

School District of Manawa

Board of Education Meeting Agenda

October 17, 2022



Google Meet joining information

Video call link: <https://meet.google.com/hzp-mjwb-yuc>

Or dial: (US) +1 570-634-6064 PIN: 664 603 850#

1. Call to Order – President Reiersen – **7:00 p.m.** – MES Boardroom, 800 Beech Street
Hybrid Meeting Format (In-person Meeting for Board of Education at MES Board Room,
800 Beech Street & Virtual Components)
2. Pledge of Allegiance
3. Roll Call
4. Verify Publication of Meeting
5. District Showcase:
 - a. Justice on Wheels Essay Contest 2nd Place Winner - Remington Cable
 - b. National Principals Month Proclamation
6. Presentations:
 - a. Key Performance Indicator Presentation on State Assessment Results - Principals
7. Announcements:
 - a. Contributions to the District
 - b. Other Contributions
8. Consent Agenda
 - a. Approve Minutes of September 19, 2022; September 28, 2022; and October 10, 2022 Board Meetings
 - b. Treasurer's Report: Approve Expenditures & Receipts
 - c. Consider Approval of Special Education Paraprofessional as Presented.
 - d. Donations:
 - i. Rick Zemple: \$869.76 for Boys Basketball Manawa Athletic Booster Club Donation
 - e. Consider Approval of Special Education Paraprofessional as Presented
 - f. Consider Approval of 2022-23 Boys Basketball Coaches as Presented
 - g. Consider Approval of 2022-23 Wrestling Coaches as Presented
9. Any Item Removed from Consent Agenda
 - a.
 - b.
10. Public Comments (Register to Speak Prior to Start of Meeting / Guidelines Listed Below Agenda)
11. Correspondence: None this month.

12. District Administrator's Report:
 - a. Student Council Representative - No one available this month.
 - b. Legislative Update
 - c. Monthly Enrollment Update
 - d. Curriculum Update
 - e. Seclusion and Restraint Report 2021-22
 - f. District and School Report Cards - Under embargo; local data review
 - g. NEOLA Policy or Administrative Guidelines Technical Changes
13. School Operations Reports:
 - a. ES Principal / Special Education Director: Highlights - Included in Board Packet
 - b. MS / HS Principal: Highlights - Included in Board Packet
14. Business Related Reports:
 - a. Highlights - Included in Board Packet
 - b. Kobussen Transportation Report
15. Director's Reports:
 - a. District Reading Specialist: Highlights - Included in Board Packet
 - b. Technology Director: Highlights - Included in Board Packet
16. Board Comments:
 - a.
 - b.
17. Committee Reports:
 - a. Curriculum Committee (Hollman)
 - i. Consider Endorsing a School-Sponsored Trap Shooting League as Presented
 - ii. Consider Endorsing a High School Robotics Club as Presented
 - iii. Consider Endorsing a High School ESports Club as Presented
 - iv. Consider Endorsing Revised Secondary Science Curriculum Maps as Presented
 1. Chemistry
 2. Physical Science
 - v. Consider Endorsing Mathematics Curriculum Maps as Presented
 1. Grade 6
 2. Grade 7
 3. Grade 8
 4. Algebra
 5. Geometry
 6. Advanced Algebra
 7. Pre-Calculus

- vi. Discuss and Recommend Applicable 2022-23 School Year Key Performance Indicators
- vii. Curriculum Committee Planning Guide
- b. Finance Committee (Jepson)
 - i. Annual Meeting Planning
 - ii. Consider Endorsement of Fund Raiser Procedure for 2022-23
 - iii. Current State of Food Service Equipment
 - iv. Consider Endorsement of Recommendation to Spend the Food Service (Fund 50) Fund Balance
 - v. General Fund (Fund 10) Fund Balance (Information / Action) - No actions
 - 1. Discuss Spending Priorities
 - a. Student Learning Impact
 - b. Health & Safety Impact
 - c. Number of Students or Staff Positively Impacted
 - d. Other
 - 2. Consider Special Meeting to Choose Projects Based on Spending Priorities
 - vi. Finance Committee Planning Guide
- c. Buildings & Grounds (Griffin) No Meeting in October.
- d. Policy and Human Resources (Reiersen) October 4, 2022
 - i. Review and Consider Endorsement of NEOLA Update Volume 31, No. 2 Updates - Steve LaVallee
 - ii. Consider Endorsement of Revised PO2416 - Student Privacy and Parental Access to Information as Presented
 - iii. Consider Endorsement of Revised AG2416 - Procedures for Inspection of Survey, Administered or Distributed to Students as Presented
 - iv. Consider Endorsement of Revised PO5136 - Personal Communication Devices as Presented
 - v. Consider Endorsement of Revised PO5830 - Student Fundraising as Presented
 - vi. Consider Endorsement of Fundraising Request Form (Google Form) as Presented
 - vii. Confirmation of Required Website Information is Complete
 - viii. Confirmation of Required Posting and Notices are Complete
 - ix. Kelly Marinoff, MacNeil Environmental was contacted to provide Paving the Way asbestos, lead, and water quality documentation on her next SDM visit as per PO8431.01.
 - x. Discuss and Recommend Applicable 2022-23 School Year Key Performance Indicators
- e. Policy and Human Resources (Reiersen) October 10, 2022 with Support Staff
 - i. What do Support Staff Members hope will come out of the Support Staff meetings?

- ii. What are the good points concerning their jobs? What are areas of concern?
- iii. What is Support Staff job training like? When does training happen? How effective do Support Staff find the training?
- iv. How do Support Staff perceive the communication concerning their jobs and in general communication about District concerns.

18. Unfinished Business: None this month.

19. New Business:

- a. Consider Approval of PO2522 - Library Media Centers as Presented
- b. Consider Approval of Library Material Formal Reconsideration Form as Presented
- c. Consider Approval to Add a 21.25 Hours per Week Secondary Special Education/Regular Education Instructional Paraprofessional as Presented
- d. Consider Approval to Change October 27, 2022 Flu Clinic to an Immunization Clinic as Presented
- e. Consider Approval of a School-Sponsored Trap Shooting League as Presented
- f. Consider Approval of a High School Robotics Club as Presented
- g. Consider Approval of a High School ESports Club as Presented
- h. Consider Approval of the Revised Secondary Science Curriculum Maps as Presented
 - i. Chemistry
 - ii. Physical Science
- i. Consider Approval of the Mathematics Curriculum Maps as Presented
 - i. Grade 6
 - ii. Grade 7
 - iii. Grade 8
 - iv. Algebra
 - v. Geometry
 - vi. Advanced Algebra
 - vii. Pre-Calculus
- j. Consider Approval of Fund Raiser Procedure for 2022-23 as Presented
- k. Consider Approval the Purchase of Up to Three (3) MAX ST5000 Vending Machines after Staff Input with at Least One Vending Machine Accessible After Normal School Hours as Presented
- l. Consider Approval of the Purchase of Up to Six (6) Booth/Table Combos at the Spending Percentage Presented
- m. Consider Approval of the purchase of Up to Six (6) Picnic Tables for Outside the Commons. Tables are to be; Round, Powder Coated (Thermoplastic), with Grated Tops and Seating. There needs to be at least 2 ADA accessible seating areas.

- n. Consider Approval to Purchase up to Six (6) Conversation Tables with 12 Chairs at the Spending Percentage Presented.
 - o. Review Updated Revenue Limit Worksheet and Finalize Annual Meeting Preparations
20. Next Meeting Dates:
- a. October 24, 2022 Annual Meeting - 7:00 p.m. - MS/HS Commons
 - b. October 31, 2022 Policy & Human Resources Committee Meeting – 5:00 p.m. – MES Board Room
 - c. November 14, 2022 Finance Committee Meeting - 6:00 p.m. - MES Board Room
 - d. November 21 , 2022 Regular Board of Education Meeting – 7:00 p.m. – MES Board Room
 - e. November ???, 2022 Curriculum Committee Meeting - TBD - MES Board Room
 - f. November ???, 2022 Buildings & Grounds Meeting - TBD - MES Board Room
 - g. Consider setting a Board/Administration work session to prioritize projects/purchases.
21. Closed Session – The Board of Education Shall Move into Closed Session pursuant to the provisions of Wisconsin Statutes 19.85(1) (c) and (f) to consider the employment and performance evaluation of a District administrator; to consider disciplinary data of the District administrator and the investigation of such District administrator which, if discussed in public, would be likely to have a substantial adverse effect upon such person and approving Minutes of the Special Board of Education Meeting held on October 4, 2022 regarding the expulsion of a student from the District pursuant to Wisconsin Statutes Section 120.13(1)(b)(c).
22. Board May Act on Items Discussed in Closed Session
23. Adjourn

PLEASE NOTE: Any person with a qualifying disability under the Americans with Disabilities Act that requires the meeting or material to be in accessible format, please contact the District Administrator to request reasonable accommodation. The meeting room is wheelchair accessible.

Upon request to the District Administrator, submitted twenty-four (24) hours in advance, the District shall make reasonable accommodation including the provision of informational material in an alternative format for a disabled person to be able to attend this meeting.

0167.3 - PUBLIC COMMENT AT BOARD MEETINGS

The Board recognizes the value of public comment on educational issues and the importance of allowing members of the public to express themselves on District matters.

Agenda Item

Any person or group who would like to have an item put on the agenda shall submit their request to the District Administrator no later than ten (10) days prior to the meeting and include:

- A. name and address of the participant;

- B. group affiliation, if and when appropriate;
- C. topic to be addressed.

Such requests shall be subject to the recommendation of the District Administrator and the approval of Board President.

Public Comment Section of the Meeting

To permit fair and orderly public expression, the Board may provide a period for public comment at any regular or special meeting of the Board and publish rules to govern such comment in Board meetings.

The presiding officer of each Board meeting at which public comment is permitted shall administer the rules of the Board for its conduct.

The presiding officer shall be guided by the following rules:

- A. Public comment shall be permitted as indicated on the order of business, at the discretion of the presiding officer, and for individuals who live or work within the District and parents/guardians of students enrolled in the District.
- B. Attendees must register their intention to participate in the public portion of the meeting upon their arrival at the meeting.
- C. Participants must be recognized by the presiding officer and will be requested to preface their comments by an announcement of their name; address; and group affiliation, if and when appropriate.
- D. Each statement made by a participant shall be limited to three (3) minutes duration.
- E. No participant may speak more than once on the same topic unless all others who wish to speak on that topic have been heard.
- F. Participants shall direct all comments to the Board and not to staff or other participants.
- G. Participants shall address only topics within the legitimate jurisdiction of the Board.
- H. All statements shall be directed to the presiding officer; no person may address or question Board members individually.
- I. The presiding officer may:
 - 1. interrupt, warn, or terminate a participant's statement when the statement is too lengthy, personally directed, abusive, obscene, or irrelevant;
 - 2. request any individual to leave the meeting when that person does not observe reasonable decorum;
 - 3. request the assistance of law enforcement officers in the removal of a disorderly person when that person's conduct interferes with the orderly progress of the meeting;
 - 4. call for a recess or an adjournment to another time when the lack of public decorum so interferes with the orderly conduct of the meeting as to warrant such action.
 - 5. waive these rules with the approval of the Board when necessary for the protection of privacy or the administration of the Board's business.
- J. The portion of the meeting during which the comment of the public is invited shall be limited to fifteen (15) minutes unless extended by a vote of the Board.
- K. Recording, filming, or photographing the Board's open meetings is permitted. Recording, filming, or photographing the Board's closed session is only permitted pursuant to Bylaw 0167.2 – Closed Session. The person operating the equipment should contact the District Administrator prior to the Board meeting to review possible placement of the equipment, and must agree to abide by the following conditions:
 - 1. No obstructions are created between the Board and the audience.
 - 2. No interviews are conducted in the meeting room while the Board is in session.

3. No commentary, adjustment of equipment, or positioning of operators is made that would distract either the Board or members of the audience or otherwise disrupt the meeting while the Board is in session.

© Neola 2020

The background of the entire image is a stylized American flag, featuring a blue canton with white stars and alternating red and white horizontal stripes. The stars are arranged in a grid pattern.

Second Amendment

**Remington Cable,
Manawa Elementary School
4th grade
Ms. Tassone/Mrs. Whitman**

About the Constitution



The United States Constitution was written in 1787, ratified in 1789, and is the world's longest surviving charter of government.

The United States Constitution was written to protect citizens and the states.

James Madison is known as the Father of the Constitution, but several people contributed to the Constitution. The Constitution has seven articles, which lays out how the government works.

About the 2nd Amendment

The Second Amendment was ratified on December 15, 1791. It was made by the founding fathers, to give people the right to protect themselves from the government and any personal threats. The second amendment allows people to protect their property. Individuals have the right to “bear arms.” There are 27 amendments, and the first ten amendments are in the Bill of Rights.



How the 2nd Amendment affects kids

The second amendment keeps kids safe by allowing parents to protect their homes, and family. The second amendment keeps kids safe by not allowing them to purchase firearms. With stricter gun control, schools are safer for kids.

One needs to be 18 or older to buy shotguns, rifles or ammunition for shotguns, and rifles. You need to be 21 and older to purchase handguns, and ammunition for handguns. A background check is required for all purchases.



Conclusion

I have learned alot about the second amendment such as it is very important to keep people safe. It is also important for citizens to continue to equally have their rights, such as owning firearms. This is one of the many reasons why America is a great place to live.



Resources

“The 0th Article of the U.S. Constitution.” *National Constitution Center – Constitutioncenter.org*, <https://constitutioncenter.org/the-constitution/preamble>.

“27 Amendments.” *The Constitution Simplified*, <https://victoriasconstitutionsimplified.weebly.com/27-amendments.html>.

“3 Branches of Government: Kids Educational Video: Kids Academy.” *YouTube*, 28 Mar. 2019, <https://youtu.be/OvwWIRTYvU8o>.

Admin. “Constitution - US Constitution: Laws.com.” *Kids Laws*, 9 Oct. 2020, <https://kids.laws.com/constitution>.

“Bill of Rights for Kids: Learn about These 10 Amendments of the Constitution.” *YouTube*, 14 July 2022, <https://youtu.be/skWNC3a8NkM>.

Brainpop.com,

<https://www.brainpop.com/socialstudies/usgovernment/branchesofgovernment?panel=login&refer=%2Fsocialstudies%2Fusgovernment%2Fbranchesofgovernment%2Fmovie%2F>.

Catrow, David. *We the Kids: The Preamble to the Constitution of the United States*. Puffin, 2005.

“The Constitution for Kids.” *YouTube*, 16 July 2018, <https://youtu.be/jsTB7gSfDPI>.

“The National Constitution Center | US Government and Civics.” *Khan Academy*, Khan Academy, <https://www.khanacademy.org/humanities/us-government-and-civics/us-gov-the-national-constitution-center>.

“Preamble to the United States Constitution Facts for Kids.” *Wikt:Introduction*, https://kids.kiddle.co/Preamble_to_the_United_States_Constitution.

“Teaching Do I Have a Right?: Constitutional Law Game.” *ICivics*,

<https://www.icivics.org/ell-teachers?emci=17c7d12d-3b34-ed11-ae83-281878b83d8a&emdi=031b00ef-ed34-ed11-ae83-281878b83d8a&ceid=20133650>.

The United States Constitution for Kids - ConSource. https://www.consource.org/static/lesson-plans/Guide-United_States_Constitution_for_Kids.pdf.

“United States Government for Kids.” *Ducksters*, https://www.ducksters.com/history/us_government.php.

“US Government Facts for Kids.” *Cool Kid Facts*, 8 Sept. 2022, <https://www.coolkidfacts.com/us-government/>.

STATE of WISCONSIN



OFFICE of the GOVERNOR

Proclamation

WHEREAS; school leadership and classroom instruction are vital factors that contribute to the success of Wisconsin's students; and

WHEREAS; school principals handle a wide range of responsibilities that include managing budgets, ensuring the smooth operation of school programs and facilities, and creating a positive school climate that is inviting and inclusive to all students, families, and community members; and

WHEREAS; school principals are also responsible for ensuring that all students feel safe and supported at school, and are instrumental partners in our state's efforts to build an education system that works for every student, regardless of age, identity, income level, ability, or ZIP code; and

WHEREAS; as instructional leaders, school principals work collaboratively with educators to maintain high standards for teaching and learning, set performance goals that drive continuous improvement, and support and guide educators and staff in their work; and

WHEREAS; this month, the state of Wisconsin joins all Wisconsinites in recognizing and honoring the school principals and assistant principals across the state who work to actualize the potential of all of Wisconsin's learners and ensure student readiness for higher education, future jobs and careers, and productive engagement in their communities;

NOW, THEREFORE, I, Tony Evers, Governor of the State of Wisconsin,
do hereby proclaim October 2022 as

NATIONAL PRINCIPALS MONTH

throughout the State of Wisconsin and I commend this observance
to all our state's residents.



IN TESTIMONY WHEREOF, I have
hereunto set my hand and caused the
Great Seal of the State of Wisconsin
to be affixed. Done at the Capitol in
the City of Madison this 16th day of
September 2022.

A handwritten signature in blue ink that reads "Tony Evers".

TONY EVERS
GOVERNOR

By the Governor

A handwritten signature in blue ink that reads "Douglas La Follette".

DOUGLAS LA FOLLETTE
Secretary of State

Minutes of August 19, 2022 School District of Manawa Board of Education Meeting

1. Meeting called to order @ 7:01
2. Pledge of allegiance
3. Roll Call: Reierson, Griffin, Jepson, Hollman, Riske, Fietzer, Krueger
4. Publication of meeting - Dr. Oppor Verified
5. District Showcase: None this month
6. Presentations
 - a. Summer School: Courses for credit (Agricultural), Added "Expanded Music Course" - Went from 6 to 29 participants and Zoo Adventures has 10 extra participants. Was able to cut expenses from field trips due to using the school van. Library offered a lot of opportunities for the community. Add more credits during summer school. Explained FTE from this year versus last year.
 - i. Mrs. Carmen O'Brien explained how the FTE (Full Time Enrollments) worked.
 - ii. Mr. Fietzer asked for an explanation on how FTE works and who funds it.
7. Announcements
 - a. President read off the donations.
8. Consent Agenda
 - a. Approve Minutes of August 15, August 8, August 24, and September 9, 2022 Board Meetings.
 - b. **Treasurer's Report: Approve Expenditures & Receipts** - Removed from Consent Agenda
 - c. Donations:
 - i. Zoetis - \$98.60 for Manawa FFA Chapter
 - ii. Manawa Lions Club - \$400.00 for Urgent Needs Fund
 - iii. Solarus - \$2,200.00 for Partners in Education
 - iv. Sacred Heart Catholic Church - Donated school supplies
 - v. Manawa Lions Club - Donated school supplies
 - d. Acknowledge resignation of special education paraprofessional
Items A, C, and D approved by consent.
9. Items removed from Consent Agenda
 - a. Motion by Fietzer/Kreuger to move Treasurer's Report: Approve Expenditures & Receipts into closed session - Motion carried
10. No public comments
11. No Correspondence
12. District Administrators report
13. School Operations Reports
 - a. The BOE President mentioned that the Emergency Protocols do not have a section for intruder actions.

14. Business Related Reports

15. Director's Reports

16. Board Comments:

- a. Jepson voiced her opinion on not revising the policies and guidelines to reflect gender neutral pronouns.

17. Committee Reports:

18. Unfinished Business: None

19. New Business:

- a. Motion by Jepson/Hollman Approval of Reviewing Room Capacity per Fire Egress Code and purchasing new room signs for both building by the end of Semester 1 - Motion Carried
- b. Motion by Griffin/Fietzer Approval of National FFA Convention Overnight Field Trip - Motion Carried
- c. Motion by xxx/xxx Approved Action Steps in MES Playground Inspection Report
- d. Motion by Jepson/Krueger Approval to Immediately Remove the Parallel Bars and Bench from the Playground - Motion Carried
- e. Motion by Hollman/Fietzer Approval to Purchase Ten (10) Picnic Tables (5 per building) with a Total Cost Not to Exceed \$15,000
 - i. Amended Motion by Fietzer/Riske to discuss the quantity of tables needed - Motion Carried
- f. Motion by Jepson/Griffin Approval to Complete Agriculture Animal Room Exhaust Switch - Motion Carried
- g. Motion by Riske/Fietzer Approval of the Summer School 2022 Report - Motion Carried
- h. Motion by Fietzer/Krueger Approval of Articulated English Classes- Motion Carried
- i. Motion by Riske/Hollman Approval of the Special Olympics Young Athletes Program - Motion Carried
- j. Motion by Hollman/Fietzer Approval of the 2022-23 Salary and Stipend Guide
 - i. Amended Motion by Hollman/Fietzer to revise by increasing GSA Club Advisor, HS yearbook, and MS/MES yearbook stipends - Motion Carried
- k. No Formal Motion on Discuss a Citizen Concern Regarding "Furries"
- l. Discuss Response Protocols Regarding the Threat of School Violence

20. Next Meeting Dates:

- a. Added September 28, 2022, BOE Meeting - 6:00 pm - Closed Session, MES Board Room
- b. October 4, 2022 Policy & Human Resources Committee Meeting – 5:00 p.m. – MES Board Room (NEOLA Update)
- c. October 6, 2022 WASB Regional Meeting - 6:00 p.m. - Bridgewood Resort 1000 Cameron Way Neenah
- d. October 10, 2022 Policy and Human Resources Meeting with Support Staff – 3:30 p.m. – MES Board Room

- e. Added October 10, 2022 Special Meeting for Safety Program with Administration - 7:00 pm - MES Board Room
 - f. Added October 12, 2022 Curriculum Committee - 5:00 pm - MES Board Room
 - g. Amended October 12, 2022 Finance Committee Meeting - 6:00 p.m. - MES Board Room
 - h. October 17, 2022 Regular Board of Education Meeting – 7:00 p.m. – MES Board Room
 - i. October 24, 2022 Annual Meeting - 7:00 p.m. - TBD
 - j. Consider setting a Board/Administration work session to prioritize projects/purchases.
21. Motion by Krueger/Riske to adjourn at 9:54 pm

September 28, 2022 Special Board of Education Meeting Minutes

1. Call to Order – President Reiersen – **6:00 p.m.** – MES Board Room, 800 Beech Street
2. Pledge of Allegiance
3. Roll Call: Present- Reiersen, Griffin, Hollman, Jepson, Fietzer, Riske Absent-Krueger
4. Verify Publication of Meeting - Verified via email responses
5. Public Comment (Register to Speak Prior to Start of Meeting / Guidelines Listed Below Agenda) - None
6. Unfinished Business: None
7. New Business: None
8. Next Meeting Dates:
 - a. October 4, 2022 Policy & Human Resources Committee Meeting – 5:00 p.m. – MES Board Room (NEOLA Update)
 - b. October 4, 2022 Special Board Meeting - Closed – 6:30 p.m. – MES Board Room
 - c. October 6, 2022 WASB Regional Meeting - 6:00 p.m. - Bridgewood Resort 1000 Cameron Way Neenah
 - d. October 10, 2022 Policy and Human Resources Meeting with Support Staff – 3:30 p.m. – MES Board Room
 - e. October 10, 2022 Special Meeting for Safety Program with Administration - 7:00 pm - MES Board Room
 - f. October 12, 2022 Curriculum Committee - 5:00 pm - MES Board Room
 - g. October 12, 2022 Finance Committee Meeting - 6:00 p.m. - MES Board Room
 - h. October 17, 2022 Regular Board of Education Meeting – 7:00 p.m. – MES Board Room
 - i. October 24, 2022 Annual Meeting - 7:00 p.m. - TBD
 - j. Consider setting a Board/Administration work session to prioritize projects/purchases.
9. Closed Session – The Board of Education Shall Move into Closed Session Pursuant to the Provisions of Wisconsin Statutes 19.85(1) (c) and (f) to consider the employment and performance evaluation of a District administrator; to consider disciplinary data of the District administrator and the investigation of such District administrator which, if discussed in public, would be likely to have a substantial adverse effect upon such person.

Motion to adjourn to closed session: Fietzer, Jepson
Motion carried at 6:02 pm (Krueger Absent)
Motion to adjourn from closed session: Jepson, Hollman
Motion carried at 7:48 pm (Krueger Absent)
10. Board May Act on Items Discussed in Closed Session - None
11. Adjourn
Motion to adjourn: Fietzer, Hollman
Motion carried at 7:48 pm (Krueger absent)

October 10, 2022 Special Board of Education Meeting Minutes

1. Call to Order – President Reiersen – **7:00 p.m.**– MES Board Room, 800 Beech Street Hybrid Meeting Format (In-person Meeting for Board of Education at MES Board Room, 800 Beech Street & Virtual Components)
2. Pledge of Allegiance
3. Roll Call- Present: Reiersen, Griffin, Jepson, Hollman, Fietzer, Riske, Krueger
4. Verify Publication of Meeting - Dr. Oppor verified
5. Public Comment (Register to Speak Prior to Start of Meeting / Guidelines Listed Below Agenda)
Motion to allow public comments during the New Business agenda items. Motion by: Hollman, Riske
Motion carried.
6. Unfinished Business: None

****NOTE**** No motioned actions were taken on the agenda items discussed in the New Business section.

7. New Business:
 - A. Secure entrances
 - a. Beginning of the school day current practice.
 - b. Removal of the exterior door stops. How do we know the doors are closed?
 - c. Are there entrance checks throughout the day? If so, are the results recorded and stored?
 - d. After school hours secure entrances; current practice.
 - e. School security protocols during community events, i.e.: sporting events, concerts, plays, parent/teacher conferences, etc.?
 - B. Window safety
 - a. Which windows have the anti-shatter film and which don't? Are there other anti-shatter/bullet proof applications? (Shatterproof window film is not bulletproof.)
 - b. Do classrooms have more than one egress in case of a fire or internal incident?
 - C. Security cameras and cybersecurity
 - a. Are there blind spots in our current set-up?
 - b. Do the current camera positions give a clear enough view and focus to identify individuals and vehicles?
 - c. How often do the local/county authorities access our feeds to ensure that the feed access is working?
 - d. What steps are in place or planned for implementation to ensure SDM's confidential information and funds are protected from cyber crime?
 - D. StopIt App - Tip line
 - a. Where is the number/ how to locate, and how are students/parents made aware of this tool?

E. Walkie Talkie

- a. How secure are the Walkie Talkie channels?
- b. What are the daily verification checks?
- c. What is the confidence level of the units being able to contact the other building(s) in case of an emergency?

F. Staff training and incident tracking & evaluation

- a. What procedures, policies, and administrative guidelines are all staff trained in and when?
- b. How are incident commanders assigned and what is the timing for completion of the incident tracking and evaluation?

G. Paving the Way facility

- a. What are the features and protocols for this classroom setting? Alarms, window and door protection, emergency communication, etc.?

H. School Security Person/School Resource Officer

- a. What is the current local authority activity on/around school property?
- b. How did the previous SRO programs work?
- c. What are the local police expectations of an SRO? Duties, amount of time per day, per week, per year? Anticipated cost?
- d. What are the expectations for a school security person from the District? Duties, amount of time per day, per week, per year? Budget constraints?

I. Resources Regarding Overall District Safety - This agenda item was not discussed during this meeting

- a. Safety Upgrades
- b. Districtwide Safety Committee - Advisory (convenes every three years)
- c. Inspections
 1. Lifts (annual)
 2. Elevator (annual)
 3. Fire Extinguishers (annual)
 4. Bleachers (annual)
 5. MES Playground (new)
 6. District-owned Vehicles (annual)
 7. Fire Department (annual)
 8. MacNeil Environmental (Multiple visits a year)

8. Next Meeting Dates: None determined at this time

9. Adjourn

Motion by: Fietzer, Krueger

Motion carried at 9:58 pm

Name	Reference	Trans Date	Description	Post Date	Amount
		09/02/2022	REIMBURSEMENT FOR 10 BOOKS, THE TWIN THI	09/02/2022	199.90
			Totals for 16110		199.90
		09/02/2022	BACK-TO-SCHOOL SUPPLEMENTAL AID	09/02/2022	60,159.00
			Totals for 16123		60,159.00
		09/02/2022	ADMISSIONS FOR FOOTBALL GAME ON 9/2/22	09/02/2022	457.00
			Totals for 16159		457.00
		09/02/2022	6-8 MS ATHLETIC FEE	09/07/2022	820.00
			Totals for 16160		820.00
		09/02/2022	9-12 HS ATHLETIC FEE	09/07/2022	2,920.00
			Totals for 16161		2,920.00
		09/02/2022	6-8 MS YEARBOOK	09/07/2022	482.00
			Totals for 16162		482.00
		09/02/2022	9-12 HS YEARBOOK	09/07/2022	3,228.00
			Totals for 16163		3,228.00
		09/02/2022	ATHLETIC PASSES	09/07/2022	990.00
			Totals for 16164		990.00
		09/02/2022	CHROMEBOOK CHARGE	09/07/2022	25.00
			Totals for 16165		25.00
		09/02/2022	DISTRICT FEE	09/07/2022	2,820.00
			Totals for 16166		2,820.00
		09/02/2022	PUTTING CLASS OF FEES INTO THIS ACCOUNT	09/07/2022	735.00
			Totals for 16167		735.00
		09/02/2022	INSTRUMENTAL RENTAL	09/07/2022	30.00
			Totals for 16168		30.00
		09/02/2022	FINE - PADLOCK REPLACEMENT	09/07/2022	5.00
			Totals for 16169		5.00
		09/02/2022	STUDENT PARKING PASS	09/07/2022	644.00
			Totals for 16170		644.00
		09/08/2022	STUDENT COUNCIL CONCESSIONS FROM VB VS.	09/08/2022	326.00
			Totals for 16150		326.00
		09/08/2022	STUDENT COUNCIL CONCESSIONS FROM FOOTBAL	09/08/2022	595.00
			Totals for 16151		595.00
		09/08/2022	SOLARUS PARTNER IN EDUCATION 2022 DONATI	09/09/2022	2,200.00
			Totals for 16152		2,200.00
		09/09/2022	CLASS OF 2030	09/09/2022	20.00
			Totals for 16153		20.00
		09/09/2022	CLASS OF 2031	09/09/2022	20.00
			Totals for 16154		20.00
		09/09/2022	CLASS OF 2032	09/09/2022	20.00
			Totals for 16155		20.00
		09/09/2022	CLASS OF 2036	09/09/2022	20.00
			Totals for 16156		20.00
		09/12/2022	EARLY COLLEGE CREDIT PROGRAM REIMBURSEME	09/12/2022	64.39
			Totals for 16124		64.39
		09/12/2022	CARL PERKINS - CHECK FROM CESA #6	09/12/2022	2,962.00
			Totals for 16125		2,962.00
		09/12/2022	URGENT NEEDS	09/12/2022	400.00
			Totals for 16126		400.00
		09/12/2022	NSF CHECK - REDEPOSIT	09/12/2022	99.25
			Totals for 16127		99.25
		09/12/2022	MES FOOD SERVICE DEPOSIT FOR 9/5/22-9/9/	09/12/2022	783.40
			Totals for 16128		783.40
		09/12/2022	MES DISTRICT FEE COLLECTION	09/12/2022	75.00

Name	Reference	Trans Date	Description	Post Date	Amount
			Totals for 16129		75.00
		09/12/2022	FOOD SERVICE FOR WEEK OF 8/29/22 TO 9/2/	09/12/2022	680.00
			Totals for 16130		680.00
		09/15/2022	ESSER II FOOD SERVICE CLAIM	09/06/2022	10,099.26
			Totals for 16171		10,099.26
		09/15/2022	GEER PRIVATE CLAIM	09/06/2022	11,236.44
			Totals for 16172		11,236.44
		09/15/2022	TITLE II PUBLIC PARTIAL CLAIM	09/06/2022	1,402.63
			Totals for 16173		1,402.63
		09/15/2022	TITLE IV PUBLIC CLAIM	09/06/2022	917.29
			Totals for 16174		917.29
		09/16/2022	MES FOOD SERVICE FROM 9/12 TO 9/16	09/16/2022	1,383.00
			Totals for 16180		1,383.00
		09/16/2022	CLASS OF 2030	09/16/2022	10.00
			Totals for 16181		10.00
		09/16/2022	CLASS OF 2032	09/16/2022	10.00
			Totals for 16182		10.00
		09/16/2022	CLASS OF 2033	09/16/2022	20.00
			Totals for 16183		20.00
		09/16/2022	CLASS OF 2035	09/16/2022	10.00
			Totals for 16184		10.00
		09/16/2022	DISTRICT STUDENT FEES	09/16/2022	75.00
			Totals for 16185		75.00
		09/16/2022	ADMISSIONS FOR FOOTBALL GAMES PUT IN WRO	09/16/2022	1,389.00
			Totals for 16186		1,389.00
		09/16/2022	CLASS OF 2024	09/16/2022	275.00
			Totals for 16187		275.00
		09/16/2022	CLASS OF 2025	09/16/2022	130.00
			Totals for 16188		130.00
		09/16/2022	CLASS OF 2026	09/16/2022	70.00
			Totals for 16189		70.00
		09/16/2022	CLASS OF 2027	09/16/2022	115.00
			Totals for 16190		115.00
		09/16/2022	CLASS OF 2028	09/16/2022	75.00
			Totals for 16191		75.00
		09/16/2022	CLASS OF 2029	09/16/2022	70.00
			Totals for 16192		70.00
		09/19/2022	SPARSITY AID	09/19/2022	236,357.00
			Totals for 16193		236,357.00
		09/19/2022	EQUALIZATION AID	09/19/2022	720,791.00
			Totals for 16194		720,791.00
		09/19/2022	REFUND FROM SCHOOL DISTRICT OF STOCKBRID	09/19/2022	100.00
			Totals for 16196		100.00
		09/23/2022	MES FOOD SERVICE FROM 9/19 TO 9/23	09/23/2022	480.00
			Totals for 16179		480.00
		09/26/2022	ESSER I PRIVATE SCHOOL PORTION	09/26/2022	8,541.86
			Totals for 16195		8,541.86
		09/26/2022	REFUND FROM SCHOOL DISTRICT OF STOCKBRID	09/26/2022	628.00
			Totals for 16197		628.00
			Total for Cash Receipts		1,075,965.42

FUND SUMMARY

<u>FUND</u>	<u>DESCRIPTION</u>	<u>BALANCE SHEET</u>	<u>REVENUE</u>	<u>EXPENSE</u>	<u>TOTAL</u>
10	GENERAL FUND	25,060.22	1,030,888.64	299.90	1,056,248.76
21	Special Revenue Trust Fund	0.00	4,843.00	0.00	4,843.00
50	FOOD SERVICE FUND	13,425.66	628.00	0.00	14,053.66
80	COMMUNITY SERVICE FUND	0.00	820.00	0.00	820.00
***	Fund Summary Totals ***	38,485.88	1,037,179.64	299.90	1,075,965.42

***** End of report *****

CHECK NUMBER	VENDOR	BATCH NUMBER	CHECK DATE	INVOICE DESCRIPTION	ACCOUNT DESCRIPTION	PO NUMBER	AMOUNT
83819	AMAZON CAPITAL SERVI	JPAP09	09/23/2022	Child Development Days supplies	SPECIAL EDUCATION FUND/GENERAL SUPPLIES/EARLY CHILDHOOD	272300017	63.94
Totals for 83819							63.94
83820	BSN SPORTS, LLC	JPAP09	09/23/2022	BJohnson-Volleyball Jerseys For Team	GENERAL FUND/APPAREL (Instructional only)/VOLLEYBALL	4000230067	2,471.21
Totals for 83820							2,471.21
83821	CAPSTONE/CAPSTONE CL	JPAP09	09/23/2022	Buncee by Capstone (10 users @ \$100 ea) 12 months	GENERAL FUND/TECH/SOFTWARE SERVIC/SCHOOL LIBRARY	1012300050	1,000.00
Totals for 83821							1,000.00
83823	DRUIDE INFORMATIQUE	JPAP09	09/23/2022	TYPING PAL SUBSCRIPTION RENEWAL BASED ON A 100 TO 399 STUDENT ENROLLMENT	GENERAL FUND/TECH/SOFTWARE SERVIC/UNDIFFERENTIA TED CURRICULUM	1012300049	360.00
Totals for 83823							360.00
83824	ENGELHARDT DAIRY OF	JPAP09	09/23/2022	MMS/LWHS DAIRY ORDER	FOOD SERVICE FUND/FOOD/FOOD SERVICES	0	316.43
83824	ENGELHARDT DAIRY OF	JPAP09	09/23/2022	DAIRY PRODUCTS	FOOD SERVICE FUND/FOOD/FOOD SERVICES	0	355.30
Totals for 83824							671.73
83827	NASSCO, INC	JPAP09	09/23/2022	CUSTODIAL SUPPLIES	GENERAL FUND/NON-CAPITAL EQUIPMENT/OPERATION	0	482.82
83827	NASSCO, INC	JPAP09	09/23/2022	CUSTODIAL SUPPLIES	GENERAL FUND/NON-CAPITAL EQUIPMENT/OPERATION	0	640.01
Totals for 83827							1,122.83
83828	NATIONAL ART ED ASSO	JPAP09	09/23/2022	NAEA/WAEA Membership	GENERAL FUND/DUES & FEES MEMBRSHIP/FT FEES/ART	4000230017	90.00
Totals for 83828							90.00
83829	NOTABLE, INC (KAMI)	JPAP09	09/23/2022	Kami SCHOOL PLAN 10/21/22 - 10/20/23	GENERAL FUND/TECH/SOFTWARE SERVIC/SCHOOL LIBRARY	4000230085	984.00
83829	NOTABLE, INC (KAMI)	JPAP09	09/23/2022	Kami SCHOOL PLAN 10/21/22 - 10/20/23	GENERAL FUND/TECH/SOFTWARE SERVIC/SCHOOL LIBRARY	4000230085	1,476.00
Totals for 83829							2,460.00
83831	PERFORMANCE FOODSERV	JPAP09	09/23/2022	FOOD AND NON-FOOD SUPPLIES	FOOD SERVICE FUND/CENTRAL SUPPLY ROOM/FOOD SERVICES	0	66.13
83831	PERFORMANCE FOODSERV	JPAP09	09/23/2022	FOOD AND NON-FOOD SUPPLIES	FOOD SERVICE FUND/FOOD/FOOD SERVICES	0	1,246.36
Totals for 83831							1,312.49
83832	SELL, DAVID	JPAP09	09/23/2022	MS FOOTBALL OFFICIAL ON 9/20/22 VS PACELLI	COMMUNITY SERVICE FUND/PERSONAL	0	45.00

CHECK NUMBER	VENDOR	BATCH NUMBER	CHECK DATE	INVOICE DESCRIPTION	ACCOUNT DESCRIPTION	PO NUMBER	AMOUNT
					SERVICES/OTHER COMMUNITY SERVICES		
					Totals for 83832		45.00
83835	THEDACARE AT WORK	JPAP09	09/23/2022	DS RAPID 5 BUNDLED - J HANNA	GENERAL	0	65.00
					FUND/PERSONAL SERVICES/HEALTH SERVICES		
					Totals for 83835		65.00
83837	WILS	JPAP09	09/23/2022	WSDLC Subscription Renewal	GENERAL	8002300010	873.60
					FUND/TECH/SOFTWARE SERVIC/SCHOOL LIBRARY		
					Totals for 83837		873.60
83839	E3 DIAGNOSTICS INC	JPAP09	09/26/2022	CALIBRATION OF AUDIOMETER THROUGH CESA6	GENERAL	8002300026	85.00
					FUND/TRANSFER TO CESA/SCHOOL NURSE		
					Totals for 83839		85.00
83841	STRATEGIC RESEARCH I	JPAP09	09/26/2022	2022 WISCONSIN INDICATOR 14 SURVEY	SPECIAL EDUCATION	0	132.00
					FUND/PERSONAL SERVICES/OTHER SPED SUPERVISION & COORD		
					Totals for 83841		132.00
83842	AMAZON CAPITAL SERVI	JPAP09	09/30/2022	WALKIE TALKIES	GENERAL	1012300048	27.44
					FUND/NON-CAPITAL EQUIPMENT/UNDIFFEREN TIATED CURRICULUM		
83842	AMAZON CAPITAL SERVI	JPAP09	09/30/2022	4K ITEMS	GENERAL	1012300053	44.59
					FUND/INSTRUCTIONAL MEDIA/UNDIFFERENTIAT ED CURRICULUM		
					Totals for 83842		72.03
83844	C.E.S.A. #8	JPAP09	09/30/2022	1ST QTR CESA 8 SERVICE BILLING	GENERAL	0	2,187.50
					FUND/TRANSFER TO CESA/Gen Tuition-Non-Open Enrollmen		
					Totals for 83844		2,187.50
83845	COMPLETE OFFICE OF W	JPAP09	09/30/2022	Office supplies	GENERAL	4000230087	63.60
					FUND/GENERAL SUPPLIES/OFFICE OF THE PRINCIPAL		
					Totals for 83845		63.60
83846	FLYNN, LANCE	JPAP09	09/30/2022	PARTICIPATION IN THE SUMMER INTERNSHIP PROGRAM FOR THE IT DEPARTMENT	GENERAL FUND/AS	0	500.00
					NEEDED, HOURLY/ADMINISTRATIV E TECHNOLOGY SERV		
					Totals for 83846		500.00
83847	FOX VALLEY TECHNICAL	JPAP09	09/30/2022	COURSE FEES	GENERAL	0	1,187.10
					FUND/TRANSFER TO VTAE DISTRICTS/Gen Tuition-Non-Open Enrollmen		
					Totals for 83847		1,187.10
83848	INTEGRATED SYSTEMS C	JPAP09	09/30/2022	IS Corp hosting fee	GENERAL	8002300019	388.80
					FUND/TECH/SOFTWARE SERVIC/ADMINISTRATIV		

CHECK NUMBER	CHECK VENDOR	BATCH NUMBER	CHECK DATE	INVOICE DESCRIPTION	ACCOUNT DESCRIPTION	PO NUMBER	AMOUNT
					E TECHNOLOGY SERV		
					Totals for 83848		388.80
83850	KITCHEN - TECH LLC.	JPAP09	09/30/2022	HATCO BOOSTER NOT HEATING	FOOD SERVICE	0	147.00
					FUND/REPAIR & MAINTENANCE SERVICES/FOOD SERVICES		
					Totals for 83850		147.00
83851	MECA SPORTSWEAR	JPAP09	09/30/2022	Academic Letters	GENERAL	4000230012	90.00
					FUND/GENERAL SUPPLIES/MISC HIGH SCHOOL		
					Totals for 83851		90.00
83853	NASSCO, INC	JPAP09	09/30/2022	CUSTODIAL SUPPLIES	GENERAL	0	412.99
					FUND/GENERAL SUPPLIES/OPERATION		
83853	NASSCO, INC	JPAP09	09/30/2022	CUSTODIAL SUPPLIES	GENERAL	0	311.56
					FUND/GENERAL SUPPLIES/OPERATION		
					Totals for 83853		724.55
83855	NTC-NORTHCENTRAL TEC	JPAP09	09/30/2022	LITTLE WOLF HIGH SCHOOL - 200078428	GENERAL	0	1,799.10
					FUND/TRANSFER TO VTAE DISTRICTS/Gen Tuition-Non-Open Enrollmen		
					Totals for 83855		1,799.10
83857	SOLARUS	JPAP09	09/30/2022	SOLARUS MONTHLY BILL	GENERAL	8002300013	22.09
					FUND/TELEPHONE AND TELEGRAPH/CENTRAL SERVICES		
83857	SOLARUS	JPAP09	09/30/2022	SOLARUS MONTHLY BILL	GENERAL	8002300013	43.14
					FUND/TELEPHONE AND TELEGRAPH/CENTRAL SERVICES		
83857	SOLARUS	JPAP09	09/30/2022	SOLARUS MONTHLY BILL	GENERAL	8002300013	42.09
					FUND/TELEPHONE AND TELEGRAPH/CENTRAL SERVICES		
83857	SOLARUS	JPAP09	09/30/2022	SOLARUS MONTHLY BILL	SPECIAL EDUCATION	8002300013	9.46
					FUND/TELEPHONE AND TELEGRAPH/PUBLIC INFORMATION		
83857	SOLARUS	JPAP09	09/30/2022	SOLARUS MONTHLY BILL	GENERAL	8002300013	31.57
					FUND/TELEPHONE AND TELEGRAPH/CENTRAL SERVICES		
83857	SOLARUS	JPAP09	09/30/2022	INTERNET SERVICES - MO	GENERAL	0	104.98
					FUND/ON-LINE COMMUNICATIONS/OFFICE OF SUPERINTENDENT		
83857	SOLARUS	JPAP09	09/30/2022	SOLARUS MONTHLY BILL	GENERAL	8002300013	336.06
					FUND/TELEPHONE AND TELEGRAPH/CENTRAL SERVICES		
83857	SOLARUS	JPAP09	09/30/2022	SOLARUS MONTHLY BILL	GENERAL	8002300013	656.31
					FUND/TELEPHONE AND		

CHECK NUMBER	VENDOR	BATCH NUMBER	CHECK DATE	INVOICE DESCRIPTION	ACCOUNT DESCRIPTION	PO NUMBER	AMOUNT
83857	SOLARUS	JPAP09	09/30/2022	SOLARUS MONTHLY BILL	TELEGRAPH/CENTRAL SERVICES GENERAL	8002300013	640.29
83857	SOLARUS	JPAP09	09/30/2022	SOLARUS MONTHLY BILL	FUND/TELEPHONE AND TELEGRAPH/CENTRAL SERVICES SPECIAL EDUCATION	8002300013	143.99
83857	SOLARUS	JPAP09	09/30/2022	SOLARUS MONTHLY BILL	FUND/TELEPHONE AND TELEGRAPH/PUBLIC INFORMATION GENERAL	8002300013	480.27
					Totals for 83857		2,510.25
83858	SOLIANT	JPAP09	09/30/2022	OT Services	SPECIAL EDUCATION FUND/PERSONAL SERVICES/OCCUPATIONA	272300022	417.60
83858	SOLIANT	JPAP09	09/30/2022	OT Services	L THERAPY SPECIAL EDUCATION	272300022	20.64
83858	SOLIANT	JPAP09	09/30/2022	OT Services	FUND/PERSONAL SERVICES/OCCUPATIONA L THERAPY	272300022	41.76
					Totals for 83858		480.00
83859	STANDARD INSURANCE C	JPAP09	09/30/2022	LIFE/STD & LTD PREMIUM	GENERAL FUND/LIFE INSURANCE PAYABLE	0	1,161.11
83859	STANDARD INSURANCE C	JPAP09	09/30/2022	LIFE/STD & LTD PREMIUM	GENERAL FUND/LTD INS PAYABLE	0	948.73
83859	STANDARD INSURANCE C	JPAP09	09/30/2022	LIFE/STD & LTD PREMIUM	GENERAL FUND/STD INS PAYABLE	0	447.03
					Totals for 83859		2,556.87
83860	TV-PLIANCE CENTER IN	JPAP09	09/30/2022	16 cu.ft. refrigerator	SPECIAL EDUCATION FUND/EQUIPMENT/VEHIC LE-REPLACEMENT/MULTI -CATEGORICAL	272300019	699.00
					Totals for 83860		699.00
83861	TWEET-GAROT MECHANIC	JPAP09	09/30/2022	FILTERS FOR BOTH BUILDINGS	GENERAL FUND/GENERAL SUPPLIES/OPERATION	8002300034	3,520.00
					Totals for 83861		3,520.00
83862	UNIFIRST CORPORATION	JPAP09	09/30/2022	MATS & MOPS	GENERAL FUND/CLEANING SERVICES/OPERATION	0	51.32
83862	UNIFIRST CORPORATION	JPAP09	09/30/2022	MATS & MOPS	GENERAL FUND/CLEANING SERVICES/OPERATION	0	41.66
83862	UNIFIRST CORPORATION	JPAP09	09/30/2022	MATS & MOPS	GENERAL FUND/CLEANING SERVICES/OPERATION	0	31.42
					Totals for 83862		124.40
83864	WAREHOUSE RESTAURANT	JPAP09	09/30/2022	HATCO S-36-480-3-QS BOOSTER HEATER	FOOD SERVICE FUND/EQUIPMENT/VEHIC	0	4,286.78

CHECK NUMBER	VENDOR	BATCH NUMBER	CHECK DATE	INVOICE DESCRIPTION	ACCOUNT DESCRIPTION	PO NUMBER	AMOUNT
					LE-REPLACEMENT/FOOD SERVICES		
					Totals for 83864		4,286.78
83865	WHSFA-WI HS FORENSIC	JPAP09	09/30/2022	MEMBERSHIP ENROLLMENT IN FORENSICS ASSOCIATION	GENERAL FUND/DUES & FEES MEMBRSHIP/FT FEES/CO-CURRICULAR ACTIVITIES	0	470.00
					Totals for 83865		470.00
83866	WI DEPARTMENT OF PUB	JPAP09	09/30/2022	2022 NEW SCHOOL NURSE ORIENTATION (ID#14975)	GENERAL FUND/PERSONAL SERVICES/SCHOOL NURSE	0	150.00
					Totals for 83866		150.00
83867	WI SKYWARD USER GROU	JPAP09	09/30/2022	FALL CONFERENCE ATTENDEE	GENERAL FUND/PERSONAL SERVICES/NON-INSTRUC TIONAL STAFF TRANIN	0	250.00
					Totals for 83867		250.00
83869	WOLTER POWER SYSTEMS	JPAP09	09/30/2022	SERVICE CALL FOR GENERATOR	GENERAL FUND/REPAIR & MAINTENANCE SERVICES/BUILDINGS	0	364.80
83869	WOLTER POWER SYSTEMS	JPAP09	09/30/2022	SERVICE CALL FOR GENERATOR	GENERAL FUND/REPAIR & MAINTENANCE SERVICES/BUILDINGS	0	275.20
					Totals for 83869		640.00
83870	SCHOOL DISTRICT OF N	JPAP10	10/04/2022	MS & HS CROSS COUNTY TEAM FEES	GENERAL FUND/DUES & FEES MEMBRSHIP/FT FEES/CROSS COUNTRY	0	200.00
83870	SCHOOL DISTRICT OF N	JPAP10	10/04/2022	MS & HS CROSS COUNTY TEAM FEES	COMMUNITY SERVICE FUND/DUES & FEES MEMBRSHIP/FT FEES/OTHER COMMUNITY SERVICES	0	10.00
					Totals for 83870		210.00
83871	AMERICAN WELDING & G	JPAP10	10/07/2022	ARGON/ARGON/CO2 MIX	GENERAL FUND/GENERAL SUPPLIES/TECHNOLOGY EDUCATION	0	50.17
					Totals for 83871		50.17
83872	AT&T	JPAP10	10/07/2022	AT&T Internet Bill	GENERAL FUND/ON-LINE COMMUNICATIONS/INSTR UCTION RELATED TECHNOLOGY	8002300023	651.48
					Totals for 83872		651.48
83874	CITY OF MANAWA	JPAP10	10/07/2022	LWHS SEWER & WATER	GENERAL FUND/WATER/OPERATION	0	241.89
83874	CITY OF MANAWA	JPAP10	10/07/2022	LWHS SEWER & WATER	GENERAL FUND/SEWERAGE/OPERAT ION	0	325.98
83874	CITY OF MANAWA	JPAP10	10/07/2022	LWHS SEWER & WATER	GENERAL FUND/SEWERAGE/OPERAT ION	0	245.92
83874	CITY OF MANAWA	JPAP10	10/07/2022	LWHS SEWER & WATER	GENERAL FUND/WATER/OPERATION	0	182.48
83874	CITY OF MANAWA	JPAP10	10/07/2022	MES WATER & SEWER	GENERAL	0	275.70

CHECK NUMBER	VENDOR	BATCH NUMBER	CHECK DATE	INVOICE DESCRIPTION	ACCOUNT DESCRIPTION	PO NUMBER	AMOUNT
83874	CITY OF MANAWA	JPAP10	10/07/2022	MES WATER & SEWER	FUND/WATER/OPERATION GENERAL	0	357.33
83874	CITY OF MANAWA	JPAP10	10/07/2022	PAES LAB	FUND/SEWERAGE/OPERATION SPECIAL EDUCATION	0	26.33
83874	CITY OF MANAWA	JPAP10	10/07/2022	PAES LAB	FUND/WATER/BUILDINGS SPECIAL EDUCATION	0	44.36
					FUND/SEWERAGE/BUILDINGS		
					Totals for 83874		1,699.99
83875	CLINTONVILLE REFRIGE	JPAP10	10/07/2022	ISSUES WITH A WALK IN FREEZER	FOOD SERVICE FUND/REPAIR & MAINTENANCE	0	1,363.65
					SERVICES/FOOD SERVICES		
					Totals for 83875		1,363.65
83876	CONGER TOYOTA LIFT	JPAP10	10/07/2022	PLANNED MAINTENANCE - GENIE - AWP-30S - 3896-2805 - E-006882	GENERAL FUND/REPAIR & MAINTENANCE	0	780.64
					SERVICES/NONINSTR EQIP REPAI		
83876	CONGER TOYOTA LIFT	JPAP10	10/07/2022	PLANNED MAINTENANCE - AICHI - SV2632E - 801932 -E-016853	GENERAL FUND/REPAIR & MAINTENANCE	0	473.51
					SERVICES/NONINSTR EQIP REPAI		
83876	CONGER TOYOTA LIFT	JPAP10	10/07/2022	PLANNED MAINTENANCE - AICHI - SV2632E - 801932 -E-016853	GENERAL FUND/REPAIR & MAINTENANCE	0	357.21
					SERVICES/NONINSTR EQIP REPAI		
					Totals for 83876		1,611.36
83878	DIVERSIFIED BENEFIT	JPAP10	10/07/2022	OCTOBER HRA ADMIN SERVICES	GENERAL FUND/DISTRICT FEES / BANKING FEE/FISCAL	0	266.58
					Totals for 83878		266.58
83879	E O JOHNSON CO., INC	JPAP10	10/07/2022	Monthly Copy Bill	GENERAL FUND/PRINTING AND BINDING/CENTRAL SERVICES	8002300021	1,968.63
					Totals for 83879		1,968.63
83880	E O JOHNSON COMPANY	JPAP10	10/07/2022	COPIER STAPLES	GENERAL FUND/CENTRAL SUPPLY ROOM/UNDIFFERENTIATE D CURRICULUM	1012300055	120.25
					Totals for 83880		120.25
83882	GFL ENVIRONMENTAL	JPAP10	10/07/2022	Garbage/Recycling Service	GENERAL FUND/CLEANING SERVICES/OPERATION	8002300024	986.48
					Totals for 83882		986.48
83884	JIM'S PLUMBING	JPAP10	10/07/2022	LABOR & MATERIAL TO THE NEW BOOSTER HEATER IN THE HIGH SCHOOL KITCHEN & REPAIRS OF 2 TOILET FLUSH VALVES AT MES	FOOD SERVICE FUND/REPAIR & MAINTENANCE	0	836.15
					SERVICES/FOOD SERVICES		
83884	JIM'S PLUMBING	JPAP10	10/07/2022	LABOR & MATERIAL TO THE NEW BOOSTER HEATER IN THE HIGH SCHOOL KITCHEN & REPAIRS OF 2	GENERAL FUND/REPAIR & MAINTENANCE SERVICES/BUILDINGS	0	100.00

CHECK NUMBER	VENDOR	BATCH NUMBER	CHECK DATE	INVOICE DESCRIPTION	ACCOUNT DESCRIPTION	PO NUMBER	AMOUNT
				TOILET FLUSH VALVES AT MES			
						Totals for 83884	936.15
83885	MID-AMERICAN RESEARC	JPAP10	10/07/2022	CUSTODIAL SUPPLIES	GENERAL	0	308.37
					FUND/GENERAL		
					SUPPLIES/OPERATION		
83885	MID-AMERICAN RESEARC	JPAP10	10/07/2022	CUSTODIAL SUPPLIES	GENERAL	0	232.63
					FUND/GENERAL		
					SUPPLIES/OPERATION		
						Totals for 83885	541.00
83886	SCHOOL SPECIALTY LLC	JPAP10	10/07/2022	SBortle-Art Supplies for MS	GENERAL	2002300006	121.35
					FUND/GENERAL		
					SUPPLIES/ART		
83886	SCHOOL SPECIALTY LLC	JPAP10	10/07/2022	SBortle-Art Supplies for MS	GENERAL	2002300006	12.15
					FUND/GENERAL		
					SUPPLIES/ART		
						Totals for 83886	133.50
83887	SOLIANT	JPAP10	10/07/2022	OT Services	SPECIAL EDUCATION	272300022	417.60
					FUND/PERSONAL		
					SERVICES/OCCUPATIONA		
					L THERAPY		
83887	SOLIANT	JPAP10	10/07/2022	OT Services	SPECIAL EDUCATION	272300022	20.64
					FUND/PERSONAL		
					SERVICES/OCCUPATIONA		
					L THERAPY		
83887	SOLIANT	JPAP10	10/07/2022	OT Services	SPECIAL EDUCATION	272300022	41.76
					FUND/PERSONAL		
					SERVICES/OCCUPATIONA		
					L THERAPY		
83887	SOLIANT	JPAP10	10/07/2022	OT Services	SPECIAL EDUCATION	272300022	417.60
					FUND/PERSONAL		
					SERVICES/OCCUPATIONA		
					L THERAPY		
83887	SOLIANT	JPAP10	10/07/2022	OT Services	SPECIAL EDUCATION	272300022	20.64
					FUND/PERSONAL		
					SERVICES/OCCUPATIONA		
					L THERAPY		
83887	SOLIANT	JPAP10	10/07/2022	OT Services	SPECIAL EDUCATION	272300022	41.76
					FUND/PERSONAL		
					SERVICES/OCCUPATIONA		
					L THERAPY		
						Totals for 83887	960.00
83888	TAHIR, ZEHRA	JPAP10	10/07/2022	CONSULTING - SEPTEMBER 2022 HOURS	GENERAL	0	1,044.18
					FUND/PERSONAL		
					SERVICES/COUNSELING		
83888	TAHIR, ZEHRA	JPAP10	10/07/2022	CONSULTING - SEPTEMBER 2022 HOURS	GENERAL	0	1,384.15
					FUND/PERSONAL		
					SERVICES/COUNSELING		
						Totals for 83888	2,428.33
83889	TROEDEL, BRITNEY	JPAP10	10/07/2022	TRANSPORTATION (BRANTLEY CANTERBURY) TO SCHOOL DISTRICT OF MANAWA SEPTEMBER 2022	SPECIAL EDUCATION	0	142.48
					FUND/CONTRACTED		
					PUPIL		
					TRANSPORTATIO/CONTRA		
					CTED PARENT		
					CONTRACT		
						Totals for 83889	142.48
83891	US CELLULAR	JPAP10	10/07/2022	US Cellular PO	GENERAL	8002300018	321.53

CHECK NUMBER	VENDOR	BATCH NUMBER	CHECK DATE	INVOICE DESCRIPTION	ACCOUNT DESCRIPTION	PO NUMBER	AMOUNT
					FUND/TELEPHONE AND TELEGRAPH/CENTRAL SERVICES		
					Totals for 83891		321.53
83893	WEX BANK - GLOBAL FL	JPAP10	10/07/2022	ALL OTHER FUEL	GENERAL	0	35.38
					FUND/FUEL-VEHICLE OPERATION/VEHICLE MAINT/NOT PUPIL TRANS		
					Totals for 83893		35.38
83894	WIS ART EDUCATION AS	JPAP10	10/07/2022	Registration to Visual Arts Classic Competition	GENERAL FUND/DUES & FEES MEMBRSHIP/FT FEES/CO-CURRICULAR ACTIVITIES	4000230016	150.00
					Totals for 83894		150.00
83895	ZABEL'S SAWMILL	JPAP10	10/07/2022	Koehler - Kiln Dried Wood from Zabel's Sawmill	GENERAL FUND/GENERAL SUPPLIES/TECHNOLOGY EDUCATION	4000230089	2,630.00
					Totals for 83895		2,630.00
83900	CUFF FARMS	JPAP10	10/13/2022	FIELD TRIP TO CUFF FARMS - 17 @ \$10 EACH	SPECIAL EDUCATION FUND/DUES & FEES MEMBRSHIP/FT FEES/MULTI-CATEGORICAL	0	170.00
					Totals for 83900		170.00
202200048	WISCONSIN RETIREMENT	AUG R9	09/29/2022	Payroll accrual	GENERAL FUND/WI RETIREMENT FUND	0	2,388.91
202200048	WISCONSIN RETIREMENT	AUG R9	09/29/2022	Payroll accrual	SPECIAL EDUCATION FUND/WI RETIREMENT FUND	0	125.84
202200048	WISCONSIN RETIREMENT	AUG R9	09/29/2022	Payroll accrual	FOOD SERVICE FUND/WI RETIREMENT FUND	0	97.94
202200048	WISCONSIN RETIREMENT	AUG R9	09/29/2022	Payroll accrual	GENERAL FUND/WI RETIREMENT FUND	0	2,388.91
202200048	WISCONSIN RETIREMENT	AUG R9	09/29/2022	Payroll accrual	SPECIAL EDUCATION FUND/WI RETIREMENT FUND	0	125.84
202200048	WISCONSIN RETIREMENT	AUG R9	09/29/2022	Payroll accrual	FOOD SERVICE FUND/WI RETIREMENT FUND	0	97.94
					Totals for 202200048		5,225.38
202200063	WISCONSIN RETIREMENT	AUG R9	09/29/2022	Payroll accrual	GENERAL FUND/WI RETIREMENT FUND	0	7,773.28
202200063	WISCONSIN RETIREMENT	AUG R9	09/29/2022	Payroll accrual	SPECIAL EDUCATION FUND/WI RETIREMENT FUND	0	952.04
202200063	WISCONSIN RETIREMENT	AUG R9	09/29/2022	Payroll accrual	FOOD SERVICE FUND/WI RETIREMENT FUND	0	97.94
202200063	WISCONSIN RETIREMENT	AUG R9	09/29/2022	Payroll accrual	GENERAL FUND/WI RETIREMENT FUND	0	7,773.28
202200063	WISCONSIN RETIREMENT	AUG R9	09/29/2022	Payroll accrual	SPECIAL EDUCATION FUND/WI RETIREMENT FUND	0	952.04

CHECK NUMBER	VENDOR	BATCH NUMBER	CHECK DATE	INVOICE DESCRIPTION	ACCOUNT DESCRIPTION	PO NUMBER	AMOUNT
202200063	WISCONSIN RETIREMENT	AUG R9	09/29/2022	Payroll accrual	FOOD SERVICE FUND/WI RETIREMENT FUND	0	97.94
						Totals for 202200063	17,646.52
202200081	DELTA DENTAL OF WISC	JPWI09	09/21/2022	DENTAL CLAIMS	GENERAL FUND/SELF FUND-EMPLOYER SHARE PREMI	0	114.00
						Totals for 202200081	114.00
202200082	EMPLOYEE BENEFITS CO	JPWI09	09/30/2022	HRA, FSA & POST EMPLOYMENT ADMIN FEES	GENERAL FUND/DISTRICT FEES / BANKING FEE/FISCAL	0	134.91
						Totals for 202200082	134.91
202200083	DIVERSIFIED BENEFIT	JPWI09	09/23/2022	HRA CLAIMS	GENERAL FUND/HEALTH INSURANCE	0	1,581.79
						Totals for 202200083	1,581.79
202200084	EMPLOYEE BENEFITS CO	JPWI09	09/22/2022	FSA CLAIMS	GENERAL FUND/FLEX PLAN SY20-21	0	10.00
						Totals for 202200084	10.00
202200085	INTERNAL REVENUE SER	P9	09/30/2022	Payroll accrual	GENERAL FUND/FICA (SOCIAL SECURITY)	0	7,403.62
202200085	INTERNAL REVENUE SER	P9	09/30/2022	Payroll accrual	SPECIAL EDUCATION FUND/FICA (SOCIAL SECURITY)	0	1,226.37
202200085	INTERNAL REVENUE SER	P9	09/30/2022	Payroll accrual	FOOD SERVICE FUND/FICA (SOCIAL SECURITY)	0	296.36
202200085	INTERNAL REVENUE SER	P9	09/30/2022	Payroll accrual	GENERAL FUND/FICA (SOCIAL SECURITY)	0	1,731.51
202200085	INTERNAL REVENUE SER	P9	09/30/2022	Payroll accrual	SPECIAL EDUCATION FUND/FICA (SOCIAL SECURITY)	0	286.81
202200085	INTERNAL REVENUE SER	P9	09/30/2022	Payroll accrual	FOOD SERVICE FUND/FICA (SOCIAL SECURITY)	0	69.32
202200085	INTERNAL REVENUE SER	P9	09/30/2022	Payroll accrual	GENERAL FUND/FEDERAL INCOME TAX	0	497.46
202200085	INTERNAL REVENUE SER	P9	09/30/2022	Payroll accrual	SPECIAL EDUCATION FUND/FEDERAL INCOME TAX	0	90.78
202200085	INTERNAL REVENUE SER	P9	09/30/2022	Payroll accrual	FOOD SERVICE FUND/FEDERAL INCOME TAX	0	45.00
202200085	INTERNAL REVENUE SER	P9	09/30/2022	Payroll accrual	GENERAL FUND/FEDERAL INCOME TAX	0	8,337.90
202200085	INTERNAL REVENUE SER	P9	09/30/2022	Payroll accrual	SPECIAL EDUCATION FUND/FEDERAL INCOME TAX	0	945.94
202200085	INTERNAL REVENUE SER	P9	09/30/2022	Payroll accrual	FOOD SERVICE FUND/FEDERAL INCOME TAX	0	143.45
202200085	INTERNAL REVENUE SER	P9	09/30/2022	Payroll accrual	GENERAL FUND/FICA (SOCIAL SECURITY)	0	1,731.51
202200085	INTERNAL REVENUE SER	P9	09/30/2022	Payroll accrual	SPECIAL EDUCATION	0	286.81

CHECK NUMBER	VENDOR	BATCH NUMBER	CHECK DATE	INVOICE DESCRIPTION	ACCOUNT DESCRIPTION	PO NUMBER	AMOUNT
202200085	INTERNAL REVENUE SER	P9	09/30/2022	Payroll accrual	FUND/FICA (SOCIAL SECURITY) FOOD SERVICE	0	69.32
202200085	INTERNAL REVENUE SER	P9	09/30/2022	Payroll accrual	FUND/FICA (SOCIAL SECURITY) GENERAL FUND/FICA (SOCIAL SECURITY)	0	7,403.62
202200085	INTERNAL REVENUE SER	P9	09/30/2022	Payroll accrual	SPECIAL EDUCATION FUND/FICA (SOCIAL SECURITY)	0	1,226.37
202200085	INTERNAL REVENUE SER	P9	09/30/2022	Payroll accrual	FOOD SERVICE FUND/FICA (SOCIAL SECURITY)	0	296.36
						Totals for 202200085	32,088.51
202200086	WEA TAX SHELTERED AN	P9	09/30/2022	Payroll accrual	GENERAL FUND/WEA TRUST - TSA/ROTH	0	100.00
202200086	WEA TAX SHELTERED AN	P9	09/30/2022	Payroll accrual	GENERAL FUND/WEA TRUST - TSA/ROTH	0	175.00
						Totals for 202200086	275.00
202200087	WISCONSIN DEPT OF RE	P9	09/30/2022	Payroll accrual	GENERAL FUND/STATE INCOME TAX	0	115.00
202200087	WISCONSIN DEPT OF RE	P9	09/30/2022	Payroll accrual	SPECIAL EDUCATION FUND/STATE INCOME TAX	0	5.00
202200087	WISCONSIN DEPT OF RE	P9	09/30/2022	Payroll accrual	FOOD SERVICE FUND/STATE INCOME TAX	0	20.00
202200087	WISCONSIN DEPT OF RE	P9	09/30/2022	Payroll accrual	GENERAL FUND/STATE INCOME TAX	0	4,403.58
202200087	WISCONSIN DEPT OF RE	P9	09/30/2022	Payroll accrual	SPECIAL EDUCATION FUND/STATE INCOME TAX	0	534.52
202200087	WISCONSIN DEPT OF RE	P9	09/30/2022	Payroll accrual	FOOD SERVICE FUND/STATE INCOME TAX	0	84.48
						Totals for 202200087	5,162.58
202200089	WEA MEMBER BENEFIT T	P9	09/30/2022	Payroll accrual	GENERAL FUND/WEA TRUST ADVANTAGE	0	40.00
						Totals for 202200089	40.00
202200090	EMPOWER RETIREMENT	P9	09/30/2022	Payroll accrual	GENERAL FUND/HARTFORD INS - TSA/ROTH	0	50.00
						Totals for 202200090	50.00
202200091	DELTA DENTAL OF WISC	JPWI09	09/28/2022	DENTAL CLAIMS & ADMINISTRATION	GENERAL FUND/SELF FUND-EMPLOYER SHARE PREMI	0	4,282.73
						Totals for 202200091	4,282.73
202200092	EMPLOYEE BENEFITS CO	JPWI10	10/04/2022	POST EMPLOYMENT SECTION 213 HRA	EMPLOYEE BENIFIT TRUST FUND/OTHER ADJUSTMENTS/ADJUSTME NTS & REFUNDS	0	1,070.50
						Totals for 202200092	1,070.50
202200093	EMPLOYEE BENEFITS CO	JPWI10	10/06/2022	BESTFLEX CLAIMS	GENERAL FUND/FLEX PLAN SY20-21	0	129.97
						Totals for 202200093	129.97
202200094	DELTA DENTAL OF WISC	JPWI10	10/05/2022	DENTAL CLAIMS	GENERAL FUND/SELF	0	376.60

CHECK NUMBER	VENDOR	BATCH NUMBER	CHECK DATE	INVOICE DESCRIPTION	ACCOUNT DESCRIPTION	PO NUMBER	AMOUNT
					FUND-EMPLOYER SHARE PREMI		
					Totals for 202200094		376.60
202200095	DIVERSIFIED BENEFIT	JPWI10	10/07/2022	HRA CLAIMS	GENERAL FUND/HEALTH INSURANCE	0	247.89
					Totals for 202200095		247.89
202200096	DIVERSIFIED BENEFIT	JPWI10	09/27/2022	HRA CLAIMS	GENERAL FUND/HEALTH INSURANCE	0	1,363.23
					Totals for 202200096		1,363.23
202200103	BMO MASTERCARD	COCCSE	09/20/2022	Credit Card Payment AP Invoice.	GENERAL FUND/EMPLOYEE TRAVEL/BOARD MEMBERS	0	303.77
202200103	BMO MASTERCARD	COCCSE	09/20/2022	Credit Card Payment AP Invoice.	GENERAL FUND/EMPLOYEE TRAVEL/BOARD MEMBERS	0	317.63
202200103	BMO MASTERCARD	COCCSE	09/20/2022	Credit Card Payment AP Invoice.	GENERAL FUND/EMPLOYEE TRAVEL/BOARD MEMBERS	0	317.63
202200103	BMO MASTERCARD	COCCSE	09/20/2022	Credit Card Payment AP Invoice.	GENERAL FUND/EMPLOYEE TRAVEL/BOARD MEMBERS	0	317.63
202200103	BMO MASTERCARD	COCCSE	09/20/2022	Credit Card Payment AP Invoice.	GENERAL FUND/EMPLOYEE TRAVEL/DIRECTION OF BUSINESS	0	317.63
202200103	BMO MASTERCARD	COCCSE	09/20/2022	Credit Card Payment AP Invoice.	GENERAL FUND/EMPLOYEE TRAVEL/OFFICE OF SUPERINTENDENT	0	15.81
202200103	BMO MASTERCARD	COCCSE	09/20/2022	Credit Card Payment AP Invoice.	GENERAL FUND/TECH/SOFTWARE SERVIC/OFFICE OF SUPERINTENDENT	0	77.45
202200103	BMO MASTERCARD	COCCSE	09/20/2022	Credit Card Payment AP Invoice.	GENERAL FUND/TEXTBOOKS & WORKBOOKS/ENGLISH LANGUAGE	0	82.19
202200103	BMO MASTERCARD	COCCSE	09/20/2022	Credit Card Payment AP Invoice.	GENERAL FUND/GENERAL SUPPLIES/ART	0	53.68
202200103	BMO MASTERCARD	COCCSE	09/20/2022	Credit Card Payment AP Invoice.	GENERAL FUND/PERSONAL SERVICES/RECRUITMENT AND PLACEMENT	0	34.00
202200103	BMO MASTERCARD	COCCSE	09/20/2022	Credit Card Payment AP Invoice.	GENERAL FUND/OTHER MEDIA/ENGLISH LANGUAGE	0	84.39
202200103	BMO MASTERCARD	COCCSE	09/20/2022	Credit Card Payment AP	GENERAL	0	861.13

CHECK NUMBER	VENDOR	BATCH NUMBER	CHECK DATE	INVOICE DESCRIPTION	ACCOUNT DESCRIPTION	PO NUMBER	AMOUNT
				Invoice.	FUND/TECHNOLOGY RELATED HARDWARE/ADMINISTRAT IVE TECHNOLOGY SERV		
202200103	BMO MASTERCARD	COCCSE	09/20/2022	Credit Card Payment AP Invoice.	GENERAL	0	649.63
				Invoice.	FUND/TECHNOLOGY RELATED HARDWARE/ADMINISTRAT IVE TECHNOLOGY SERV		
202200103	BMO MASTERCARD	COCCSE	09/20/2022	Credit Card Payment AP Invoice.	GENERAL	0	21.99
				Invoice.	FUND/GENERAL SUPPLIES/OPERATION		
202200103	BMO MASTERCARD	COCCSE	09/20/2022	Credit Card Payment AP Invoice.	GENERAL	0	129.42
				Invoice.	FUND/GENERAL SUPPLIES/OPERATION		
202200103	BMO MASTERCARD	COCCSE	09/20/2022	Credit Card Payment AP Invoice.	GENERAL	0	39.98
				Invoice.	FUND/TECH/SOFTWARE SERVIC/ADMINISTRATIV E TECHNOLOGY SERV		
202200103	BMO MASTERCARD	COCCSE	09/20/2022	Credit Card Payment AP Invoice.	GENERAL	0	185.36
				Invoice.	FUND/TECH/SOFTWARE SERVIC/ADMINISTRATIV E TECHNOLOGY SERV		
202200103	BMO MASTERCARD	COCCSE	09/20/2022	Credit Card Payment AP Invoice.	GENERAL	0	21.09
				Invoice.	FUND/TECH/SOFTWARE SERVIC/ADMINISTRATIV E TECHNOLOGY SERV		
202200103	BMO MASTERCARD	COCCSE	09/20/2022	Credit Card Payment AP Invoice.	GENERAL	0	5.48
				Invoice.	FUND/TECH/SOFTWARE SERVIC/ADMINISTRATIV E TECHNOLOGY SERV		
202200103	BMO MASTERCARD	COCCSE	09/20/2022	Credit Card Payment AP Invoice.	GENERAL	0	294.00
				Invoice.	FUND/TECH/SOFTWARE SERVIC/ADMINISTRATIV E TECHNOLOGY SERV		
202200103	BMO MASTERCARD	COCCSE	09/20/2022	Credit Card Payment AP Invoice.	GENERAL	0	144.00
				Invoice.	FUND/TECH/SOFTWARE SERVIC/ADMINISTRATIV E TECHNOLOGY SERV		
202200103	BMO MASTERCARD	COCCSE	09/20/2022	Credit Card Payment AP Invoice.	SPECIAL EDUCATION FUND/NON-CAPITAL EQUIPMENT/OCCUPATION AL THERAPY	0	449.35
					Totals for 202200103		5,040.87
222300033	IGL, MICHAEL	JPAP09	09/23/2022	MS FOOTBALL OFFICIAL ON 9/20/22 VS PACELLI	COMMUNITY SERVICE FUND/PERSONAL SERVICES/OTHER COMMUNITY SERVICES	0	45.00
222300033	IGL, MICHAEL	JPAP09	09/23/2022	MS VOLLEYALL OFFICIAL VS SHIOCTON ON 9/19/22	COMMUNITY SERVICE FUND/PERSONAL SERVICES/OTHER COMMUNITY SERVICES	0	55.00
222300033	IGL, MICHAEL	JPAP09	09/23/2022	JV & VARSITY VOLLEYBALL OFFICIAL ON 9/20/22 VS MENOMINEE INDIAN	GENERAL FUND/PERSONAL SERVICES/VOLLEYBALL	0	105.00
					Totals for 222300033		205.00

CHECK NUMBER	VENDOR	BATCH NUMBER	CHECK DATE	INVOICE DESCRIPTION	ACCOUNT DESCRIPTION	PO NUMBER	AMOUNT
222300034	KLAUBAUF, ANTHONY	JPAP09	09/23/2022	MS FOOTBALL OFFICIAL ON 9/20/22 VS PACELLI	COMMUNITY SERVICE FUND/PERSONAL SERVICES/OTHER COMMUNITY SERVICES	0	45.00
						Totals for 222300034	45.00
222300035	MACH, DENNIS	JPAP09	09/23/2022	MS FOOTBALL OFFICIAL ON 9/20/22 VS PACELLI	COMMUNITY SERVICE FUND/PERSONAL SERVICES/OTHER COMMUNITY SERVICES	0	45.00
222300035	MACH, DENNIS	JPAP09	09/23/2022	MS VOLLEYBALL OFFICIAL VS SHIOCTON ON 9/19/22	COMMUNITY SERVICE FUND/PERSONAL SERVICES/OTHER COMMUNITY SERVICES	0	55.00
222300035	MACH, DENNIS	JPAP09	09/23/2022	JV & VARSITY VOLLEYBALL OFFICIAL ON 9/20/22 VS MENOMINEE INDIAN	GENERAL FUND/PERSONAL SERVICES/VOLLEYBALL	0	105.00
						Totals for 222300035	205.00
222300036	BROMBEREK, KIMBERLY	JPAP09	09/26/2022	VARSITY VOLLEYBALL OFFICIAL ON 9/24/22 VS BOWLER, CRANDON, REEDSVILLE	GENERAL FUND/PERSONAL SERVICES/VOLLEYBALL	0	200.00
						Totals for 222300036	200.00
222300037	CONSTANTINEAU, SCOTT	JPAP09	09/26/2022	VARSITY FOOTBALL OFFICIAL ON 9/23/22 VS SHIOCTON	GENERAL FUND/PERSONAL SERVICES/BOYS FOOTBALL	0	120.00
						Totals for 222300037	120.00
222300038	GROTE, MICHAEL	JPAP09	09/26/2022	VARSITY FOOTBALL OFFICIAL ON 9/23/22 VS SHIOCTON	GENERAL FUND/PERSONAL SERVICES/BOYS FOOTBALL	0	120.00
						Totals for 222300038	120.00
222300039	HALIBURTON, JOHN	JPAP09	09/26/2022	VARSITY VOLLEYBALL OFFICIAL ON 9/24/22 VS BOWLER, CRANDON, REEDSVILLE	GENERAL FUND/PERSONAL SERVICES/VOLLEYBALL	0	200.00
						Totals for 222300039	200.00
222300040	IGL, MICHAEL	JPAP09	09/26/2022	VARSITY FOOTBALL OFFICIAL ON 9/23/22 VS SHIOCTON	GENERAL FUND/PERSONAL SERVICES/BOYS FOOTBALL	0	120.00
						Totals for 222300040	120.00
222300041	KEEGAN, ANGELA	JPAP09	09/26/2022	VARSITY VOLLEYBALL OFFICIAL ON 9/24/22 VS BOWLER, CRANDON, REEDSVILLE	GENERAL FUND/PERSONAL SERVICES/VOLLEYBALL	0	200.00
						Totals for 222300041	200.00
222300042	MACH, DENNIS	JPAP09	09/26/2022	VARSITY FOOTBALL OFFICIAL ON 9/23/22 VS SHIOCTON	GENERAL FUND/PERSONAL SERVICES/BOYS FOOTBALL	0	120.00
						Totals for 222300042	120.00
222300043	MAULE, GEORGE	JPAP09	09/26/2022	VARSITY FOOTBALL OFFICIAL ON 9/23/22 VS SHIOCTON	GENERAL FUND/PERSONAL SERVICES/BOYS FOOTBALL	0	120.00
						Totals for 222300043	120.00
222300044	REMMENGA, JEFFERY	JPAP09	09/26/2022	VARSITY VOLLEYBALL OFFICIAL ON 9/24/22 VS BOWLER,	GENERAL FUND/PERSONAL	0	200.00

CHECK NUMBER	VENDOR	BATCH NUMBER	CHECK DATE	INVOICE DESCRIPTION	ACCOUNT DESCRIPTION	PO NUMBER	AMOUNT
				CRANDON, REEDSVILLE	SERVICES/VOLLEYBALL		
					Totals for	222300044	200.00
222300045	BERO, BROCK	JPAP09	09/28/2022	VARSITY FOOTBALL OFFICIAL ON 9/16/22 VS WITTENBERG-BIRNAMWOOD	GENERAL FUND/PERSONAL SERVICES/BOYS FOOTBALL	0	120.00
					Totals for	222300045	120.00
222300046	BERO, RANDY	JPAP09	09/28/2022	VARSITY FOOTBALL OFFICIAL ON 9/16/22 VS WITTENBERG-BIRNAMWOOD	GENERAL FUND/PERSONAL SERVICES/BOYS FOOTBALL	0	120.00
					Totals for	222300046	120.00
222300047	BUHRANDT, KURT	JPAP09	09/28/2022	VARSITY FOOTBALL OFFICIAL ON 9/16/22 VS WITTENBERG-BIRNAMWOOD	GENERAL FUND/PERSONAL SERVICES/BOYS FOOTBALL	0	120.00
					Totals for	222300047	120.00
222300048	HERALD, MICHAEL	JPAP09	09/28/2022	VARSITY FOOTBALL OFFICIAL ON 9/16/22 VS WITTENBERG-BIRNAMWOOD	GENERAL FUND/PERSONAL SERVICES/BOYS FOOTBALL	0	120.00
					Totals for	222300048	120.00
222300049	ZAHN, GARY	JPAP09	09/28/2022	VARSITY FOOTBALL OFFICIAL ON 9/16/22 VS WITTENBERG-BIRNAMWOOD	GENERAL FUND/PERSONAL SERVICES/BOYS FOOTBALL	0	120.00
					Totals for	222300049	120.00
222300050	IGL, MICHAEL	JPAP09	09/29/2022	MS GIRLS VOLLEYBALL ON 9/26/22 VS WITTENBERG-BIRNAMWOOD	COMMUNITY SERVICE FUND/PERSONAL SERVICES/OTHER COMMUNITY SERVICES	0	55.00
					Totals for	222300050	55.00
222300051	KEEGAN, ANGELA	JPAP09	09/29/2022	JV2 VOLLEYBALL OFFICIAL ON 9/20/22 VS MENOMINEE INDIAN	GENERAL FUND/PERSONAL SERVICES/VOLLEYBALL	0	50.00
					Totals for	222300051	50.00
222300052	MACH, DENNIS	JPAP09	09/29/2022	MS GIRLS VOLLEYBALL ON 9/26/22 VS WITTENBERG-BIRNAMWOOD	COMMUNITY SERVICE FUND/PERSONAL SERVICES/OTHER COMMUNITY SERVICES	0	55.00
					Totals for	222300052	55.00
222300053	IGL, MICHAEL	JPAP09	09/30/2022	GIRLS JV & VARSITY VOLLEYBALL OFFICIAL ON 9/29/22 VS TIGERTON	GENERAL FUND/PERSONAL SERVICES/VOLLEYBALL	0	105.00
					Totals for	222300053	105.00
222300054	MACH, DENNIS	JPAP09	09/30/2022	GIRLS JV & VARSITY VOLLEYBALL OFFICIAL ON 9/29/22 VS TIGERTON	GENERAL FUND/PERSONAL SERVICES/VOLLEYBALL	0	105.00
					Totals for	222300054	105.00
222300055	DAYTON, KENNETH	JPAP10	10/04/2022	MS FOOTBALL OFFICIAL ON 10/3/22 VS SPENCER/COLUMBUS	COMMUNITY SERVICE FUND/PERSONAL SERVICES/OTHER COMMUNITY SERVICES	0	90.00
					Totals for	222300055	90.00
222300056	IGL, MICHAEL	JPAP10	10/04/2022	MS GIRLS VOLLEYBALL OFFICIAL ON 10/3/22 VS BONDUEL	COMMUNITY SERVICE FUND/PERSONAL	0	55.00

CHECK NUMBER	VENDOR	BATCH NUMBER	CHECK DATE	INVOICE DESCRIPTION	ACCOUNT DESCRIPTION	PO NUMBER	AMOUNT
					SERVICES/OTHER		
					COMMUNITY SERVICES		
					Totals for 222300056		55.00
222300057	MACH, DENNIS	JPAP10	10/04/2022	MS GIRLS VOLLEYBALL OFFICIAL ON 10/3/22 VS BONDUEL	COMMUNITY SERVICE	0	55.00
					FUND/PERSONAL		
					SERVICES/OTHER		
					COMMUNITY SERVICES		
					Totals for 222300057		55.00
222300058	REYNOLDS, GREGREY	JPAP10	10/04/2022	MS FOOTBALL OFFICIAL ON 10/3/22 VS SPENCER/COLUMBUS	COMMUNITY SERVICE	0	90.00
					FUND/PERSONAL		
					SERVICES/OTHER		
					COMMUNITY SERVICES		
					Totals for 222300058		90.00
222300059	REYNOLDS, NATHANIEL	JPAP10	10/04/2022	MS FOOTBALL OFFICIAL ON 10/3/22 VS SPENCER/COLUMBUS	COMMUNITY SERVICE	0	90.00
					FUND/PERSONAL		
					SERVICES/OTHER		
					COMMUNITY SERVICES		
					Totals for 222300059		90.00
222300060	COWANS, WILLIAM	JPAP10	10/05/2022	GIRLS VARSITY VOLLEYBALL OFFICIAL ON 10/4/22 VS BONDUEL	GENERAL	0	105.00
					FUND/PERSONAL		
					SERVICES/VOLLEYBALL		
					Totals for 222300060		105.00
222300061	GRIFFIN, GARRET	JPAP10	10/05/2022	GIRLS JV2 VOLLEYBALL OFFICIAL ON 10/4/22 VS BONDUEL	GENERAL	0	50.00
					FUND/PERSONAL		
					SERVICES/VOLLEYBALL		
222300061	GRIFFIN, GARRET	JPAP10	10/05/2022	MS GIRLS VOLLEYBALL OFFICIAL ON 10/4/22 VS AMHERST	COMMUNITY SERVICE	0	55.00
					FUND/PERSONAL		
					SERVICES/OTHER		
					COMMUNITY SERVICES		
					Totals for 222300061		105.00
222300062	HOLAT, TRAVIS	JPAP10	10/05/2022	MS FOOTBALL OFFICIAL ON 10/3/22 VS SPENCER/COLUMBUS	COMMUNITY SERVICE	0	90.00
					FUND/PERSONAL		
					SERVICES/OTHER		
					COMMUNITY SERVICES		
					Totals for 222300062		90.00
222300063	MULLINS, BRADLEY	JPAP10	10/05/2022	GIRLS JV2 VOLLEYBALL OFFICIAL ON 10/4/22 VS BONDUEL	GENERAL	0	50.00
					FUND/PERSONAL		
					SERVICES/VOLLEYBALL		
222300063	MULLINS, BRADLEY	JPAP10	10/05/2022	MS GIRLS VOLLEYBALL OFFICIAL ON 10/4/22 VS AMHERST	COMMUNITY SERVICE	0	55.00
					FUND/PERSONAL		
					SERVICES/OTHER		
					COMMUNITY SERVICES		
					Totals for 222300063		105.00
222300064	GRIFFIN, GARRET	JPAP10	10/07/2022	MS FOOTBALL VS WEYAUWEGA-FREMONT ON 10/6/22 - NO GAME IN MANAWA - SCHEDULING ERROR	COMMUNITY SERVICE	0	45.00
					FUND/PERSONAL		
					SERVICES/OTHER		
					COMMUNITY SERVICES		
					Totals for 222300064		45.00
222300065	GROTE, MICHAEL	JPAP10	10/07/2022	MS FOOTBALL VS WEYAUWEGA-FREMONT ON 10/6/22 - NO GAME IN MANAWA - SCHEDULING ERROR	COMMUNITY SERVICE	0	45.00
					FUND/PERSONAL		
					SERVICES/OTHER		
					COMMUNITY SERVICES		
					Totals for 222300065		45.00
222300066	LEBLANC, DAVE	JPAP10	10/07/2022	MS FOOTBALL VS WEYAUWEGA-FREMONT ON 10/6/22 - NO GAME IN MANAWA -	COMMUNITY SERVICE	0	45.00
					FUND/PERSONAL		
					SERVICES/OTHER		

CHECK NUMBER	VENDOR	BATCH NUMBER	CHECK DATE	INVOICE DESCRIPTION	ACCOUNT DESCRIPTION	PO NUMBER	AMOUNT
				SCHEDULING ERROR	COMMUNITY SERVICES		
					Totals for 222300066		45.00
222300067	MULLINS, BRADLEY	JPAP10	10/07/2022	GIRLS MS VOLLEYBALL OFFICIAL ON 10/6/22 VS WEYAUWEGA-FREMONT	COMMUNITY SERVICE FUND/PERSONAL SERVICES/OTHER COMMUNITY SERVICES	0	55.00
					Totals for 222300067		55.00
222300068	RADLEY, DANIEL	JPAP10	10/07/2022	GIRLS MS VOLLEYBALL OFFICIAL ON 10/6/22 VS WEYAUWEGA-FREMONT	COMMUNITY SERVICE FUND/PERSONAL SERVICES/OTHER COMMUNITY SERVICES	0	55.00
					Totals for 222300068		55.00
222300069	RODENCAL, DOUGLAS	JPAP10	10/07/2022	MS FOOTBALL VS WEYAUWEGA-FREMONT ON 10/6/22 - NO GAME IN MANAWA - SCHEDULING ERROR	COMMUNITY SERVICE FUND/PERSONAL SERVICES/OTHER COMMUNITY SERVICES	0	45.00
					Totals for 222300069		45.00
222300070	TREPASSO, LINDA	JPAP10	10/07/2022	HIRED FOR A DAY AS A MUSIC CONSULTANT	GENERAL FUND/PERSONAL SERVICES/VOCAL MUSIC	0	120.00
					Totals for 222300070		120.00
222300071	BERO, BROCK	JPAP10	10/12/2022	VARSITY FOOTBALL OFFICIAL ON 10/7/22 VS AMHERST	GENERAL FUND/PERSONAL SERVICES/BOYS FOOTBALL	0	120.00
					Totals for 222300071		120.00
222300072	BERO, RANDY	JPAP10	10/12/2022	VARSITY FOOTBALL OFFICIAL ON 10/7/22 VS AMHERST	GENERAL FUND/PERSONAL SERVICES/BOYS FOOTBALL	0	120.00
					Totals for 222300072		120.00
222300073	HERALD, MICHAEL	JPAP10	10/12/2022	VARSITY FOOTBALL OFFICIAL ON 10/7/22 VS AMHERST	GENERAL FUND/PERSONAL SERVICES/BOYS FOOTBALL	0	120.00
					Totals for 222300073		120.00
222300074	HERALD, RYAN	JPAP10	10/12/2022	VARSITY FOOTBALL OFFICIAL ON 10/7/22 VS AMHERST	GENERAL FUND/PERSONAL SERVICES/BOYS FOOTBALL	0	120.00
					Totals for 222300074		120.00
222300075	ZAHN, GARY	JPAP10	10/12/2022	VARSITY FOOTBALL OFFICIAL ON 10/7/22 VS AMHERST	GENERAL FUND/PERSONAL SERVICES/BOYS FOOTBALL	0	120.00
					Totals for 222300075		120.00
222300076	PRAHL, JULIE	JPAP10	10/13/2022	MS VOLLEYBALL OFFICIAL ON 10/11/22 VS TIGERTON	COMMUNITY SERVICE FUND/PERSONAL SERVICES/OTHER COMMUNITY SERVICES	0	70.00
					Totals for 222300076		70.00
Totals for checks							130,507.22

FUND SUMMARY

<u>FUND</u>	<u>DESCRIPTION</u>	<u>BALANCE SHEET</u>	<u>REVENUE</u>	<u>EXPENSE</u>	<u>TOTAL</u>
10	GENERAL FUND	62,976.66	0.00	44,996.94	107,973.60
27	SPECIAL EDUCATION FUND	6,758.36	0.00	3,320.91	10,079.27
50	FOOD SERVICE FUND	1,416.05	0.00	8,617.80	10,033.85
73	EMPLOYEE BENEFIT TRUST FUND	0.00	0.00	1,070.50	1,070.50
80	COMMUNITY SERVICE FUND	0.00	0.00	1,350.00	1,350.00
***	Fund Summary Totals ***	71,151.07	0.00	59,356.15	130,507.22

***** End of report *****

REQUEST FOR CHECK FROM MANAWA BOOSTER CLUB

Equipment or Online/App Program Purchase

What sport is check for: or Boys Basketball Manawa Athletic Booster Club Donation

Check is payable to: ~~Fox Cities Elementary~~ Rick Zemple

Amount of Check: \$ ~~200~~ \$ 869.76

Checklist

Rick Zemple

Please make check payable to the School District of Manawa to pay for equipment or Online Program as required by the School District.

Email or Signature from current AD approving the purchase can be paid for by the Manawa Athletic Booster Club because it is not in the budget.

Send copy of the Invoice to Mary Griffin or Manawa Athletic Booster Club Treasurer

Send copy of the Invoice to Carmen O'Brien or Business Manager

B. John

Signed by Authorized Coach or email was sent

B. John

Signed by Athletic Director or email was sent



powered by NVR Branding

251 E Main Street
Hortonville Wisconsin 54944
U.S.A

Bill To
Manawa Boys Basketball
515 E. 4th St.
Manawa, WI 54949
715-347-1388
rick.zemple@batteriesplus.com

Invoice

INV-40364

Balance Due
\$210.00

Invoice Date : 10/04/2022
Terms : Net 30
Due Date : 11/03/2022
P.O.# : SO-165946
Sales person : Cheryl Kirkland

#	Item & Description	Type	Location	Qty	Rate	Amount
1	Customer Brought in Garment SKU : MISC embroider manawa m with wolf and basketball underneath red /white basketball in white	Embroidery	Right Chest	8	10.00	80.00
2	Customer Brought in Garment SKU : MISC manawa basketball in all white	Digital	Full Front	26	5.00	130.00
Sub Total						210.00
Total						\$210.00
Balance Due						\$210.00

FOX CITIES EMBROIDER
251 E MAIN ST
HORTONVILLE, WI. 54944-9452
920-779-9568

Sale

XXXXXXXXXXXXXXXXXXXX6201
VISA

Entry Method: Chip

Total: \$ 869.76

10/04/22

13:20:42

Inv #: 000000001

Appr Code: 314002

Apprvd: Online

VISA CREDIT

AID: A0000000031010

TVR: 80 80 00 80 00

TSI: 68 00

Customer Copy
ENCRYPTED BY ELAVON
THANK YOU!

#	Item & Description	Item Color	Size	Type	Location	Qty	Rate	Amount
3	ELECTRIFY COOLCORE® LONG SLEEVE TEE SKU : 222570 Full Front FCE 8-31-22 MANAWA BASKETBALL WARM UP BLACK & 187C Left Sleeve WOLVES Follow Proof- CAD CUT Black 8"X2"	Black Heather	X-Large	Screen Print	Full Front	4	27.49	109.96

Sub Total 659.76

Total \$659.76

Balance Due \$659.76

Payment Options





Students choosing to excel; realizing their strengths.

School Board Notification of New Hire

Position: District Office/Special Education Clerical Paraprofessional

School: LWHS/MMS

FTE: 28.75 hours per week – 12-month employee

of Applicants: 1

Interviewed: 1

Verbal Acceptance Date: October 3, 2022

Start Date: 2022-2023 School Year: October 10, 2022

Justification for Employee Selection:

Mrs. Vazquez has lived in Manawa for several years, in which she worked as a dietary aide in the Manawa Community Living Center. In January 2022, she started subbing for the district in various capacities and prove herself as a reliable and professional worker.

Mrs. Vazquez received her High School diploma in Mexico in 2008. She has many skills and qualities relevant to special education including: organizational skills, patience, adaptability, creativity, team work, childcare, food preparation, kitchen experience, and more.

Mrs. Vazquez was the only candidate that applied and was interviewed. Luckily, she is good with the students and will be a good addition to the special education department. A background check was conducted on her on December 2021, because she was subbing in the building. I recommend her for the position.

Signature of principal/administrator: 

For HR to complete

Salary Offered: \$14.5 per hour

Former Employee's Name if replacement: Dana Bonikowske

Former Employee's Salary:

School Board Approval Date: Anticipated October 10, 2022



School District of Manawa

Students Choosing to Excel, Realizing Their Strengths

To: Dr. Melanie Oppor
Fr: Brad Johnson
Date: 9/29/2022
Re: 2022-2023 Boys Basketball Coaches Recommendations

I am recommending Rick Zemple as the varsity boys basketball coach for the 2022-2023 season.

I am recommending Kris Zielke as the 8th-grade boys' basketball coach for the 2022-2023 season.

Name	Position	Information
Rick Zemple	Varsity Boys Basketball Coach	Mr. Zemple will be in his third year of coaching our varsity squad. He has shown his commitment to fundamentals and skill development in our basketball program. Coach Zemple is a great fit for our program with his defensive mindset and a strong focus on details.
Kris Zielke	8th-Grade Boys Basketball Coach	Mr. Zielke is a parent of one of our 8th-grade players. This is his second season coaching middle school basketball. He has worked with this group of student-athletes for a number of years.
TBD	7th-Grade Boys Basketball Coach	

School District of Manawa

800 Beech Street
Manawa, WI 54949

Phone: (920) 596-2525
Fax: (920) 596-5308

Little Wolf High School Manawa Middle School

515 E. Fourth St
Manawa, WI 54949

Phone: (920) 596-2524
Fax: (920) 596-2655

Manawa Elementary

800 Beech Street
Manawa, WI 54949

Phone: (920) 596-2238
Fax: (920) 596-5339

ManawaSchools.org



/ ManawaSchools



/ ManawaSchools



School District of Manawa

Students Choosing to Excel, Realizing Their Strengths

To: Dr. Melanie Oppor
Fr: Dr. Abe El Manssouri and Brad Johnson
Date: 9/29/22
Re: 2022-2023 Wrestling Coaches Recommendations

The following are recommended:

- Brad Johnson as the head wrestling coach for the 2022-2023 season.
- Casey Johnson as the assistant wrestling coach for the 2022-2023 season.
- Dan Botting as the assistant wrestling coach for the 2022-2023 season.
- Cody Dean as the head middle school wrestling coach for the 2022-2023 season.
- Shae Coyle as a volunteer assistant wrestling coach for the 2022-2023 season.
- Garret Griffin as a volunteer assistant wrestling coach for the 2022-2023 season.
- Kevin Klemm as a volunteer assistant wrestling coach for the 2022-2023 season.

Name	Position	Information
Brad Johnson	Head Wrestling Coach	Coach Johnson has been the HC for the past 9 years. The Wolves have won a regional championship, been the sectional runner up and sent 10 wrestlers to the WIAA Individual State Tournament in that time, including 4 this past season. (Recommended by Dr. Abe El Manssouri.)
Casey Johnson	Assistant Wrestling Coach (Split 50%)	Coach Johnson works primarily with the upper-weight wrestlers in the program but aided in the advancement of the entire team since the 2019 season. His work shows in the recent performance of Andrew Elmhorst at the State Tournament each of the past two seasons. Coach

School District of Manawa

800 Beech Street
Manawa, WI 54949

Phone: (920) 596-2525
Fax: (920) 596-5308

Little Wolf High School Manawa Middle School

515 E. Fourth St
Manawa, WI 54949

Phone: (920) 596-2524
Fax: (920) 596-2655

Manawa Elementary

800 Beech Street
Manawa, WI 54949

Phone: (920) 596-2238
Fax: (920) 596-5339

ManawaSchools.org



/ ManawaSchools



/ ManawaSchools



School District of Manawa

Students Choosing to Excel, Realizing Their Strengths

		Johnson is an asset to the program.
Dan Botting	Assistant Wrestling Coach (Split 50%)	Coach Botting has been an assistant coach for the Manawa Wolves since 2019 and has pushed numerous lightweight wrestlers to excel, qualify, and place at the WIAA Individual State Tournament. This past year's credentials alone are proof of this as Manawa sent three lightweight wrestlers to state and came home with a 2nd and a 3rd. Coach Botting is an asset to the program.
Cody Dean	MS Head Wrestling Coach	Coach Dean has been the middle school coach for the past 4 years. His focus is on the retention of not only athletes but of the basic fundamentals of a solid wrestler. His focus on having fun, competing hard, and mastering the basics have set the program up for success in future years. Coach Dean is an asset to the program.
Shae Coyle	Volunteer Coach	Coach Coyle has been a member of the coaching staff for the past 7 years. His focus is on drilling and skill development. Coach Coyle instills work ethic

School District of Manawa

800 Beech Street
Manawa, WI 54949

Phone: (920) 596-2525
Fax: (920) 596-5308

Little Wolf High School Manawa Middle School

515 E. Fourth St
Manawa, WI 54949

Phone: (920) 596-2524
Fax: (920) 596-2655

Manawa Elementary

800 Beech Street
Manawa, WI 54949

Phone: (920) 596-2238
Fax: (920) 596-5339

ManawaSchools.org



/ ManawaSchools



/ ManawaSchools



School District of Manawa

Students Choosing to Excel, Realizing Their Strengths

		and grit in his athletes with his never give up attitude. Coach Coyle also coaches the youth program. Coach Coyle is an asset to the program.
Garret Griffin	Volunteer Coach	Coach Griffin has been very involved with wrestling his entire life. He wrestled for Manawa and qualified for the WIAA State Tournament. He then attended UW-La Crosse and wrestled for them. He then took over La Crescent wrestling program in Minnesota for a number of years. Coach works hard on fundamentals including positioning and pressure with his wrestlers. Coach Griffin is an asset to the program.
Kevin Klemm	Volunteer Coach	Coach Klemm recently graduated from Manawa where he qualified for the WIAA State Tournament a number of times and eventually took 3rd as a Senior. Coach has been working individually with some of our best wrestlers for a few years. The results have shown. We are excited to add Coach Klemm and his similar philosophy, he is an asset to our program.

School District of Manawa

800 Beech Street
Manawa, WI 54949

Phone: (920) 596-2525
Fax: (920) 596-5308

Little Wolf High School Manawa Middle School

515 E. Fourth St
Manawa, WI 54949

Phone: (920) 596-2524
Fax: (920) 596-2655

Manawa Elementary

800 Beech Street
Manawa, WI 54949

Phone: (920) 596-2238
Fax: (920) 596-5339

ManawaSchools.org



/ ManawaSchools



/ ManawaSchools



School District of Manawa

Students Choosing to Excel, Realizing Their Strengths

School District of Manawa

800 Beech Street
Manawa, WI 54949

Phone: (920) 596-2525
Fax: (920) 596-5308

Little Wolf High School Manawa Middle School

515 E. Fourth St
Manawa, WI 54949

Phone: (920) 596-2524
Fax: (920) 596-2655

Manawa Elementary

800 Beech Street
Manawa, WI 54949

Phone: (920) 596-2238
Fax: (920) 596-5339

ManawaSchools.org



/ ManawaSchools



/ ManawaSchools

Student Council Update
Board of Education Meeting
10/17/22

*Homecoming Week was a success- students reported that Wednesday Night Games went very smoothly. Staff remarked that the sportsmanship shown by students at the games was overall remarkably good. The creativity and craftsmanship the students displayed in the windows, hallways, skits, and floats was top notch. Staff members and students alike really enjoyed the week.

*The Glow Run was on Monday the 3rd, some feedback was given to help improve it for next year. More on that later.

*We will resume our monthly meetings with Dr. Oppor and Dr. El Manssouri this Friday at lunch at the high school.

*The council will be meeting this week to firm up plans with the FFA and the middle school class officers to start a food drive next month.

*The council would also like to plan some more service projects. One in particular we hope to start is a community wide clean up around Earth Day (April 22nd). Another idea is to work with the homeless shelters in Waupaca and New London on some service projects. We hope to have more on that soon.

*The Wisconsin Association of School Council's Regional Fall Conference will be held in Green Bay on November 14. We are hoping to send a small group of representatives to learn more about how to improve our council and school culture.

Monthly Enrollment Count for SY2022-2023

Grade	1-May-22	3rd Fri SEPT	OCT	NOV	DEC	JAN	2nd Fri JAN	FEB	MAR	APR	MAY
EC / Speech .5	6	4	4								
4K .6	31	24	24								
Kdg	26	32	33								
1	32	25	25								
2	34	33	33								
3	25	37	37								
4	58	26	26								
5	32	62	62								
6	33	32	32								
7	51	32	33								
8	32	51	54								
9	50	43	42								
10	55	53	53								
11	57	58	60								
12	55	51	61								
Students Enrolled	577	563	579	0	0	0	0	0	0	0	0
Less OE IN (non-resident)	-28	-31	-31								
Plus OE OUT (resident)	94	106	107								
Less Tuition Sharing	0	0	0								
Students in CESA Program	-1	0	0								
Total Resident Count	643	638	655	0	0	0	0	0	0	0	0

Note: September Open Enrollment numbers are tentative until after the 3rd Friday Count and Open Enrollment is Verified with other districts.



School District of Manawa
Students Choosing to Excel, Realizing Their Strengths

Implementation of Act 118 in Manawa

- The district has 2 certified Non-violent Crisis Intervention (NVC) trainers, who trained 36 regular and special education staff members and 2 administrators.
- Annually, prior to school starting all staff view a presentation about Act 118 along with documentation procedure.

Seclusion and Restraint Report to the Board for 2021-22

School	Total # of Students (students with disabilities)	Incidents of Seclusion	Total # of Students (students with disabilities)	Incidents of Restraint
Elementary School	2(1)	9	1(1)	1
New Horizon's Alternative School	0	0	1(1)	2
Middle School	0	0	0	0
High School	0	0	0	0
Total	2	9	2	3

Please contact the Director of Special Education and/or Building Principal if you have any questions about this report and/or the use of seclusion and restraint in the School District of Manawa.





Students choosing to excel; realizing their strengths.

To: Board of Education
From: Danni Brauer
Date: 10/12/22
Re: October Update

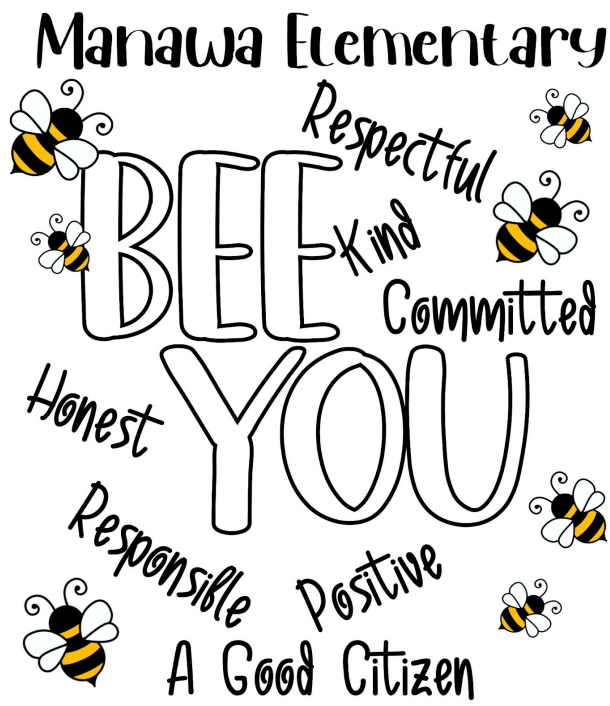
- Special Education Procedural Compliance Self-Assessment (PCSA) Update - SDM was in “self-assessment” throughout the 2021-22 school year. The process was completed on September 23, 2022 by Patricia Williams from DPI with this email *“Thank you for meeting with me today. Based on my review of both the IEP and Implementation sample, the Manawa School District has corrected all errors found through the Procedural Compliance Self-Assessment, and is now in current compliance with these requirements. We are therefore able to close the Self-Assessment process for the Manawa School District. Thank you so much for all of your work on this, and I hope you found the process to be beneficial. We will be sending you a formal closing letter in the next couple of weeks. I hope you have a wonderful weekend! Patti”*
- The end of September began our new BCT (Building Consultation Team) meeting rotation. These meetings are held with all grade levels during common prep time in order to problem solve student concerns.
- Manawa Elementary continues to have staffing issues with a sub shortage. To date there have been 11 instances of staff out without a sub. This means internally we need to find coverage. The staff as a whole are doing an amazing job of pulling together in these times to be sure students receive the best possible education.
- The new dismissal procedures continue to go well.
- The Manawa Fire Department visited 4K-4th grade classrooms to talk about fire safety and to introduce their free pizza program.
- We continue to roll out the ALICE program to students. We use an analogy of sheep, shepard, and wolf. The students are the sheep who follow the shepard, the teacher/staff member, with the wolf being a dangerous someone. The phrase “get to safety” is used to let students know we are in a dangerous situation and they need to stop, look, and listen to the adult for directions. We will begin to practice in the coming weeks.
- Parents will schedule P/T conferences using Skyward this year for Oct. 27th conferences.
- On October 27th from 8:00-6:00 we will be offering child screenings for children between ages 2 and 4 (who do not currently attend 4K). Ms. Seka, Ms. Jill, and Mr. Drankus will be screening children and giving parents information about their child’s development.
- In an effort to continue to build community and character development at Manawa Elementary School, this year’s theme is “BEE”. MES students learn about a character trait to “BEE” each month. The trait is introduced at the monthly assembly and then, before the next assembly, each teacher chooses one or two students they would like to recognize for displaying that trait. Those students are announced and given a certificate



Students choosing to excel; realizing their strengths.

before the next trait is introduced. The first couple weeks of the school year, before the assembly at the end of September, we focused on BEE YOU. September's character trait was BEE RESPECTFUL. At the assembly the following students were awarded certificates for representing the trait: Evelyn Schmeling, Brady Mills, Lydia Koffarnus, Leighton Bruette, Michael Sanchez, Addilyn Penkalski, Elias Toledo, Sammy Levezow, Levi Feltz, Astina Laux, Vivian Koffarnus, Presley Young, Jaycee Swinfort, Kastyn Schachtschneider, Christine Griffin, Oliver Mikkelson, Karmin Balthazor, Brian Levezow, Dillon Krueger, Lilliana Taggart, Peyton Larson, Ameen Benhamadi, Autumn Amador, Hayley Zierbel, Reegen Flanagan, Charli Marshall, Jayla Williamson, and Mark Ziemer.

- 2022-23 BEE Character Traits
 - September - BEE RESPECTFUL
 - October - BEE RESPONSIBLE
 - November/December - BEE KIND
 - January - BEE HONEST
 - February - BEE POSITIVE
 - March/April - BEE COMMITTED
 - May - BEE A GOOD CITIZEN





School District of Manawa

Students Choosing to Excel, Realizing Their Strengths

To: Dr. Melanie Oppor, Manawa Board of Education
Fr: Dr. Abe El Manssouri
Date: 10/17/2022
Re: Updates

- ❖ I have officially received the official welcome from a group of unidentified Manawa students. They attempted to raid my house with toilet paper, which has never happened before, but they were faced with my 7-year old fierce son with his glowy sword and Nerf gun.



School District of Manawa

800 Beech Street
Manawa, WI 54949

Phone: (920) 596-2525
Fax: (920) 596-5308

Little Wolf High School Manawa Middle School

515 E. Fourth St
Manawa, WI 54949

Phone: (920) 596-2524
Fax: (920) 596-2655

Manawa Elementary

800 Beech Street
Manawa, WI 54949

Phone: (920) 596-2238
Fax: (920) 596-5339

ManawaSchools.org



/ ManawaSchools



/ ManawaSchools



School District of Manawa

Students Choosing to Excel, Realizing Their Strengths

- ❖ I received the first report from our guidance counseling coach, which included many holes that existed within our guidance counseling department. Examples of findings included irregularities in updating Skywards to reflect our students' accurate academic standing, the lack of an electronic and physical filing system to track graduation credits throughout the high school years, and more. The coach conducted a comprehensive audit beginning of the seniors' class -due to urgency-in order to identify students who may be at risk of graduation. The guidance counseling coach is working closely with the principal to begin the work for building a solid and robust ACP program for the district.

- ❖ I started addressing and implementing the safety measures discussed last week by doing the following:
 - Assigning rotation for monitoring the main two school entrances.
 - Reminding the teachers time and time again to keep their doors closed and locked.
 - Assigning a schedule (between me and Mrs. Moericke) for checking the entire building entrances regularly throughout the day.

- ❖ Below is an excerpt of my weekly correspondence with my staff around the subject of change. I have been encouraging my staff to come to me and discuss with me any challenges or stressors they might have.
 - ***“Change:** I understand that any change can be stressful and difficult for many individuals, especially if they have been doing things the same way for a long time. However, as district administrators and also many teachers, we have agreed that our district performance should be improved and our students deserve more and better. It is not uncommon that certain individuals in an organization that is going through change may convey an impression of discontent, however, it is crucial that the reaction is never one that can have negative impacts on other employees or students. I have stated, time and time again, that my office is always open for any individual (staff, students, and parents) with concerns, questions, or clarifications. In the last two months of my employment, I have received many teachers who expressed concern and helped them overcome obstacles and challenges. Once again, if you are encountering challenges or need clarifications, then please talk to me, as I am the one who can give you the most accurate information about my practices and decisions.” StaffNotes, 10/03/2022.*

School District of Manawa

800 Beech Street
Manawa, WI 54949

Phone: (920) 596-2525
Fax: (920) 596-5308

Little Wolf High School Manawa Middle School

515 E. Fourth St
Manawa, WI 54949

Phone: (920) 596-2524
Fax: (920) 596-2655

Manawa Elementary

800 Beech Street
Manawa, WI 54949

Phone: (920) 596-2238
Fax: (920) 596-5339

ManawaSchools.org

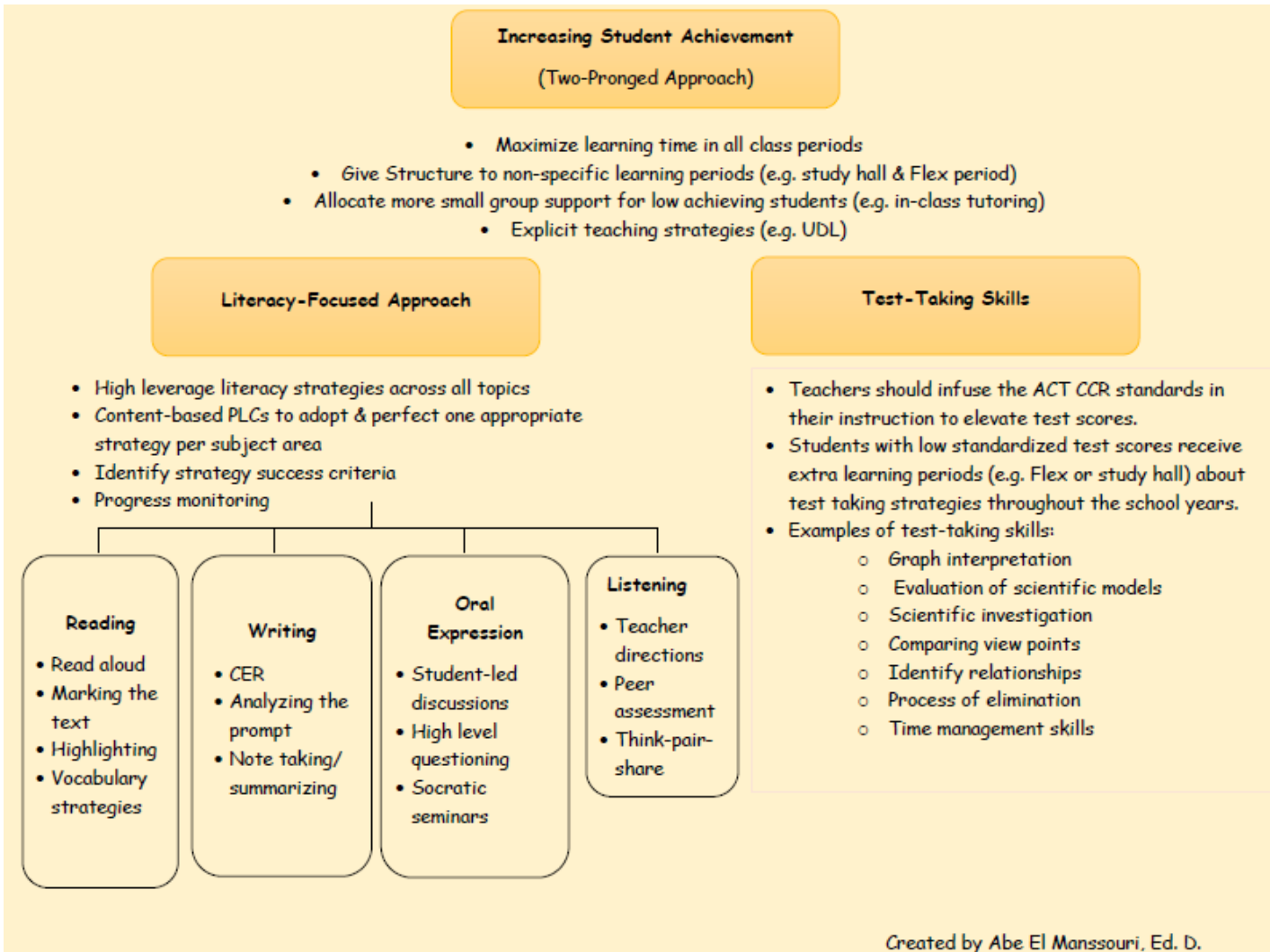


/ ManawaSchools



/ ManawaSchools

- ❖ I have been working with our district reading specialist on putting into action the literacy-focused approach that I previously envisioned and intended for the middle school and high school buildings. We met with the teachers during last week's PLC time and kicked off the work for this initiative that is predicted to increase students literacy skills across all boards. The literacy-focused initiative is part of a bigger plan that intends to close the achievement gap that exists between our schools and other schools in the state. The visual below exemplifies the initiative.





School District of Manawa

Students Choosing to Excel, Realizing Their Strengths

- ❖ Another big initiative that I started implementing in the last month of school is the Positive Accountability Model or PAM. PAM is a behavioral approach I developed as part of my doctoral research with the purpose of decreasing challenging behavior by using methods that are positive, non-punitive, accountability-based, and culturally-responsive. Similar to any new initiative, there is always a certain level of pushback. This is an excerpt from the my weekly correspondence with my staff around the importance of this behavioral approach and all of the work that goes behind the scenes:

➤ ***Punishment vs reparative justice:*** *one of the comments I have heard from a few staff members was that students who served in-school suspensions were enjoying their day, rather than being held in the detention rooms. When I first toured the school, I felt uneasy about the idea of those detention rooms being small and claustrophobic. As you may know, my doctoral research was about positive, accountability-based, and non-punitive methods to decrease students' challenging behaviors. What many staff members and other students don't see is the work and conversations that happen in the background. I sit down with the students and have prolonged culturally-responsive conversations about the impact of their actions on themselves, their parents, their health, and their future. These students have also received other consequences such as police citations and possible suspensions from athletic activities. In addition to their regular coursework, the students read assigned books and write reflections. The last thing these students need is out-of-school suspension where they get to do nothing or in-school imprisonment without a learning opportunity. StaffNotes, 10/03/2022.*

School District of Manawa

800 Beech Street
Manawa, WI 54949

Phone: (920) 596-2525
Fax: (920) 596-5308

Little Wolf High School Manawa Middle School

515 E. Fourth St
Manawa, WI 54949

Phone: (920) 596-2524
Fax: (920) 596-2655

Manawa Elementary

800 Beech Street
Manawa, WI 54949

Phone: (920) 596-2238
Fax: (920) 596-5339

ManawaSchools.org



/ ManawaSchools



/ ManawaSchools



Students choosing to excel; realizing their strengths.

To: Board of Education
From: Carmen O'Brien
cc: Dr. Melanie Oppor
Date: 10/12/2022
Re: Business Office Monthly Update - October

The 2022-23 budget and preparation for the annual meeting at the end of this month consumes most of my time. The full budget has been entered into Skyward and the budget publication was submitted to the Waupaca County Post to appear in the October 13th and 20th editions.

There are two numbers that I will not receive from the state until October 14th, the Private School Voucher Aid Deduction and the 2022-23 General State Aid. Once these numbers are finalized, I can tweak the budget in Skyward so that a balanced budget is presented at the annual meeting and budget adoption hearing.

The amounts in the Revenue Limit Worksheet that the Board decides are the General Operations Levy, the Referendum Approved Debt, and the Community Services Levy. As part of the KPI's for the district, it is highly recommended to levy to the allowable limit for General Operations. If a district decides to levy less, this will decrease state aid for the subsequent years because it appears that the funds are not needed.

There is a minimum amount that needs to be levied for the Referendum Approved Debt. At the budget adoption, the BOE may levy an amount over the minimum to be used in to pay down the debt faster and avoid interest costs. This is recommended to avoid big ups and downs to the tax rate. Tax payers seem to appreciate keeping the rate steady.

Last, the BOE approves the amount taxed for the Community Service fund, Fund 80. Currently, this fund pays for middle school athletics and the STEP volunteer program. This fund could also be used to pay for a School Resource Officer (SRO). This may be discussed at the annual meeting and the BOE will decide what amount to levy for Fund 80 during the budget adoption hearing.

This past month I met with the high school student council and the food service team to survey them on what they might like in furnishings for the Commons. I presented this information to the Finance Committee and hope that the Board will soon be able to endorse purchasing vending machines and new seating options.

Kobussen Buses Ltd.

Family Pride in Every Ride

October 12, 2022
September Transportation Report
Prepared For: School District of Manawa

To Whom it May Concern,

It is hard to believe that we are one month into the 2022-23 school year already and I am very pleased with how things are going! Recap from September, there were 21 days of school and 22 extracurricular activities.

The first few days of school, both drivers and parents adjusted to the new route times and are now in their daily routine. We did change a few students' buses once the school year started, as we found a more efficient route the buses could travel. Natasha is extremely happy with how they turned out. She still looks to try and find shortcuts where possible.

We currently have Natasha and Kayla Hujet in the training process for their commercial driver's license. Both will be fill in substitute drivers. Once fall sports slow down, we will have a lull which would be a great time for anyone to start training for their CDL! We are offering our \$1,500 sign on bonus and have a great starting wage for sporting events, \$15.00 per hour! This is great for anyone that is highly involved in the school district, parents of athletes, community members or anyone looking for some extra spending money! Anyone interested can contact me. My information is listed below.

As always, we are always looking for ways to improve, so if anyone has any questions, comments, or concerns, please do not hesitate to contact our office. My information is listed below.

Jacob Elsner
(920) 389-1500 x1701
Jacob.elsner@kobussen.com

Thank you,

Jacob Elsner
Terminal Manager
Kobussen Buses LTD



School District of Manawa

Students Choosing to Excel, Realizing Their Strengths

Mrs. Michelle Johnson
District Reading Specialist

Oct 3, 2022

To: Dr. Melanie Oppor, Manawa Board of Education

Fr: Michelle Johnson

Date: 10/3/22

Re: District Literacy Highlights

Purpose:

Instructional coaches partner with educators to analyze current reality, set goals, identify and explain teaching strategies to hit the goals, and provide support until the goals are met. Together, we provide opportunities to educate all students at the highest level.

Literacy Goals Update

<u>MES</u>	
<u>Literacy Goal</u>	<u>Current Action Steps</u>
Continuous Grade Level Data Analysis	<ul style="list-style-type: none"> ★ Initial data dig of various sources of data, Fountas and Pinell, iReady Data, Attendance, prior year’s Forward led to the building goals: <ul style="list-style-type: none"> ○ Build Student Engagement ○ Expand strategic small group instruction ○ Increase capacity of Early Literacy Instruction

School District of Manawa
800 Beech Street
Manawa, WI 54949

Phone: (920) 596-2525
Fax: (920) 596-5308

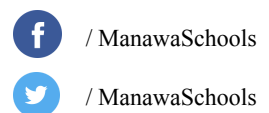
**Little Wolf High School
Manawa Middle School**
515 E. Fourth St
Manawa, WI 54949

Phone: (920) 596-2524
Fax: (920) 596-2655

Manawa Elementary
800 Beech Street
Manawa, WI 54949

Phone: (920) 596-2238
Fax: (920) 596-5339

ManawaSchools.org





	<p>Completion of initial universal assessments to address instructional and student needs. Currently, iReady, Fountas and Pinnell, Early Literacy Screeners and further assessments are being completed. On Oct. 14th, data was reviewed and the further development of small group assessment.</p> <ul style="list-style-type: none"> ★ Monthly grade level BCT data analysis and problem solving was initiated the last week of September.
<p>Strategic Small Group Instruction</p>	<ul style="list-style-type: none"> ★ Professional development prior to beginning of the year calibrated benchmark assessment and data gathering/interpretation to set goals and identify students for small group instruction. ★ (Second round of PD is in Nov. to build instructional practices and develop the targeted instruction based off of the initial data. ★ Special Assignment teachers, instructional coaches, and content teachers initiated booster preventative small group instruction from the beginning of the year through collaborative Wolf Time and during reading block. ★ iReady PD and learning pathways provide individualized learning paths and lessons for each and every student. Progress has been initiated and monitored.
<p>Aligned Standards/Formative and Summative Assessments</p>	<ul style="list-style-type: none"> ★ Oct. 14th- Vertical and horizontal alignment with K-12 ELA curriculum mapping. As a united literacy team, educators will review

School District of Manawa
800 Beech Street
Manawa, WI 54949

Phone: (920) 596-2525
Fax: (920) 596-5308

**Little Wolf High School
Manawa Middle School**

515 E. Fourth St
Manawa, WI 54949
Phone: (920) 596-2524
Fax: (920) 596-2655

Manawa Elementary

800 Beech Street
Manawa, WI 54949

Phone: (920) 596-2238
Fax: (920) 596-5339

ManawaSchools.org



/ ManawaSchools



/ ManawaSchools



	<p>drafts of curriculum maps with grades prior and after to identify any gaps or needs prior to bringing it to the Curriculum Committee for review.</p>
<p><u>Student-Centered Instructional Coaching</u></p>	<ul style="list-style-type: none"> ★ Throughout the first few weeks, instructional coaching has been dedicated to new teachers, modeling, data analysis and support with instruction to build a foundation. Then, the coaching expanded to other grades utilizing assessment data and observations to scaffold support/coaching and resources needed.
<p><u>Early Literacy</u></p>	<ul style="list-style-type: none"> ★ Early literacy screeners completed at the PK-1st grade levels to identify strengths and areas of need. Special assignment teachers, student teachers, and instructional coaches are providing additional support/intervention to identified students. Updates and celebrations shared during BCT.

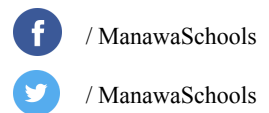
<p>MANAWA MIDDLE SCHOOL/LITTLE WOLF HIGH SCHOOL</p>	
<p><u>Professional Learning Community Development</u></p>	<ul style="list-style-type: none"> ★ Collaborative teams worked together with the Special Education team to review student needs/IEP. ★ Oct. 14th- PLC teams will select their focused Literacy Pillar to create their literacy commitment for the year.

School District of Manawa
 800 Beech Street
 Manawa, WI 54949
 Phone: (920) 596-2525
 Fax: (920) 596-5308

**Little Wolf High School
 Manawa Middle School**
 515 E. Fourth St
 Manawa, WI 54949
 Phone: (920) 596-2524
 Fax: (920) 596-2655

Manawa Elementary
 800 Beech Street
 Manawa, WI 54949
 Phone: (920) 596-2238
 Fax: (920) 596-5339

ManawaSchools.org





	<ul style="list-style-type: none"> ★ PLC monthly time will be utilized to review data, identify supports needed for students, and to celebrate. Discussion and team sharing of goals accomplished surrounding their literacy commitments.
<u>Content/Literacy Literacy</u>	<ul style="list-style-type: none"> ★ Based on content expertise, each PLC is selecting a Pillar of Literacy: Speaking, Writing, Listening, Reading, Vocabulary to focus on to create a collective balanced opportunity for all students throughout each contents. Resources and coaching will be centralized around each focus/area of expertise.
<u>Strategic Small Group Intervention</u>	<ul style="list-style-type: none"> ★ Literacy and Math resource courses have successfully been implemented throughout the beginning of the year. Students receive targeted/personalized instruction based on classroom, iReady, and other assessment data. Students additionally received frontloading in upcoming vocabulary, and point in time support on current ELA/Math instruction.
<u>Aligned Standards Curriculum Mapping</u>	<ul style="list-style-type: none"> ★ K-12 ELA curriculum mapping and alignment on Oct. 14th in-service/PLC day.

School District of Manawa

800 Beech Street
Manawa, WI 54949

Phone: (920) 596-2525
Fax: (920) 596-5308

**Little Wolf High School
Manawa Middle School**

515 E. Fourth St
Manawa, WI 54949

Phone: (920) 596-2524
Fax: (920) 596-2655

Manawa Elementary

800 Beech Street
Manawa, WI 54949

Phone: (920) 596-2238
Fax: (920) 596-5339

ManawaSchools.org



/ ManawaSchools



/ ManawaSchools



MES

Pictured below, our new 5th grade teacher engages the students with an Interactive Read Aloud titled *The Lion That Stole My Arm*. The students were so into the story, that they begged for her to continue after a chapter. Students interacted through discussion, partner talk, and writing throughout their journey.



MES and Literacy/Math Resource staff participate in an iReady diagnostic PD data dig.

School District of Manawa

800 Beech Street
Manawa, WI 54949

Phone: (920) 596-2525
Fax: (920) 596-5308

Little Wolf High School Manawa Middle School

515 E. Fourth St
Manawa, WI 54949

Phone: (920) 596-2524
Fax: (920) 596-2655

Manawa Elementary

800 Beech Street
Manawa, WI 54949

Phone: (920) 596-2238
Fax: (920) 596-5339

ManawaSchools.org



/ ManawaSchools



/ ManawaSchools



In an instructional coaching cycle, 3rd grade teacher, Ms. Meier's discusses the difference between nonfiction/informational and fictional texts. The students collected evidence in support of differentiating between the two through and IRA.



1st grade teacher, Ms. Schuelke, models with students how as readers it is important to make connections to the text we read for a deeper comprehension. She models appropriate phrasing and expression while reading aloud.

School District of Manawa

800 Beech Street
Manawa, WI 54949

Phone: (920) 596-2525
Fax: (920) 596-5308

**Little Wolf High School
Manawa Middle School**

515 E. Fourth St
Manawa, WI 54949
Phone: (920) 596-2524
Fax: (920) 596-2655

Manawa Elementary

800 Beech Street
Manawa, WI 54949

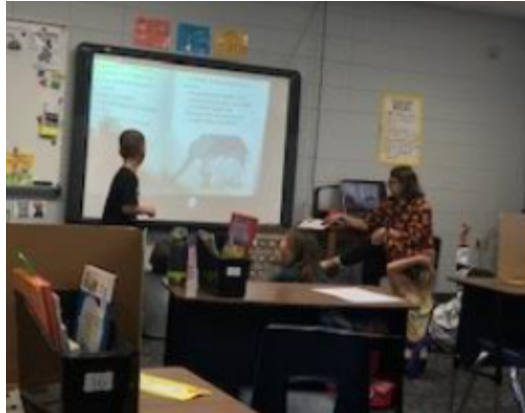
Phone: (920) 596-2238
Fax: (920) 596-5339

ManawaSchools.org

/ ManawaSchools



/ ManawaSchools



During strategic one-on-one benchmark assessment, Mrs. Burkhardt notes observations of foundational skills. She records student literacy behaviors such as using syntax, phonics, or content to decode. This time is very valuable in setting up student-centered goals and instruction.



Manawa Middle/Little Wolf High School:

Middle and high school teachers participate in professional development and training on

School District of Manawa

800 Beech Street
Manawa, WI 54949

Phone: (920) 596-2525
Fax: (920) 596-5308

Little Wolf High School Manawa Middle School

515 E. Fourth St
Manawa, WI 54949

Phone: (920) 596-2524
Fax: (920) 596-2655

Manawa Elementary

800 Beech Street
Manawa, WI 54949

Phone: (920) 596-2238
Fax: (920) 596-5339

ManawaSchools.org



/ ManawaSchools



/ ManawaSchools



Strengthening Secondary Literacy learners. Topics covered included building engagement, Science of Reading, and Interactive Read Alouds at the secondary level. This is first of four in a series that is followed up by in person instructional coaching within classrooms.



School District of Manawa

800 Beech Street
Manawa, WI 54949

Phone: (920) 596-2525
Fax: (920) 596-5308

**Little Wolf High School
Manawa Middle School**

515 E. Fourth St
Manawa, WI 54949

Phone: (920) 596-2524
Fax: (920) 596-2655

Manawa Elementary

800 Beech Street
Manawa, WI 54949

Phone: (920) 596-2238
Fax: (920) 596-5339

ManawaSchools.org



/ ManawaSchools



/ ManawaSchools



Our featured literacy resource students share a good book that they are currently reading. We sure love them!



School District of Manawa

800 Beech Street
Manawa, WI 54949

Phone: (920) 596-2525
Fax: (920) 596-5308

**Little Wolf High School
Manawa Middle School**

515 E. Fourth St
Manawa, WI 54949

Phone: (920) 596-2524
Fax: (920) 596-2655

Manawa Elementary

800 Beech Street
Manawa, WI 54949

Phone: (920) 596-2238
Fax: (920) 596-5339

ManawaSchools.org



/ ManawaSchools



/ ManawaSchools



School District of Manawa

800 Beech Street
Manawa, WI 54949

Phone: (920) 596-2525
Fax: (920) 596-5308

**Little Wolf High School
Manawa Middle School**

515 E. Fourth St
Manawa, WI 54949

Phone: (920) 596-2524
Fax: (920) 596-2655

Manawa Elementary

800 Beech Street
Manawa, WI 54949

Phone: (920) 596-2238
Fax: (920) 596-5339

ManawaSchools.org



/ ManawaSchools



/ ManawaSchools



Upcoming Dates:

Sept.-Nov- Completed ELA Curriculum Mapping, Horizontal and Vertical Alignment

Sept. 5th-Oct. 14th- Initial iReady, Fountas and Pinnell, and Early Lit assessments

Sept. 21st-Strengthening Secondary Literacy- Initial training

Oct. 6th- In person instructional coaching/Interactive Read Aloud Demo at Manawa Middle and Little Wolf

October 10th, Fall in Love with Math and Reading Family Dinner and Information Update

Nov. 10th- Second of the Series- PD/Training Strengthening Secondary Learners featuring Dyslexia identification and support.

Nov. 21st-Small/Guided Small Group Professional Development

School District of Manawa

800 Beech Street
Manawa, WI 54949

Phone: (920) 596-2525
Fax: (920) 596-5308

**Little Wolf High School
Manawa Middle School**

515 E. Fourth St
Manawa, WI 54949

Phone: (920) 596-2524
Fax: (920) 596-2655

Manawa Elementary

800 Beech Street
Manawa, WI 54949

Phone: (920) 596-2238
Fax: (920) 596-5339

ManawaSchools.org



/ ManawaSchools



/ ManawaSchools



Technology Board Report

Oct 17, 2022

Network and Server Infrastructure

Continuing to working on disaster recovery from cloud servers and will begin to test the recovery process. Continuing to collaborate with insurance company concerning Incident Response policies and procedures. Continued work with vendor to test immutable backup products to minimize the impact of a cyber attack. Worked with Wiscnet concerning our Badgernet connection to minimize internet down situations.

Skyward

Coordinating the following areas: Finalized the permission to survey form in Skyward.

Insurance Guidelines

Beginning the process of putting the insurance company is suggested updates to various networked systems and procedures: i.e. Server migration to 2019/2022, 2 Factor Authentication protocols, Professional Development around cyber security, increase depth in backups, Incident Response and Continuity of Services plans

Hardware Updates

Continue to wait for access points. Delayed due to chip shortage and shipping issues. Working with vendors to address shipping delays. Looking to address server build to accommodate operation system upgrade. Working on getting all door systems up to date. Working on camera placement and costs.

Minutes of the September 19, 2022 School District of Manawa Curriculum Committee Meeting

Date: October 12, 2022

Time: 5:00 p.m.

Hybrid Meeting Format (In-person Meeting for Board of Education at MES Board Room, 800 Beech Street & Virtual Components)

Board Committee Members: Hollman (C), Riske, and Fietzer

In Attendance: C. Fietzer, S. Riske, M. Wright, M. Oppor

Timer: Called to Order @ 5:05pm

Recorder: Riske

1. Consider Endorsing a School-Sponsored Trap Shooting League as Presented
Motion by Fietzer/Riske
2. Consider Endorsing a High School Robotics Club as Presented
Motion by Riske/Fietzer
3. Consider Endorsing a High School ESports Club with permission slip sent home with students to inform parents of the games being played as Presented
Motion by Fietzer/Riske
4. Consider Endorsing Revised Secondary Science Curriculum Maps as Presented
 - a. Chemistry
 - b. Physical ScienceMotion by Riske/Fietzer
5. Consider Endorsing Mathematics Curriculum Maps as Presented
 - a. Grade 6
 - b. Grade 7
 - c. Grade 8
 - d. Algebra
 - e. Geometry
 - f. Advanced Algebra
 - g. Pre-CalculusMotion by Riske/Fietzer
6. Discuss and Recommend Applicable 2022-23 School Year Key Performance Indicators (Information / Action)
7. Curriculum Committee Planning Guide (Information / Action)
8. Next Meeting Date: *Waiting to talk with Hollman*
9. Next Meeting Items:
 - a. Consider Endorsing English Language Arts Curriculum as Presented

- b. Consider Endorsing Social Studies Curriculum as Presented
- c. Consider Evaluation Report on and Recommendation for Club and Organizations as Presented
- d.

10. Adjourn

Motion by Riske/Fietzer @ 5:57pm

10-12-2022 FINANCE COMMITTEE MEETING MINUTES

Date: October 12, 2022

Time: 6:00 p.m.

Board Committee Members: Jepson (C), Reierson, Fietzer

In Attendance: Jepson, Reierson, Fietzer, Dr. Oppor, O'Brien, Mrs. Griffin

Timer/Recorder: Reierson

1. Annual Meeting Planning (Information)
2. Consider Endorsement of Fund Raiser Procedure for 2022-23 (Information/Action)
Motion to endorse the Fund Raiser Procedure for 2022-23 school year as presented.
Motion by: Jepson, Reierson
Motion carried
3. Current State of Food Service Equipment (Information)
4. Consider Endorsement of Recommendation to Spend the Food Service (Fund 50) Fund Balance (Information / Action)
Motion to endorse the purchase of up to 3 MAX ST5000 vending machines after staff input with at least one vending machine accessible after normal school hours.
Motion by: Fietzer, Jepson
Motion carried.
Motion to endorse the purchase of up to 6 booth/table combos at the spending percentage presented.
Motion by: Jepson, Fietzer
Motion carried.
Motion to endorse the purchase of up to 6 picnic tables for outside the Commons. Tables are to be; round, powder coated (thermoplastic), with grated tops and seating. There needs to be at least 2 ADA accessible seating areas.
Motion by: Jepson, Fietzer
Motion carried.
Motion to endorse purchase up to 6 Conversation Tables with 12 chairs at the spending percentage presented.
Motion by: Fietzer, Jepson
Motion carried.
5. General Fund (Fund 10) Fund Balance (Information / Action) - No actions
 1. Discuss Spending Priorities
 - i. Student Learning Impact
 - ii. Health & Safety Impact
 - iii. Number of Students or Staff Positively Impacted
 - iv. Other
 2. Consider Special Meeting to Choose Projects Based on Spending Priorities
6. Finance Committee Planning Guide (Information / Action)
7. Next Finance Committee Meeting Date: November 14, 2022 at 6:00 pm

8. Next Finance Committee Items:

1.

2.

9. Adjourn

Motion by: Reiersen, Fietzer

Motion carried at 9:16

**SCHOOL DISTRICT OF MANAWA
POLICY & HUMAN RESOURCES COMMITTEE MEETING
MINUTES**

Date: October 4, 2022

Time: 5:00 p.m.

Board Committee Members: Reierson (C), Riske, and Krueger

In Attendance: Reierson, Riske, Krueger, Dr. Oppor, Mr. LaValle. Mrs. Griffin

Timer/Recorder: Reierson

1. Review and Consider Endorsement of NEOLA Update Volume 31, No. 2 Updates - Steve LaVallee (Information / Action)

Tabled until next meeting - additional verbiage changes are needed in several documents, clarification of current practice and applicable legal requirements are also needed for several documents.

Agenda items 2 thru 10 were not addressed for endorsement during the meeting and will need to be on the next meeting agenda.

Mrs. Griffin requested a meeting of the school associated clubs representatives with P&HR Committee/Board and Administration representatives to review the Fund-Raising policies and requirements so that there is understanding of the policies and expectations. Mrs. Reierson and Dr. Oppor will work on a date for this meeting.

2. Consider Endorsement of Revised PO2416 - Student Privacy and Parental Access to Information as Presented (Information / Action)
Motion by:
3. Consider Endorsement of Revised AG2416 - Procedures for Inspection of Survey, Administered or Distributed to Students as Presented (Information / Action)
Motion by:
4. Consider Endorsement of Revised PO5136 - Personal Communication Devices as Presented (Information / Action)
Motion by:
5. Consider Endorsement of Revised PO5830 - Student Fundraising as Presented (Information / Action)
Motion by:
6. Consider Endorsement of Fundraising Request Form (Google Form) as Presented (Information / Action)
Motion by:
7. Confirmation of Required Website Information is Complete (Information)
8. Confirmation of Required Posting and Notices are Complete (Information)

9. Kelly Marinoff, MacNeil Environmental was contacted to provide Paving the Way asbestos, lead, and water quality documentation on her next SDM visit as per PO8431.01. (Information)

10. Discuss and Recommend Applicable 2022-23 School Year Key Performance Indicators (Information / Action)
Motion by:

11. Set Next Meeting Dates:
 - a. October 10, 2022 at 3:30 p.m. with Support Staff
 - b. October 31, 2022 at 5:00 p.m.

12. Next Meeting Items:
 - a. School Nurse References - Nurse/Paramedical (Information / Action)
 - b.

13. Adjourn: Riske, Krueger
Motion carried at 6:19 p.m.

**SCHOOL DISTRICT OF MANAWA
POLICY & HUMAN RESOURCES COMMITTEE MEETING
MINUTES**

Date: October 10, 2022

Time: 3:30 p.m.

Board Committee Members: Reierson (C), Riske, and Krueger

In Attendance: Reieron, Riske, Krueger

Timer/Recorder: Reierson

NOTE Agenda items only had discussion - no motioned actions taken. See discussion notes compiled by Committee members.

1. What do Support Staff Members hope will come out of the Support Staff meetings?
2. What are the good points concerning their jobs? What are areas of concern?
3. What is Support Staff job training like?

When does training happen?

How effective do Support Staff find the training?
4. How do Support Staff perceive the communication concerning their jobs and in general communication about District concerns.
5. Set Next Meeting Dates:
 - a. (P and HR only) October 31, 2022 at 5:00 p.m.
 - b.
6. Next Meeting Items:
 - a. Tabled items from October 4, 2022 Agenda
 - b. School Nurse References - Nurse/Paramedical (Information / Action)
 - c.

7. Adjourn

Motion by: Riske, Krueger

Motion carried at 4:40 pm

Discussion notes compiled by P&HR Committee members:

Key points shared by support staff

Training

Job Requirements are not known

Overlapping in duties

Miscommunications
Reporting
Reviews not getting completed
Training is huge
Some things are falling through the cracks
Skyward training was phenomenal
Where does my role start and another end
Who is their supervisor

Spec Ed:

Good training
Missing huge gaps 1:1 students not having coverage
Who do you go to for what

Office admin overlap on coverage and are duplicating coverage
Not all staff have had a meeting with Abe yet
What is being communicated versus what is being actually done are two different things
When rules change, there is no support given to the staff.. Ie when a child goes to the office for a phone violation, what do the office staff do with them?

Need to debrief and collaborate with immediate team when there is an issue- needs to be without students around
Communication is an issue
Support staff doesn't get communicated with the way that teachers do.

Basically reviews are a SWOT analysis

Plus'

Coworkers
Relationships with students
Some Admins are willing to listen to support staff

Minus'

Lack of appreciation for support staff. We feel like we don't matter

Feeling belittled
We do not have enough bodies
Still don't know their schedule
Working 35+hours a week

Too short on staff
NON PAID OVER TIME
Parents are not picking up on time
Step away for an hour a day for a break, there really isn't a break, they are always on and willing to help those that need it.
Any OT has to be requested in advance.

Carmen stated that it is clear that each support staff person has to be following the 28.75 hours a week for budget.

Person #4 being hired; will be hired for Special Ed, lunch and other coverage

Budget concerns cannot supersede the needs of our students.

Rounding rule versus pay to the minute needs to be addressed. Punching in as a whole, should not be a pre-populated time card, should realistically be a punchable card.

Training needs to be technical and soft in nature.

Start creating SOP's and work instructions.

2 week notice should be time for the person leaving to leave good training documentation for the incumbent. Suggested language changes to include in the policy that any Paid time off may not be used to extend a termination date.

When asked if the support staff would be open to additional meetings they asked if the meetings would be paid or unpaid. This concern needs to be addressed.



Book	Policy Manual
Section	2000 Program
Title	Copy of LIBRARY MEDIA CENTERS
Code	po2522
Status	Proposed to Policy & Human Resources Committee
Adopted	March 15, 2021

2522 - LIBRARY MEDIA CENTERS

The Board believes that school library media centers are a fundamental part of the educational process by providing a place to foster independent and collaborative learning and information-seeking skills in students and staff. This is accomplished through timely access to services and resources that both reflect the student body, the cultural diversity and pluralistic nature of American society, and represent perspectives held in the world more broadly. Therefore, the Board shall provide sufficient materials and staff for a library media center in each school in the District.

The District Administrator shall designate a licensed library media professional to direct or coordinate the District's library media program. **The selection of materials by the licensed library media professional shall follow the Board's adoption selection criteria and procedures.** The Board shall adopt a long-range plan for library media services developed by teachers and library and audiovisual personnel and administrators. The plan shall be reviewed periodically. The plan and any materials selection or review process shall be in accordance with Policy 2260 - Nondiscrimination and Access to Equal Educational Opportunity. **Te use of the District's allocation from the Common School Fund for acquisitions, in accordance with the Department of Public Instruction regulations, shall be a component of the foregoing procedures.**

The school libraries of this district are guided by the principles set forth in the Library Bill of Rights and its interpretive statements, including "Access to Resources and Services in the School Library Program" and The Students' Right to Read statement of the National Council of Teachers of English. See Administrative Guideline 2522.01 for the Library Bill of Rights and "Access to Resources and Services in the School Library Program: An Interpretation of the Library Bill of Rights."

The major **objectivesgoals** of the District's school library media centers are:

A. To provide faculty and students with materials that enrich and support the curriculum taking into consideration the varied interests, abilities, learning styles, and maturity levels of the students served.
B. To provide students with a wide range of educational materials on all levels of difficulty and in a variety of formats, with a diversity of appeal, allowing for the presentation of many different points of view.
C. To select materials that present various sides of controversial issues, giving students an opportunity to develop analytical skills resulting in informed decisions.
D. To select materials in all formats, including up-to-date, high-quality, varied literature to develop and strengthen a love of reading.

- A. To support and enrich the District's standards and benchmarks;**
- B. To provide for personal interests, professional, educational, and recreational reading while promoting an appreciation of good literature;**
- C. To provide a comprehensive and coordinated collection of current resources so that students and staff will conveniently and effectively use a wide variety of materials, including print and non-print media;**

- ~~D. To promote and support the appropriate use of technology for interpreting and communicating intellectual content;~~
- ~~E. To provide instruction that advances student and staff literacy of print, digital, and other emerging information resources;~~
- ~~F. To provide equitable and timely access to resources that support students' personal, academic, and life-long learning;~~
- ~~G. To foster a love of reading, curiosity, and investigation by providing a space that is well-maintained, up-to-date, welcoming, and safe for all users.~~

~~The District Administrator shall establish procedures consistent with the District's long-range plan for library services development related to the selection of materials, removal (weeding) of materials, inventory, and repair and/or replacement of materials. The use of the District's allocation from the Common School Fund for acquisitions, in accordance with DPI regulations, shall be a component of the foregoing procedures.~~

Selection Criteria

The School District of Manawa does not discriminate in the selection and evaluation of library materials on the basis of sex, race, religion, national origin, ancestry, creed, pregnancy, marital or parental status, sexual orientation, or physical, mental, emotional, or learning disability.

Initial purchase suggestions for library materials may come from all personnel--teachers, coordinators, and administrators. Students will also be encouraged to make suggestions. The final decision to purchase library materials will be made by a licensed library media specialist.

The following criteria will be used in the selection of library materials as they apply:

- Support and enrich the curriculum and/or students' personal interests and learning
- Meet high standards in literacy, artistic, and aesthetic quality; technical aspects; and physical format
- Be appropriate for the subject area and for the age, emotional development, ability level, learning styles, and social,
- emotional, and intellectual development of the students for whom the materials are selected.
- Incorporate accurate and authentic factual content from authoritative sources
- Earn favorable reviews in standard reviewing sources such as, but not limited to:
 - Association for Library Service to Children (ALSC) Notable Children's Books
 - Booklist
 - Cooperative Children's Book Center of Wisconsin
 - School Library Journal
 - Young Adult Library Services Association (YALSA) Best Books for Young Adults
- Exhibit a high degree of potential user appeal and interest
- Represent differing viewpoints on controversial issues
- Provide a global perspective and promote diversity by including materials by authors and illustrators of all cultures
- Include a variety of resources in physical and virtual formats including print and non-print such as electronic and
- multimedia (i.e. online databases, e-books, educational games, and other forms of emerging technologies)
- Demonstrate physical format, appearance, and durability suitable for their intended use
- Balance cost with need

Selection is an ongoing process that should include removing materials that are no longer used or needed (weeding), adding materials, and replacing lost and worn materials that still have educational value.

Gifts and Donations

Gifts and donations shall be handled in accordance with Policy 7230 - Gifts, Grants, and Bequests. Gift materials shall be judged by the same selection criteria and shall be accepted or rejected by those criteria. All materials should support the curriculum and needs of library users. Gifts and donations, like purchased resources, will be removed from the collection at the end of their useful life.

Requests, Suggestions, or Complaints

Challenges to instructional materials shall be handled in accordance with Policy 9130 - Public Requests Suggestions, or Complaints.

Reconsideration of Library Materials

Any resident or employee of the School District of Manawa may formally or informally request the reconsideration of library materials on the basis of appropriateness.

Informal Reconsideration Procedure of Library Materials

The Board recognizes that some materials are controversial and that any given item may offend some patrons. Selection of materials will not be made on the basis of anticipated approval or disapproval but solely on the basis of the principles set forth in this policy. Individuals or groups may initiate complaints about specific titles or types of materials in the Library's collection by talking to or writing to the District's Library Media Specialist. At this point, such communications are considered informal complaints. The District Library Media Specialist will respond to informal complaints by offering a rationale for the book in the collection, discussing the desired action based on the complaint, and, if appropriate, offering the complainant a Request for Reconsideration Form.

Formal Reconsideration Procedure of Library Materials

Persons who are concerned about the appropriateness of library materials and are unsatisfied with the response from an informal discussion about the title may choose to make a formal request for reconsideration of the title in question.

The following procedures should be followed if, after discussing the questioned resource, no resolution is made:

1. The complainant should be referred to the Principal.
2. A concerned citizen who is dissatisfied with earlier informal discussions will be offered a packet of materials which includes the library's mission statement, selection policy, Request for Reconsideration Form, and the Library Bill of Rights.
3. The complainant is required to complete and submit the Request for Reconsideration Form to the Principal within ten (10) business days.
4. If a completed Request for Reconsideration Form is not submitted within ten (10) business days, the matter is considered closed.
5. Upon receipt of the Request for Reconsideration Form, the Principal should notify and provide a copy of the Request for Reconsideration Form to the following individuals:
 - ~~a-~~ District Administrator
 - ~~b-~~ District Library Media Specialist
6. The work in question will remain on library shelves and in circulation until a formal decision is made.
7. The Reconsideration Committee will be appointed by the District Administrator and consist of:
 - ~~a-~~ Committee Chair - District Reading Specialist
 - ~~b-~~ District Library Media Specialist
 - ~~c-~~ Teacher - grade-level appropriate and/or language arts
 - ~~d-~~ Library Professional - not employed by the district
 - ~~e-~~ Community Leader - mayor, town chairman, etc.
 - ~~f-~~ Faith Leader
 - ~~g-~~ Three Members of the Community - a communication will be sent out widely using various media requesting volunteers to serve on a Reconsideration Committee with an application deadline. All received volunteer names will be placed into a random drawing to determine the three who will serve on the committee.
8. Through interlibrary loans or other means, the school librarian will obtain copies of the material in question for review by the Reconsideration Committee.
9. The Reconsideration Committee will schedule two formal reconsideration meetings: an initial meeting & a discussion/decision meeting. The Reconsideration Committee should follow the procedures listed below:
 - a. At the initial meeting:
 - i. The committee chair will review Reconsideration Committee guidelines and procedures.
 - ii. A member of the committee will be assigned to keep minutes.
 - iii. The complainant may make an initial verbal presentation about the resource under reconsideration. The complainant is asked to provide sources for quotes used during this presentation. The presentation may not exceed fifteen (15) minutes.
 - iv. The complainant may not participate in the Committee's deliberations. The Committee Chair may choose to give committee members time to ask questions.
 - v. The school librarian will provide the Reconsideration Committee with a short formal Intellectual Freedom training that explains a packet of materials, that includes the library's mission statement, selection policy, the Library Bill of Rights, the completed Reconsideration Form, reviews of the resource being reconsidered, and a list of awards or honors, if any. The presentation may not exceed fifteen (15) minutes.

vi. The Committee reserves the right to use outside expertise if necessary to help in its decision-making process.
vii. The Committee Chair directs the committee members to fully review/read the complaint and challenged resource and be prepared to vote on the complaint at the next meeting.

b. During the second discussion/decision meeting:

i. The complainant may not participate in the Committee's deliberations.

ii. The Committee will discuss the material in question based upon the selection criteria.

iii. The committee members must have reviewed/read the challenged material in its entirety to be eligible to vote.

iv. The Committee will make its decision determined by the simple majority to retain, move the resources to a different level(if appropriate), or remove the resource. The decision will be made via a secret written ballot vote.

v. The Committee's written decision (including a minority report if needed) shall be presented to the District Administrator within five school days after the decision is made. The District Administrator will inform the complainant, in writing, of the Reconsideration Committee's decision.

vi. If the complainant is not satisfied with the decision of the Reconsideration Committee, a written appeal can be made within 10 school days of receiving the decision to the Board of Education President. The written appeal and all written material relating to the reconsideration shall be referred to the Board of Education for review.

10. The procedures for an appeal to the Board of Education will be as follows:

a. An appeal of the decision made by the Reconsideration Committee must be made in writing to the Board of Education President within 10 days of the Reconsideration Committee's decision being communicated to the complainant.

b. A decision on the appeal will be made at the next regular meeting or special meeting within 30 days of the written request to the Board of Education President.

c. The Board of Education reserves the right to use outside expertise if necessary to help in its decision-making.

d. The Chairperson for the Reconsideration Committee will present the committee's decision to the board.

e. The complainant or designee will present the petitioner's position.

f. The Board of Education **board**-decision will be final, and the District Administrator will implement the decision.

11. Decisions on reconsidered materials will stand for five years before new requests for reconsideration of those items will be entertained.

Parental/Police Access to Library Information

The Board respects the privacy rights of parents and their children. The Board is also committed to ensuring that parents are permitted to obtain information about the instructional material, resources, and services students choose to use at the District's libraries.

Parents of a student under the age of sixteen (16) have the right to review, upon request library records relating to the use of the library's documents or other materials, resources, or services by the student.

Upon request from a law enforcement officer investigating criminal conduct alleged to have occurred at a school library, the library shall disclose to the officer records produced by a surveillance device under the control of the library that is pertinent to the alleged criminal conduct.

Other than the exceptions noted above, records indicating the identity of any individual who borrows or uses the library's documents or other materials, resources, or services may not be disclosed except by court order or to persons acting within the scope of their duties in the administration of the library, or to persons authorized by the individual to inspect such records.

Inter-Library Loans

The Board authorizes District participation in interlibrary loan programs. The District will loan school library books and other instructional materials that are not in immediate or constant demand by staff or students to another participating school district for use in the libraries of that district.

Fines

Students may be assessed fines for the late return of borrowed materials or damage or loss of materials in accordance with Policy 6152 - Student Fees, Fines, and Charges.

© Neola 2020

Legal 43.30, 43.72, 121.02(1)(h) Wis. Stats.
PI 6, 8

Last Modified by Melanie J Oppor on September 29, 2022



LIBRARY MATERIAL FORMAL RECONSIDERATION FORM

The School District of Manawa has an established library selection policy and a procedure for formal reconsideration of library materials. Completion of this form is the first step in that formal procedure. If you wish to request reconsideration of a library resource, please return the completed form to the building principal.

Date:			
Name:			
Address:			
City:		State/Zip:	
Phone:		Email:	

Do you represent yourself? Or an organization? Name of Organization _____

I. Resource you are requesting for reconsideration:

Book (e-book) Magazine Digital Resource

Other, identify: _____

Title: _____

Author: _____

V. What do you feel might be the result of a student's use of this material?

VI. What action are you requesting the committee consider?

VII. Are there resources you suggest to provide additional information and/or other viewpoints on this topic?

Complainant Signature: _____

Date: _____

For Office Use:

Document Received by: _____

Date Received: _____



Students choosing to excel; realizing their strengths.

To: Board of Education
From: Dr. Abe El Manssouri
Date: October 04, 2022
Re: LWHS/MMS Staffing

The purpose of this memo is to request a new 21.25 hour a week part-time paraprofessional to serve:

- 15 hours a week as a special education aide.
- 6.25 hours a week as a regular education instructional aide.

Rationale: There is an urgent need in the special education department for more employees to cover the unexpected flow of students with IEPs. In August, one of the secondary special education paraprofessionals transferred to the elementary school because of a late resignation at the elementary building. A couple of weeks after the school started, the special education department identified more areas of need. There is also a study hall and a lunch supervision period that will relieve some of the pressure on the middle school department.



Students choosing to excel; realizing their strengths.

To: Board of Education
From: Dr. Melanie J. Oppor
Date: October 13, 2022
Re: Locally Hosted Waupaca County Immunization Clinic

The purpose of this memo is to request that the Board of Education consider approving an expansion of the Board approved flu clinic to include other immunization options for local families.

Nurse Rhone of the Waupaca County Department of Health Services contacted the District to offer other commonly requested immunizations that they could make available for the voluntary clinic. The options include:

- COVID vaccinations: Pfizer/Moderna
- Influenza
- HPV
- Tdap (Adacel)
- MCV4 (Menveo)

Nurse Rhone indicates that Waupaca County DHS can provide one or more of the immunization options on the list with your approval.

The Waupaca County DHS has set October 27 for the voluntary clinic during parent/teacher conferences. Nurse Sarah Rhone indicated that a four-hour vaccination clinic would be ideal during the conference window. The clinic opportunity will be advertised to parents once the immunization options are identified. This will certainly be a convenient option for local young families. Thank you for your thoughtful consideration.



School District of Manawa

Students Choosing to Excel, Realizing Their Strengths

To: Dr. Melanie Oppor, Manawa Board of Education
Fr: Brad Johnson
Date: 10/4/2022
Re: Trap Shooting Memo

A Trap Shooting interest survey was sent out to the sixth grade through senior classes on September 21st. A total of 132 students filled out the survey. 68 or 51.5% of the students expressed interest in Trap Shooting.

At this point, we would like to move forward with approving Trap Shooting as a recognized school-sponsored activity in the School District of Manawa. We have contacted the Manawa Fish and Game Club. They are extremely excited about this opportunity and would take care of financial burdens such as clay targets among other things. They have also offered support of their members to assist with ensuring safety is met at all times and teaching students how to advance their skills.

Chris Tech, Manawa Gun Club Vice President, would be our team's coach if approved, along with Advisors Krystal Draeger and Dan Botting. We would participate in the Wisconsin State High School Clay Target League.

The following is information that will clarify what we need to do to become a school-sponsored activity:

- Five students is the minimum number for a team. There is no maximum number of students that can be on a team. There may be some limitations to team size because of coaching resources and/or shooting range capacity.
- Participants are insured through registration, coaches and volunteers receive a liability insurance policy from the league, there is no additional cost for insurance coverage.
- The League requires formal approval from a school official (AD, Principal, Superintendent, or School Board) and permission to use the high school name for the team. It is recommended, but not required, to offer the athletes a lettering program and recognition in the school's yearbook.
- The League requires one coach for every 10 student-athletes. The League averages one coach for every four student-athletes.
- After a coach adds a team member to the team's roster, a registration invitation will be automatically generated and emailed to the parents to access athlete registration. Parents

School District of Manawa

800 Beech Street
Manawa, WI 54949

Phone: (920) 596-2525
Fax: (920) 596-5308

Little Wolf High School Manawa Middle School

515 E. Fourth St
Manawa, WI 54949

Phone: (920) 596-2524
Fax: (920) 596-2655

Manawa Elementary

800 Beech Street
Manawa, WI 54949

Phone: (920) 596-2238
Fax: (920) 596-5339

ManawaSchools.org



/ ManawaSchools



/ ManawaSchools



School District of Manawa

Students Choosing to Excel, Realizing Their Strengths

will go to the athlete registration website and complete the registration process. All athletes are required to register.

- Students must be in grades six through twelve (or per school team requirements) and possess a league-approved firearm education certificate.
- About \$230. The fee varies slightly for each team depending on ammunition and target costs from the team's local shooting range. Some teams may also include uniforms. A \$35 fee is paid to the League for administration costs associated with operations, awards and insurance. An annual four-issue subscription to the League's PullUSA Magazine is also included. Some school teams are sponsored by local businesses and organizations to help pay for costs. The State Tournament participation fee is not included in the team cost.
- All student-athletes are required to complete and submit certificates for either one of two League-approved firearm safety certification programs – a state-approved hunter education certificate or the League's SAFE certificate. Teams should verify the firearm safety training certification requirements with the shooting range where they will be conducting League events. View certification details by visiting the firearms safety training page under the Rules section on this website.
- The League is the safest sport in high school. With more than 30,000 student-athletes that have participated in more than 330,000 events that have shot more than 20 million times, there have been no reported injuries since the League started in 2001.
- Competition occurs at the local shooting range. Scores are submitted by the coaches on the League's website and compared against other schools' scores within the conference.
- The League allows teams to shoot up to two days a week (including weekends) which provides most participants the flexibility to work around practices and games of other sports and/or activities.
- Senior student-athletes who are pursuing post-secondary education in environmental sciences or natural resources can apply for a scholarship available from the League.
- Clay target shooting is an Olympic sport that is identified as an "activity" or "club" at the high school level. In most cases, a high school identifies their "sports" as a varsity sport officially recognized by the state high school athletic/activities association.
- This is the only activity that complements the school district's mission; provides equal opportunity to all students; is safe and affordable for families; and there is no funding, facilities, or maintenance required for the school.
- Although the League follows similar beliefs and operations as the state high school athletic/activities association, this is not a sanctioned sport. That's why teams are designated as an activity or club. The League's goal is to have the state high school athletic/activities association recognize and support a State Tournament similar to other high school sports. This is typically achieved with a high number of participation of member schools, a track record of success, and a formal presentation and approval from the state high school athletic/activities association's board of directors.

School District of Manawa

800 Beech Street
Manawa, WI 54949

Phone: (920) 596-2525
Fax: (920) 596-5308

Little Wolf High School Manawa Middle School

515 E. Fourth St
Manawa, WI 54949

Phone: (920) 596-2524
Fax: (920) 596-2655

Manawa Elementary

800 Beech Street
Manawa, WI 54949

Phone: (920) 596-2238
Fax: (920) 596-5339

ManawaSchools.org



/ ManawaSchools



/ ManawaSchools



School District of Manawa

Students Choosing to Excel, Realizing Their Strengths

- No administration assistance is required because coaches manage the entire team and the League provides online resources and guidance to manage the team. Transportation to the shooting ranges is arranged by students, families, and coaches.
- This information among other information was found at:
<http://wiclaytarget.com/about-us/frequently-asked-questions/>

School District of Manawa

800 Beech Street
Manawa, WI 54949

Phone: (920) 596-2525
Fax: (920) 596-5308

Little Wolf High School Manawa Middle School

515 E. Fourth St
Manawa, WI 54949

Phone: (920) 596-2524
Fax: (920) 596-2655

Manawa Elementary

800 Beech Street
Manawa, WI 54949

Phone: (920) 596-2238
Fax: (920) 596-5339

ManawaSchools.org



/ ManawaSchools



/ ManawaSchools

2022-23 School District of Manawa

Proposed District-Sponsored Clubs and Activities

The following is a listing of two clubs I would like to make available in the School District of Manawa. Participation is voluntary and will occur outside of the regular school curriculum.

Competitive Extracurricular Clubs and Activities:

HS Robotics Club

Advisors: Ms. Wright

Meeting Location, Date, & Time: Planning and introductory meetings will begin in September when participants will meet and discuss Vex Competitions. Students will work as a team to build 2 robots and practice for tournaments that take place from December through February. Meetings will occur in Ms. Wright's classroom and practices will occur in Ms. Wright's Fablab. Practices are held before school, during prep time, during lunch, or after school by group consensus. Participants must attend team meetings and practices with the team advisors to be able to participate in the tournaments. Tournaments are held at schools in Wausau, Appleton, Neenah, Menasha, Green Bay, etc.

Mission and Purpose: The mission of the LWHS Robotics Club is to help provide team-building opportunities for students while improving their computer programming and engineering design skills. By working with peers in a nonjudgmental zone, students will build their confidence, and share their talents in a supportive atmosphere. The program is open to all high school students. Participants choose their own categories and deliver speeches, readings from pieces of literature, or small group dramas in front of peers and for evaluation from a judge. The LWHS Robotics Club will work with the Robotics Education & Competition Foundation to participate in VEX Robotics Competitions, following their rules, and attending various state competitions through this organization. There is no student fee associated with this program.

HS ESports Club

Advisor: Ms. Wright

Meeting Location, Date, & Time: 1-2 times per week after school throughout the school year. Additional meetings will occur leading up to ESports competitions. Students will meet to play approved online video games via computer, create teams for various competitions, and participate in state competitions. Competitions are held via remote access to certified servers. Students will practice and compete in Ms. Wright's classroom. There are a total of 3 seasons throughout the school year which includes Fall, Winter, and Spring. Students can choose which season(s) they would like to participate in. The current game titles for the 22-23 season include: Smite, Fortnite, Rocket League, League of Legends, and Valorant. Teams consist of 3-5 students per team depending upon the game.

Mission and Purpose: The mission of the LWHS Esports Club is to help provide team-building opportunities for students while building their confidence, and sharing their talents and love of gaming in a supportive atmosphere. The LWHS ESportss Club will be part of the Wisconsin High School Esports Association. Through WHSEA, students will participate in preselected games, follow the WHSEA rules, and participate in various state competitions through this organization. The program is open to all high school students. There is no student fee associated with this program.

Course Name:	Chemistry	
Credits:	1	
Prerequisites:	Biology I & Algebra (C or better is recommended)	
Description:	A laboratory-oriented course designed to study the working of chemical reactions meant for students intending to attend a college or university. Labs are practical in nature and focus on applying concepts learned in class. An understanding of Algebra is essential to understand chemistry. Units covered include data analysis, matter, atomic structure, periodic table, compounds and chemical bonds, chemical reactions & equations, mole concept and stoichiometry, solution chemistry, and acids & bases.	
Academic Standards:	Next Generation Science Standards	
Units:	Unit Length:	
Introduction to Chemistry	2 Weeks	Unit Outcomes: The sub atomic structural model and interactions between electric charges at the atomic scale can be used to explain the structure and interactions of matter, including chemical reactions and nuclear processes. Repeating patterns of the periodic table reflect patterns of outer electrons. A stable molecule has less energy than the same set of atoms separated; one must provide at least this energy to take the molecule apart.
Matter and Change	2 Weeks	SCI.PS1.A The sub atomic structural model and interactions between electric charges at the atomic scale can be used to explain the structure and interactions of matter, including chemical reactions and nuclear processes. Repeating patterns of the periodic table reflect patterns of outer electrons. A stable molecule has less energy than the same set of atoms separated; one must provide at least this energy to take the molecule apart.
Measurements	2 Weeks	SCI.PS1.A The sub atomic structural model and interactions between electric charges at the atomic scale can be used to explain the structure and interactions of matter, including chemical reactions and nuclear processes. Repeating patterns of the periodic table reflect patterns of outer electrons. A stable molecule has less energy than the same set of atoms separated; one must provide at least this energy to take the molecule apart.
Chemical Reactions	2 Weeks	SCI.PS1.B Chemical processes are understood in terms of collisions of molecules, rearrangement of atoms, and changes in energy as determined by properties of elements involved.

The Mole	2 Weeks		SCI.PS1.B	Chemical processes are understood in terms of collisions of molecules, rearrangement of atoms, and changes in energy as determined by properties of elements involved.
Stoichiometry	4 Weeks		SCI.PS1.B	Chemical processes are understood in terms of collisions of molecules, rearrangement of atoms, and changes in energy as determined by properties of elements involved.
Atomic Structure	2 Weeks		SCI.PS1.A	The sub atomic structural model and interactions between electric charges at the atomic scale can be used to explain the structure and interactions of matter, including chemical reactions and nuclear processes. Repeating patterns of the periodic table reflect patterns of outer electrons. A stable molecule has less energy than the same set of atoms separated; one must provide at least this energy to take the molecule apart.
Electrons in Atoms	2 Weeks		SCI.PS1.A	The sub atomic structural model and interactions between electric charges at the atomic scale can be used to explain the structure and interactions of matter, including chemical reactions and nuclear processes. Repeating patterns of the periodic table reflect patterns of outer electrons. A stable molecule has less energy than the same set of atoms separated; one must provide at least this energy to take the molecule apart.
The periodic Table	2 Weeks		SCI.PS1.A	The sub atomic structural model and interactions between electric charges at the atomic scale can be used to explain the structure and interactions of matter, including chemical reactions and nuclear processes. Repeating patterns of the periodic table reflect patterns of outer electrons. A stable molecule has less energy than the same set of atoms separated; one must provide at least this energy to take the molecule apart.
Chemical Nomenclature	2 Weeks		SCI.PS1.A	The sub atomic structural model and interactions between electric charges at the atomic scale can be used to explain the structure and interactions of matter, including chemical reactions and nuclear processes. Repeating patterns of the periodic table reflect patterns of outer electrons. A stable molecule has less energy than the same set of atoms separated; one must provide at least this energy to take the molecule apart.

Ionic and Metallic Bonding	2 Weeks	SCI.PS1.A	The sub atomic structural model and interactions between electric charges at the atomic scale can be used to explain the structure and interactions of matter, including chemical reactions and nuclear processes. Repeating patterns of the periodic table reflect patterns of outer electrons. A stable molecule has less energy than the same set of atoms separated; one must provide at least this energy to take the molecule apart.
Covalent Bonding	4 Weeks	SCI.PS1.A	The sub atomic structural model and interactions between electric charges at the atomic scale can be used to explain the structure and interactions of matter, including chemical reactions and nuclear processes. Repeating patterns of the periodic table reflect patterns of outer electrons. A stable molecule has less energy than the same set of atoms separated; one must provide at least this energy to take the molecule apart.
States of Matter	2 Weeks	SCI.PS1.A	The sub atomic structural model and interactions between electric charges at the atomic scale can be used to explain the structure and interactions of matter, including chemical reactions and nuclear processes. Repeating patterns of the periodic table reflect patterns of outer electrons. A stable molecule has less energy than the same set of atoms separated; one must provide at least this energy to take the molecule apart.
Behavior of Gases	2 Weeks	SCI.PS1.A	The sub atomic structural model and interactions between electric charges at the atomic scale can be used to explain the structure and interactions of matter, including chemical reactions and nuclear processes. Repeating patterns of the periodic table reflect patterns of outer electrons. A stable molecule has less energy than the same set of atoms separated; one must provide at least this energy to take the molecule apart.

<p>Unit Name: Introduction to Chemistry</p> <p>Standards: SCI.PS1.A</p>	<p>Length: 2 Weeks</p> <p>Outcomes: The sub atomic structural model and interactions between electric charges at the atomic scale can be used to explain the structure and interactions of matter, including chemical reactions and nuclear processes. Repeating patterns of the periodic table reflect patterns of outer electrons. A stable molecule has less energy than the same set of atoms separated; one must provide at least this energy to take the molecule apart.</p>
<p>Essential Questions: How would you approach a problem in the realm of pure vs. applied chemistry? In what ways can you distinguish the difference between each of the 5 disciplines of chemistry? How does the scientific method help you solve a problem?</p>	<p>Learning Targets: Define chemistry. Differentiate between the macroscopic and the microscopic as it relates to chemistry. Know the relationship between pure chemistry and applied chemistry. Identify and describe the five primary disciplines of chemistry. Describe some of the concerns of the modern world in which chemistry has played and will continue to play a role. Differentiate between the independent variable and the dependent variable in an experiment.</p>
<p>Topic 1: What is Chemistry?</p>	
<p>Standards: SCI.PS1.A</p> <p>Lesson Frame:</p> <p>Lesson Frame:</p> <p>Lesson Frame:</p> <p>Lesson Frame:</p>	<p>Length: 1 day</p> <p>Academic Vocabulary: analytical chemistry, applied chemistry, biochemistry, chemistry, inorganic chemistry, macroscopic, matter, microscopic, organic chemistry, physical chemistry, pure chemistry, control group, dependent variable, hypothesis, independent variable, scientific law, scientific method, theory</p> <p>We will: compare and contrast macroscopic and microscopic matter.</p> <p>I will: differentiate between the macroscopic and the microscopic as it relates to chemistry.</p> <p>We will: compare and contrast pure and applied chemistry.</p> <p>I will: describe the relationship between pure chemistry and applied chemistry.</p> <p>We will: compare and contrast five disciplines of chemistry.</p> <p>I will: identify and describe the five primary disciplines of chemistry.</p> <p>We will: create a narrative of applications of chemistry.</p> <p>I will: describe some of the concerns of the modern world in which chemistry has played and will continue to play a role.</p> <p>Notes:</p>
<p>Performance Tasks: Chemistry for all types</p>	

<p>Topic 2: The Scientific Method</p>	<p>Length: 1 day</p>
<p>Standards: SCI.PS1.A</p>	<p>Academic Vocabulary: control group, dependent variable, hypothesis, independent variable, scientific law, scientific method theory</p>
<p>Lesson Frame:</p>	<p>We will: apply the scientific method. I will: identify the steps of the scientific method.</p>
<p>Lesson Frame:</p>	<p>We will: compare and contrast variables. I will: differentiate between the independent variable and the dependent variable in an experiment.</p>
<p>Lesson Frame:</p>	<p>We will: analyze the research process. I will: describe how scientists work in research groups and communicate their results.</p>
<p>Performance Tasks: Name your graph</p>	<p>Notes:</p>

<p>Unit Name: Atomic Structure</p> <p>Standards: SCI.PS1.A</p>	<p>Length: 2 Weeks</p> <p>Outcomes: The sub atomic structural model and interactions between electric charges at the atomic scale can be used to explain the structure and interactions of matter, including chemical reactions and nuclear processes. Repeating patterns of the periodic table reflect patterns of outer electrons. A stable molecule has less energy than the same set of atoms separated; one must provide at least this energy to take the molecule apart.</p>
<p>Essential Questions: How has the understanding of the atom shaped how it looks like?</p>	<p>Learning Targets: Explain the law of conservation of mass, the law of definite proportions, and the law of multiple proportions. Describe John Dalton's atomic theory. Distinguish between the three main subatomic particles. Understand the contributions of J. J. Thomson, Robert Millikan, and Ernest Rutherford to atomic theory. Describe the structure of the nuclear atom. Define atomic number. Define mass number. Understand how isotopes differ from one another and be able to designate them by various methods. Be able to calculate the average atomic mass of an element.</p>
<p>Topic 1: Atoms</p> <p>Standards: SCI.PS1.A</p> <p>Lesson Frame:</p> <p>Lesson Frame:</p> <p>Performance Tasks: Atom composition</p>	<p>Length: 3 days</p> <p>Academic Vocabulary: atom, law of conservation of mass, law of definite proportions, law of multiple proportions</p> <p>We will: compare and contrast different laws.</p> <p>I will: explain the law of conservation of mass, the law of definite proportions, and the law of multiple proportions.</p> <p>We will: analyze flaws in Dalton's atomic theory.</p> <p>I will: describe John Dalton's atomic theory.</p> <p>Notes:</p>
<p>Topic 2: Nuclear Model of the Atom</p> <p>Standards: SCI.PS1.A</p> <p>Lesson Frame:</p>	<p>Length: 3 days</p> <p>Academic Vocabulary: atomic model, cathode ray, cathode ray tube, electron, neutron, nucleus, proton</p> <p>We will: compare and contrast subatomic particles.</p> <p>I will: distinguish between the three main subatomic particles.</p>

Lesson Frame:	We will: compare and contrast different models of the nuclear atoms. I will: distinguish between the contributions of J. J. Thomson, Robert Millikan, and Ernest Rutherford to atomic theory.
Performance Tasks: Quantum Story	Notes:
Topic 3: Isotopes and Atomic Mass	Length: 3 days
Standards: SCI.PS1.A	Academic Vocabulary: atomic mass, atomic mass unit, atomic number, isotope, mass number, nuclide
Lesson Frame:	We will: compare different elements and atomic numbers. I will: define atomic number.
Lesson Frame:	We will: calculate mass number. I will: define mass number.
Lesson Frame:	We will: calculate different aspects of isotopes. I will: describe how isotopes differ from one another and be able to designate them by various methods.
Lesson Frame:	We will: define average atomic mass. I will: calculate the average atomic mass of an element.
Performance Tasks: Isotopes	Notes:

<p>Unit Name: The Periodic Table</p> <p>Standards: SCI.PS1.A</p>	<p>Length: 2 Weeks</p> <p>Outcomes: The sub atomic structural model and interactions between electric charges at the atomic scale can be used to explain the structure and interactions of matter, including chemical reactions and nuclear processes. Repeating patterns of the periodic table reflect patterns of outer electrons. A stable molecule has less energy than the same set of atoms separated; one must provide at least this energy to take the molecule apart.</p>
<p>Essential Questions: Why is the periodic table organized the way it is? What trends are buried in the periodic table?</p>	<p>Learning Targets: Describe some of the early attempts to organize the chemical elements. Know the periodic law. Describe various components of the modern periodic table, including periods, groups, metals, nonmetals, and metalloids. Understand the relationship between the number of orbitals in various energy sublevels and the length of the periods in the periodic table. Identify each block of the periodic table and be able to determine which block each element belongs to based on its electron configuration. Describe the relationship between outer electron configuration and group number. Be able to determine the number of valence electrons for any element. Locate the following groups on the periodic table: alkali metals, alkaline earth metals, halogens, and noble gases. Locate the transition elements, lanthanides, and actinides on the periodic table. Learn the periodic trends for atomic radius. Know the relationship between group number and valence electrons. Describe how ions are formed. Learn the periodic trends for ionization energy. Explain how multiple ionization energies are related to noble gas electron configurations. Describe electron affinity. Learn the periodic trends for electronegativity.</p>
<p>Topic 1: History of the Periodic Table</p> <p>Standards: SCI.PS1.A</p> <p>Lesson Frame:</p> <p>Lesson Frame:</p> <p>Lesson Frame:</p>	<p>Length: 3 days</p> <p>Academic Vocabulary: group, metal, metalloid, nonmetal, period, periodic law, periodic table</p> <p>We will: attempt to organize elements.</p> <p>I will: describe some of the early attempts to organize the chemical elements.</p> <p>We will: create a narrative of the organization of the periodic table.</p> <p>I will: describe how Mendeleev organized his periodic table.</p> <p>We will: predict where an element falls on the periodic table based on properties.</p>

	<p>I will: state the periodic law.</p> <p>We will: compare and contrast various components of the periodic table.</p> <p>I will: describe various components of the modern periodic table, including periods, groups, metals, nonmetals, and metalloids.</p> <p>Notes:</p>
<p>Lesson Frame:</p>	
<p>Performance Tasks: Table of Beverages</p>	
<p>Topic 2: Electron Configuration and the Periodic Table</p>	<p>Length: 4 days</p>
<p>Standards: SCI.PS1.A</p>	<p>Academic Vocabulary: actinide, alkali metal, alkaline earth metal, halogen, inner transition element, lanthanide, noble gas, representative (main-group) elements, transition element</p>
<p>Lesson Frame:</p>	<p>We will: compare orbitals and periods on the periodic table.</p> <p>I will: describe the relationship between the number of orbitals in various energy sublevels and the length of the periods in the periodic table.</p>
<p>Lesson Frame:</p>	<p>We will: classify elements by block.</p> <p>I will: identify each block of the periodic table and be able to determine which block each element belongs to based on its electron configuration.</p>
<p>Lesson Frame:</p>	<p>We will: compare electron number and group number.</p> <p>I will: describe the relationship between outer electron configuration and group number.</p> <p>I will: determine the number of valence electrons for any element.</p>
<p>Lesson Frame:</p>	<p>We will: locate the following groups on the periodic table: alkali metals, alkaline earth metals, halogens, and noble gases.</p> <p>I will: define the following groups on the periodic table: alkali metals, alkaline earth metals, halogens, and noble gases.</p>
<p>Lesson Frame:</p>	<p>We will: locate the transition elements, lanthanides, and actinides on the periodic table.</p> <p>I will: define the transition elements, lanthanides, and actinides on the periodic table.</p> <p>Notes:</p>
<p>Performance Tasks: Table Label</p>	
<p>Topic 3: Periodic Trends</p>	<p>Length: 3 days</p>
<p>Standards: SCI.PS1.A</p>	<p>Academic Vocabulary: anion, atomic radius, cation, electron affinity, electronegativity, ion, ionization energy</p>
<p>Lesson Frame:</p>	<p>We will: show periodic trends.</p>

Lesson Frame:	I will: state the periodic trends for atomic radius. We will: compare group number and valence electrons.
Lesson Frame:	I will: describe the relationship between group number and valence electrons. We will: demonstrate how ions are formed.
Lesson Frame:	I will: describe how ions are formed. We will: show periodic trends.
Lesson Frame:	I will: describe the periodic trends for ionization energy. We will: calculate ionization energies.
Lesson Frame:	I will: explain how multiple ionization energies are related to noble gas electron configurations. We will: calculate electron affinity.
Lesson Frame:	I will: describe electron affinity. We will: calculate ion sizes.
Lesson Frame:	I will: predict the effect that ion formation has on the size of an atom.
Performance Tasks: Title label	Notes:

<p>Unit Name: Matter and Change</p> <p>Standards: SCI.PS1.A</p>	<p>Length: 2 Weeks</p> <p>Outcomes: The sub atomic structural model and interactions between electric charges at the atomic scale can be used to explain the structure and interactions of matter, including chemical reactions and nuclear processes. Repeating patterns of the periodic table reflect patterns of outer electrons. A stable molecule has less energy than the same set of atoms separated; one must provide at least this energy to take the molecule apart.</p>
<p>Essential Questions: What is the best way to separate mixtures?</p>	<p>Learning Targets: Describe a substance according to its physical properties. Distinguish between extensive and intensive properties. Describe the three states of matter. Identify physical changes to matter. Define a mixture and understand why mixtures are different than pure substances. Classify mixtures as homogeneous or heterogeneous. Describe several ways to separate mixtures. Distinguish between elements and compounds. Identify the chemical properties of a substance. Describe chemical changes and differentiate them from physical changes. Use various visual clues to identify whether a chemical reaction is taking place.</p>
<p>Topic 1: Properties of Matter</p>	<p>Length: 3 days</p>
<p>Standards: SCI.PS1.A</p>	<p>Academic Vocabulary: extensive property, gas, intensive property, liquid, mass, physical change, physical property, pure substance, solid, vapor, volume</p>
<p>Lesson Frame:</p>	<p>We will: analyze physical properties of matter.</p>
<p>Lesson Frame:</p>	<p>I will: describe a substance according to its physical properties.</p>
<p>Lesson Frame:</p>	<p>We will: compare and contrast extensive and intensive properties.</p>
<p>Lesson Frame:</p>	<p>I will: distinguish between extensive and intensive properties.</p>
<p>Performance Tasks: From within or without</p>	<p>We will: compare and contrast the three states of matter. I will: describe the three states of matter. We will: analyze physical changes. I will: identify physical changes to matter.</p> <p>Notes:</p>
<p>Topic 2: Classification of Matter</p>	<p>Length: 3 days</p>

<p>Standards: SCI.PS1.A</p> <p>Lesson Frame:</p> <p>Lesson Frame:</p> <p>Lesson Frame:</p> <p>Lesson Frame:</p> <p>Performance Tasks: What's the matter?</p>	<p>Academic Vocabulary: chemical change, chemical formula, chemical symbol, compound, distillation, element, filtration, heterogeneous mixture, homogeneous mixture, mixture, phase</p> <p>We will: compare and contrast mixtures and pure substances.</p> <p>I will: define a mixture and understand why mixtures are different than pure substances.</p> <p>We will: compare and contrast homogeneous or heterogeneous mixtures.</p> <p>I will: classify mixtures as homogeneous or heterogeneous.</p> <p>We will: apply separation methods.</p> <p>I will: describe several ways to separate mixtures.</p> <p>We will: compare and contrast elements and compounds.</p> <p>I will: distinguish between elements and compounds.</p> <p>Notes:</p>
<p>Topic 3: Changes in Matter</p> <p>Standards: SCI.PS1.A</p> <p>Lesson Frame:</p> <p>Lesson Frame:</p> <p>Lesson Frame:</p> <p>Performance Tasks: Separation of mixtures lab</p>	<p>Length: 3 days</p> <p>Academic Vocabulary: chemical property, chemical reaction, precipitate, product, reactant</p> <p>We will: analyze chemical properties of a substance.</p> <p>I will: identify the chemical properties of a substance.</p> <p>We will: compare and contrast physical and chemical changes.</p> <p>I will: describe chemical changes and differentiate them from physical changes.</p> <p>We will: identify physical and chemical changes.</p> <p>I will: use various visual clues to identify whether a chemical reaction is taking place.</p> <p>Notes:</p>

<p>Unit Name: Ionic and Metallic Bonding</p> <p>Standards: SCI.PS1.A</p>	<p>Length: 2 Weeks</p> <p>Outcomes: The sub atomic structural model and interactions between electric charges at the atomic scale can be used to explain the structure and interactions of matter, including chemical reactions and nuclear processes. Repeating patterns of the periodic table reflect patterns of outer electrons. A stable molecule has less energy than the same set of atoms separated; one must provide at least this energy to take the molecule apart.</p>
<p>Essential Questions: How can we determine ionic and metallic compounds?</p>	<p>Learning Targets: Be able to determine the number of valence electrons for any element and draw an electron dot diagram for any atom. Use the octet rule to predict the charges of the most common ions formed by the representative elements. Write electron configurations for ions. Identify other atoms or ions that are isoelectronic with a particular ion. Know that transition metal ions with either half-filled or completely filled d sublevels are particularly stable. Explain how an ionic bond is formed when electrons are transferred from one atom to another in terms of the resulting electrostatic attraction. Draw diagrams showing this process. Describe the structural arrangements of ions in a crystal, including coordination number and its relationship to a given compound's formula unit. Explain how various physical properties result from the ionic crystal lattice, such as strength, hardness, high melting points, brittleness, and electrical conductivity. Describe the electron-sea model of metallic bonding. Explain how metallic bonding is responsible for the conductivity and luster of metals. Explain why metals are malleable and ductile, while crystalline ionic compounds are not. Describe how metal atoms are arranged, including the three most common packing systems. Identify some common alloys and explain their importance.</p>
<p>Topic 1: Ions</p>	<p>Length: 3 days</p>
<p>Standards: SCI.PS1.A</p>	<p>Academic Vocabulary: electron dot diagram, isoelectronic, octet rule</p>
<p>Lesson Frame:</p>	<p>We will: compare valence electrons and electron dot diagrams. I will: determine the number of valence electrons for any element and draw an electron dot diagram for any atom.</p>
<p>Lesson Frame:</p>	<p>We will: apply the octet rule to common ions.</p>

	<p>I will: use the octet rule to predict the charges of the most common ions formed by the representative elements.</p> <p>We will: ally electron configurations to ions.</p> <p>I will: write electron configurations for ions.</p> <p>We will: compare isoelectronic atoms</p> <p>I will: identify other atoms or ions that are isoelectronic with a particular ion.</p> <p>We will: relate half filled d-sublevels to stability.</p> <p>I will: describe how transition metal ions with either half-filled or completely filled d-sublevels are particularly stable.</p> <p>Notes:</p>
Lesson Frame:	
Lesson Frame:	
Lesson Frame:	
Performance Tasks: Flame test	
Topic 2: Ionic Bonds and Ionic Compounds	Length: 3 days
Standards: SCI.PS1.A	Academic Vocabulary: coordination number, formula unit, ionic bond, ionic compound
Lesson Frame:	We will: draw diagrams showing ionic bonding.
Lesson Frame:	I will: explain how an ionic bond is formed when electrons are transferred from one atom to another in terms of the resulting electrostatic attraction.
Lesson Frame:	We will: draw coordination numbers.
Lesson Frame:	I will: describe the structural arrangements of ions in a crystal, including coordination number and its relationship to a given compound's formula unit.
Lesson Frame:	We will: relate different physical properties in an ionic lattice.
Lesson Frame:	I will: explain how various physical properties result from the ionic crystal lattice, such as strength, hardness, high melting points, brittleness, and electrical conductivity.
Performance Tasks: Ion classification	Notes:
Topic 3: Metallic Bonds	Length: 3 days
Standards: SCI.PS1.A	Academic Vocabulary: alloy, closest packing, metallic bond
Lesson Frame:	We will: create a narrative of the electron-sea.
Lesson Frame:	I will: describe the electron-sea model of metallic bonding.
Lesson Frame:	We will: compare metallic bonding and luster.
Lesson Frame:	I will: explain how metallic bonding is responsible for the conductivity and luster of metals.

Lesson Frame:	We will: compare metals and ionic compounds.
	I will: explain why metals are malleable and ductile, while crystalline ionic compounds are not.
Lesson Frame:	We will: compare packing structures.
	I will: describe how metal atoms are arranged, including the three most common packing systems.
Lesson Frame:	We will: compare and contrast alloys.
	I will: identify some common alloys and explain their importance.
Performance Tasks:	Notes:
Golden penny	

<p>Unit Name: Electrons in Atoms</p> <p>Standards: SCI.PS1.A</p>	<p>Length: 2 Weeks</p> <p>Outcomes: The sub atomic structural model and interactions between electric charges at the atomic scale can be used to explain the structure and interactions of matter, including chemical reactions and nuclear processes. Repeating patterns of the periodic table reflect patterns of outer electrons. A stable molecule has less energy than the same set of atoms separated; one must provide at least this energy to take the molecule apart.</p>
<p>Essential Questions: How does quantum level reflect the atom?</p>	<p>Learning Targets: Describe the relationships between speed, wavelength, and frequency of light. Understand the photoelectric effect and how it is related to the wave-particle duality of light. Describe how changes in electron energies lead to atomic emission spectra. Describe the Bohr model of the atom. Understand the de Broglie wave equation and how it illustrates the wave nature of the electron. Explain the difference between quantum mechanics and classical mechanics. Understand how the Heisenberg uncertainty principle and Schrödinger's wave equation led to the idea of atomic orbitals. Know the four quantum numbers and how they are related to the arrangement of electrons in an atom. Describe the interrelationships between principal energy level, sublevel, orbital and electron spin and how they relate to the number of electrons of an atom. Understand how to apply the Aufbau principle, the Pauli exclusion principle, and Hund's rule to determine ground state electron configurations. Be able to write correct orbital filling diagrams and electron configurations for all elements. Know how to use the noble gas notation shorthand method. Be able to determine the number of valence electrons and the number of unpaired electrons in any atom. Understand that some electron configurations are exceptions to the normal Aufbau process.</p>
<p>Topic 1: Light</p> <p>Standards: SCI.PS1.A</p>	<p>Length: 3 days</p> <p>Academic Vocabulary: atomic emission spectrum, electromagnetic radiation, electromagnetic spectrum, excited state, frequency, ground state, photoelectric effect, photon, quantum, wavelength</p>
<p>Lesson Frame:</p>	<p>We will: differentiate between speed, wavelength, and frequency.</p> <p>I will: describe the relationships between speed, wavelength, and frequency of light.</p>

Lesson Frame:	<p>We will: calculate photoelectric effect.</p> <p>I will: describe the photoelectric effect and how it is related to the wave-particle duality of light.</p>
Lesson Frame:	<p>We will: calculate electron energies.</p>
Lesson Frame:	<p>I will: describe how changes in electron energies lead to atomic emission spectra.</p> <p>We will: compare the Bohr model to other atomic models.</p> <p>I will: describe the Bohr model of the atom.</p> <p>Notes:</p>
Performance Tasks: Phet Photoelectric Effect	
Topic 2: The Quantum Mechanical Model	Length: 3 days
Standards: SCI.PS1.A	Academic Vocabulary: angular momentum quantum number, Heisenberg uncertainty principle, magnetic quantum number, orbital, principal quantum number, quantum mechanical model, quantum mechanics, quantum numbers
Lesson Frame:	<p>We will: compare the de Broglie model to the Bohr model.</p> <p>I will: state the de Broglie wave equation and how it illustrates the wave nature of the electron.</p>
Lesson Frame:	<p>We will: compare and contrast quantum mechanics and classical mechanics.</p> <p>I will: explain the difference between quantum mechanics and classical mechanics.</p>
Lesson Frame:	<p>We will: create a narrative of the interactions between Heisenberg and Schrödinger.</p> <p>I will: describe how the Heisenberg uncertainty principle and Schrödinger's wave equation led to the idea of atomic orbitals.</p>
Lesson Frame:	<p>We will: calculate the four quantum numbers.</p> <p>I will: state the four quantum numbers and how they are related to the arrangement of electrons in an atom.</p>
Lesson Frame:	<p>We will: compare and contrast energy levels and electron numbers.</p> <p>I will: describe the interrelationships between principal energy level, sublevel, orbital and electron spin and how they relate to the number of electrons of an atom.</p> <p>Notes:</p>
Performance Tasks: Quantum Story	
Topic 3: Electron Arrangement in Atoms	Length: 3 days

<p>Standards: SCI.PS1.A</p>	<p>Academic Vocabulary: spin quantum number, Aufbau principle, electron configuration, Hund's rule, noble gas notation, Pauli exclusion principle, valence electron</p>
<p>Lesson Frame:</p>	<p>We will: create an accurate orbital filling diagram. I will: write correct orbital filling diagrams and electron configurations for all elements.</p>
<p>Lesson Frame:</p>	<p>We will: correctly write noble gas shorthand. I will: use the noble gas notation shorthand method.</p>
<p>Lesson Frame:</p>	<p>We will: determine the number of valence electrons and the number of unpaired electrons in any atom. I will: describe electron configurations that are exceptions to the normal Aufbau process.</p>
<p>Performance Tasks: Orbital diagrams</p>	<p>Notes:</p>
<p style="background-color: #cccccc;"></p>	

<p>Unit Name: Covalent Bonding</p> <p>Standards: SCI.PS1.A</p>	<p>Length: 4 Weeks</p> <p>Outcomes: The sub atomic structural model and interactions between electric charges at the atomic scale can be used to explain the structure and interactions of matter, including chemical reactions and nuclear processes. Repeating patterns of the periodic table reflect patterns of outer electrons. A stable molecule has less energy than the same set of atoms separated; one must provide at least this energy to take the molecule apart.</p>
<p>Essential Questions: How can electrons define the shape and properties of a molecule?</p>	<p>Learning Targets: Describe how a covalent bond forms, including the energy change involved in the process. Use the octet rule to draw Lewis electron dot structures for simple molecules. Know how and when to incorporate double and triple bonds into the structures. Understand how a coordinate covalent bond differs from other covalent bonds. Be able to draw Lewis structures for polyatomic ions. Understand the concept of resonance. Know some common exceptions to the octet rule. Relate bond energy to the stability and reactivity of molecules. Explain the basis of VSEPR theory. Predict the shapes of molecules and polyatomic ions using VSEPR theory. Account for variations in bond angles based on the relative repulsive forces exerted by lone pairs and bonding pairs of electrons. Describe the relationship between molecular geometry and electron domain geometry. Describe how the electronegativity difference between two atoms in a covalent bond results in the formation of a nonpolar covalent, polar covalent, or ionic bond. Describe how molecular geometry plays a role in determining whether a molecule is polar or nonpolar. Distinguish between the following three types of intermolecular forces: dipole-dipole forces, London dispersion forces, and hydrogen bonds. Describe how chemical bonding and intermolecular forces influence the properties of various compounds. Describe valence bond theory as it pertains to the formation of a covalent bond between atoms. Describe the process of electron promotion and hybridization during the formation of hybrid orbitals. Explain the relationship between electron domain geometry and the various types of hybrid orbitals. Distinguish between sigma and pi bonding.</p>
<p>Topic 1: Lewis Electron Dot Structures</p>	
<p>Length: 3 days</p>	

Standards: SCI.PS1.A	Academic Vocabulary: bond energy, coordinate covalent bond, covalent bond, diatomic molecule, double covalent bond, Lewis electron dot structures, lone pair, resonance, single covalent bond, structural formula, triple covalent bond
Lesson Frame:	We will: analyze covalent bonds. I will: describe how a covalent bond forms, including the energy change involved in the process.
Lesson Frame:	We will: analyze when to use double and triple bonds. I will: use the octet rule to draw Lewis electron dot structures for simple molecules. I will: describe how and when to incorporate double and triple bonds into the structures.
Lesson Frame:	We will: compare covalent bonds with coordinate bonds.
Lesson Frame:	I will: describe how a coordinate covalent bond differs from other covalent bonds.
Lesson Frame:	We will: draw Lewis structures.
Lesson Frame:	I will: draw Lewis structures for polyatomic ions.
Lesson Frame:	We will: write resonance structures.
Lesson Frame:	I will: explain the concept of resonance.
Lesson Frame:	We will: draw common exceptions to the octet rule.
Lesson Frame:	I will: Name some common exceptions to the octet rule.
Lesson Frame:	We will: compare bond energy to stability.
Lesson Frame:	I will: relate bond energy to the stability and reactivity of molecules.
Performance Tasks: Dot your chemicals	Notes:
Topic 2: Molecular Geometry	Length: 3 days
Standards: SCI.PS1.A	Academic Vocabulary: electron domain geometry, molecular geometry, valence shell, valence shell electron pair repulsion (VSEPR)
Lesson Frame:	We will: compare VSEPR to MOT. I will: explain the basis of VSEPR theory.
Lesson Frame:	We will: compare molecules and polyatomic ions with VSEPR theory.
Lesson Frame:	I will: predict the shapes of molecules and polyatomic ions using VSEPR theory.
Lesson Frame:	We will: compare bond angles between lone pairs versus bonding pairs. I will: account for variations in bond angles based on the relative repulsive forces exerted by lone pairs and bonding pairs of electrons.

Lesson Frame:	<p>We will: compare molecular geometry and electron domain.</p> <p>I will: describe the relationship between molecular geometry and electron domain geometry.</p> <p>Notes:</p>
Performance Tasks: Molecular Geometry Phet	Notes:
Topic 3: Polarity and Intermolecular Forces	Length: 3 days
Standards: SCI.PS1.A	Academic Vocabulary: diatomic element, dipole, dipole-dipole forces, hydrogen bond, intermolecular forces, London dispersion forces, nonpolar covalent bond, polar covalent bond, polar molecule, van der Waals forces
Lesson Frame:	<p>We will: compare nonpolar, polar, and ionic bonds.</p> <p>I will: describe how the electronegativity difference between two atoms in a covalent bond results in the formation of a nonpolar covalent, polar covalent, or ionic bond.</p>
Lesson Frame:	<p>We will: relate molecular polarity and molecular geometry.</p> <p>I will: describe how molecular geometry plays a role in determining whether a molecule is polar or nonpolar.</p>
Lesson Frame:	<p>We will: compare intermolecular forces.</p> <p>I will: distinguish between the following three types of intermolecular forces: dipole-dipole forces, London dispersion forces, and hydrogen bonds.</p>
Lesson Frame:	<p>We will: compare chemical bonds and intermolecular forces.</p> <p>I will: describe how chemical bonding and intermolecular forces influence the properties of various compounds.</p>
Performance Tasks: Molecular Polarity Phet	Notes:
Topic 4: Hybridization of Atomic Orbitals	Length: 3 days
Standards: SCI.PS1.A	Academic Vocabulary: hybridization, hybrid orbitals, pi bond (π), sigma bond (σ), valence bond theory
Lesson Frame:	<p>We will: compare valence bond theory and covalent bonding.</p> <p>I will: describe valence bond theory as it pertains to the formation of a covalent bond between atoms.</p>
Lesson Frame:	<p>We will: draw hybridization.</p> <p>I will: describe the process of electron promotion and hybridization during the formation of hybrid orbitals.</p>
Lesson Frame:	<p>We will: compare electron domain geometry and hybridized orbitals.</p>

	I will: explain the relationship between electron domain geometry and the various types of hybrid orbitals.
Lesson Frame:	We will: draw sigma and pi bonding.
	I will: distinguish between sigma and pi bonding.
Performance Tasks: Hybridizing s,p, and d	Notes:

<p>Unit Name: Measurements</p> <p>Standards: SCI.PS1.A</p>	<p>Length: 2 Weeks</p> <p>Outcomes: The sub atomic structural model and interactions between electric charges at the atomic scale can be used to explain the structure and interactions of matter, including chemical reactions and nuclear processes. Repeating patterns of the periodic table reflect patterns of outer electrons. A stable molecule has less energy than the same set of atoms separated; one must provide at least this energy to take the molecule apart.</p>
<p>Essential Questions: Why hasn't the US switched to the metric system?</p>	<p>Learning Targets: Identify the seven base units of the International System of Units. Know the commonly used metric prefixes. Convert between the Celsius and Kelvin temperature scales. Understand volume and energy as combinations of SI Units. Distinguish between mass and weight. Identify and use conversion factors. Use the method of dimensional analysis to convert between units. Understand density as a physical property of matter. Perform calculations with derived units, including density. Distinguish between accuracy and precision in measurements. Calculate the percent error of a measured quantity. Report measured values to the correct number of significant figures based on the measuring tool. Perform calculations with measured quantities, rounding the answers to the correct number of significant figures.</p>
<p>Topic 1: International System of Units</p> <p>Standards: SCI.PS1.A</p> <p>Lesson Frame:</p> <p>Lesson Frame:</p> <p>Lesson Frame:</p> <p>Lesson Frame:</p> <p>Lesson Frame:</p>	<p>Length: 3 days</p> <p>Academic Vocabulary: energy, International System of Units (SI), joule, kinetic energy, liter, measurement, scientific notation, temperature, weight</p> <p>We will: compare and contrast SI units and imperial units.</p> <p>I will: identify the seven base units of the International System of Units.</p> <p>We will: analyze metric prefixes</p> <p>I will: list the commonly used metric prefixes.</p> <p>We will: perform temperature calculations.</p> <p>I will: convert between the Celsius and Kelvin temperature scales.</p> <p>We will: convert between imperial and SI units of energy and volume.</p> <p>I will: describe volume and energy as combinations of SI Units.</p> <p>We will: compare and contrast mass and weight.</p> <p>I will: distinguish between mass and weight.</p>

<p>Performance Tasks: Big K</p>	<p>Notes:</p>
<p>Topic 2: Unit Conversions</p>	<p>Length: 3 days</p>
<p>Standards: SCI.PS1.A</p>	<p>Academic Vocabulary: conversion factor, density, derived unit, dimensional analysis</p>
<p>Lesson Frame:</p>	<p>We will: calculate with conversion factors. I will: identify and use conversion factors.</p>
<p>Lesson Frame:</p>	<p>We will: use dimensional analysis.</p>
<p>Lesson Frame:</p>	<p>I will: use the method of dimensional analysis to convert between units.</p>
<p>Lesson Frame:</p>	<p>We will: apply density as a property of matter.</p>
<p>Lesson Frame:</p>	<p>I will: Explain density as a physical property of matter. We will: calculate with density.</p>
<p>Lesson Frame:</p>	<p>I will: perform calculations with derived units, including density.</p>
<p>Performance Tasks: POGIL Conversion</p>	<p>Notes:</p>
<p>Topic 3: Uncertainty in Measurements</p>	<p>Length: 3 days</p>
<p>Standards: SCI.PS1.A</p>	<p>Academic Vocabulary: accepted value, accuracy, error, experimental value, percent error, precision, significant figures</p>
<p>Lesson Frame:</p>	<p>We will: compare and contrast accuracy and precision.</p>
<p>Lesson Frame:</p>	<p>I will: distinguish between accuracy and precision in measurements.</p>
<p>Lesson Frame:</p>	<p>We will: analyze calculations of percent error.</p>
<p>Lesson Frame:</p>	<p>I will: calculate the percent error of a measured quantity.</p>
<p>Lesson Frame:</p>	<p>We will: perform accurate and precise measurements.</p>
<p>Lesson Frame:</p>	<p>I will: report measured values to the correct number of significant figures based on the measuring tool.</p>
<p>Lesson Frame:</p>	<p>We will: analyze calculations of measured quantities.</p>
<p>Lesson Frame:</p>	<p>I will: perform calculations with measured quantities, rounding the answers to the correct number of significant figures.</p>
<p>Performance Tasks: Precision vs. Accuracy</p>	<p>Notes:</p>

<p>Unit Name: States of Matter</p> <p>Standards: SCI.PS1.A</p>	<p>Length: 2 Weeks</p> <p>Outcomes: The sub atomic structural model and interactions between electric charges at the atomic scale can be used to explain the structure and interactions of matter, including chemical reactions and nuclear processes. Repeating patterns of the periodic table reflect patterns of outer electrons. A stable molecule has less energy than the same set of atoms separated; one must provide at least this energy to take the molecule</p>
<p>Essential Questions: How does KMT affect our understanding of matter?</p>	<p>Learning Targets: State the main points of the kinetic molecular theory, and describe how it relates to the properties of an ideal gas. Define pressure and describe how gases exert pressure. Understand the barometer and how it measures atmospheric pressure. Convert between units of gas pressure. Relate temperature to average kinetic energy. Describe a liquid according to the kinetic-molecular theory. Describe how a liquid exhibits surface tension. Describe the evaporation of a liquid and its relationship to the kinetic energy of the evaporating particles. Define vapor pressure and understand its relationship to intermolecular forces and to the temperature of the liquid. Describe the process of boiling and differentiate between boiling point and normal boiling point. Use a vapor pressure curve to determine boiling points at different atmospheric pressures. Describe a solid according to the kinetic-molecular theory. Understand that a solid also has a vapor pressure, and describe the relationship between the vapor pressure of a solid and sublimation. Describe the features of the seven basic crystal systems. Define a unit cell. List the four classes of crystalline solids and describe the properties of each. Describe an amorphous solid Interpret heating and cooling curves. Know the terms for the six different changes of state. Describe the general features of a phase diagram, including the triple point and the critical point.</p>
<p>Topic 1: Kinetic Molecular Theory and Gases</p> <p>Standards: SCI.PS1.A</p> <p>Lesson Frame:</p>	<p>Length: 3 days</p> <p>Academic Vocabulary: absolute zero, atmospheric pressure, barometer, gas pressure, ideal gas, kinetic-molecular theory, pascal, pressure</p> <p>We will: compare KMT with VSEPR.</p>

	<p>I will: state the main points of the kinetic molecular theory, and describe how it relates to the properties of an ideal gas.</p> <p>We will: draw gases with pressure.</p> <p>I will: define pressure and describe how gases exert pressure.</p> <p>We will: draw a barometer with arrow showing how they work.</p> <p>I will: describe a barometer and how it measures atmospheric pressure.</p> <p>I will: convert between units of gas pressure.</p> <p>We will: compare temperature and kinetic energy.</p> <p>I will: relate temperature to average kinetic energy.</p> <p>Notes:</p>
Lesson Frame:	
Lesson Frame:	
Lesson Frame:	
Performance Tasks: Changing to KMT	
Topic 2: Liquids	Length: 3 days
Standards: SCI.PS1.A	Academic Vocabulary: boiling point, condensation, evaporation, fluid, normal boiling point, surface tension, vapor pressure, vaporization
Lesson Frame:	We will: draw a liquid according to KMT.
Lesson Frame:	I will: describe a liquid according to the kinetic-molecular theory.
Lesson Frame:	We will: draw a liquid with surface tension.
Lesson Frame:	I will: describe how a liquid exhibits surface tension.
Lesson Frame:	We will: draw a liquid with evaporating particles.
Lesson Frame:	I will: describe the evaporation of a liquid and its relationship to the kinetic energy of the evaporating particles.
Lesson Frame:	We will: compare vapor pressure with intermolecular forces.
Lesson Frame:	I will: define vapor pressure and understand its relationship to intermolecular forces and to the temperature of the liquid.
Lesson Frame:	We will: draw a liquid boiling versus a liquid evaporating.
Lesson Frame:	I will: describe the process of boiling and differentiate between boiling point and normal boiling point.
Lesson Frame:	We will: create a diagram showing atmospheric pressure and boiling point.
Performance Tasks: Transitioning with liquids	I will: use a vapor pressure curve to determine boiling points at different atmospheric pressures.
	Notes:
Topic 3: Solids	Length: 3 days

Standards: SCI.PS1.A	Academic Vocabulary: amorphous solid, crystal, deposition, melting point, sublimation, unit cell
Lesson Frame:	We will: draw a solid according to KMT. I will: describe a solid according to the kinetic-molecular theory.
Lesson Frame:	We will: compare solid vapor pressure with a liquid vapor pressure. I will: Show how a solid also has a vapor pressure, and describe the relationship between the vapor pressure of a solid and sublimation.
Lesson Frame:	We will: compare the seven basic crystal structures. I will: describe the features of the seven basic crystal systems.
Lesson Frame:	We will: draw a unit cell. I will: define a unit cell.
Lesson Frame:	We will: compare the four classes of solids.
Lesson Frame:	I will: list the four classes of crystalline solids and describe the properties of each. We will: compare an amorphous solid and a crystalline solid. I will: describe an amorphous solid.
Performance Tasks: Solidifying	Notes:
Topic 4: Changes of State	Length: 3 days
Standards: SCI.PS1.A	Academic Vocabulary: critical pressure, critical temperature, phase diagram, triple point
Lesson Frame:	We will: compare heating and cooling curves. I will: interpret heating and cooling curves.
Lesson Frame:	We will: draw the six different changes of state. I will: list the terms for the six different changes of state.
Lesson Frame:	We will: recreate a phase diagram. I will: describe the general features of a phase diagram, including the triple point and the critical point.
Performance Tasks: Phet phases	Notes:

<p>Unit Name: The Mole</p> <p>Standards: SCI.PS1.B</p>	<p>Length: 2 Weeks</p> <p>Outcomes: Chemical processes are understood in terms of collisions of molecules, rearrangement of atoms, and changes in energy as determined by properties of elements involved.</p>
<p>Essential Questions: Why convert between moles and mass?</p>	<p>Learning Targets: Identify three methods for measuring the amount of matter in a sample. Define the mole and its relationship to Avogadro's number. Use Avogadro's number to convert between moles and the number of representative particles of a substance. Relate the atomic mass of an element to its molar mass. Calculate the molar mass of a given compound. Use molar mass to make conversions between mass and moles of a substance. Explain Avogadro's hypothesis and how it relates to the volume of a gas at standard temperature and pressure. Convert between moles and volume of a gas at STP. Calculate the density of gases at STP. Use the mole road map to make two-step conversions between mass, number of particles, and gas volume. Calculate the percent composition of a compound either from mass data or from the chemical formula. Use percent composition to calculate the mass of an element in a certain sample of a compound. Calculate the percentage of a hydrate mass that is due to water. Determine the empirical formula of a compound from percent composition data. Determine the molecular formula of a compound from the empirical formula and the molar mass.</p>
<p>Topic 1: The Mole Concept</p>	<p>Length: 3 days</p>
<p>Standards: SCI.PS1.B</p>	<p>Academic Vocabulary: Avogadro's number, formula mass, molar mass, mole, representative particle</p>
<p>Lesson Frame:</p>	<p>We will: utilize three methods to measure matter. I will: identify three methods for measuring the amount of matter in a sample.</p>
<p>Lesson Frame:</p>	<p>We will: use Avogadro's number to convert between moles and the number of representative particles of a substance. I will: define the mole and its relationship to Avogadro's number.</p>
<p>Lesson Frame:</p>	<p>We will: calculate the molar mass of a given compound. I will: relate the atomic mass of an element to its molar mass.</p>
<p>Performance Tasks: Mole conversions</p>	<p>Notes:</p>

Topic 2: Mass, Volume, and the Mole	Length: 3 days
Standards: SCI.PS1.B	Academic Vocabulary: Avogadro's hypothesis, molar volume, standard temperature and pressure (STP)
Lesson Frame:	We will: calculate mole conversions. I will: use molar mass to make conversions between mass and moles of a substance.
Lesson Frame:	We will: use Avogadro's hypothesis at standard temperature and pressure. I will: explain Avogadro's hypothesis and how it relates to the volume of a gas at standard temperature and pressure.
Lesson Frame:	We will: calculate the density of gases at STP.
Lesson Frame:	I will: convert between moles and volume of a gas at STP. We will: calculate two-step mole conversions.
Performance Tasks: 2 step Mole Conversions.	I will: use the mole road map to make two-step conversions between mass, number of particles, and gas volume. Notes:
Topic 3: Chemical Formulas	Length: 3 days
Standards: SCI.PS1.B	Academic Vocabulary: hydrate, percent composition
Lesson Frame:	We will: calculate the percentage of a hydrate's mass that is due to water. I will: calculate the percent composition of a compound either from mass data or from the chemical formula. Use percent composition to calculate the mass of an element in a certain sample of a compound.
Lesson Frame:	We will: calculate empirical formula from data. I will: determine the empirical formula of a compound from percent composition data. Notes:
Performance Tasks: Chemical composition lab	

Unit Name: Chemical Reactions	Length: 2 Weeks
Standards: SCI.PS1.B	Outcomes: Chemical processes are understood in terms of collisions of molecules, rearrangement of atoms, and changes in energy as determined by properties of elements involved.
Essential Questions: How does conservation of mass manifest itself?	Learning Targets: Describe chemical reactions using word equations. Know the correct symbols to use in order to write skeleton equations for chemical reactions. Use coefficients to balance chemical equations so that the law of conservation of mass is followed. Define and give general equations for combination, decomposition, single-replacement, and double-replacement reactions. Classify a reaction as combination, decomposition, single-replacement, double-replacement, or combustion. Use the activity series to correctly predict whether a given reaction will occur. Predict the products of simple reactions, given only the reactants.
Topic 1: Chemical Equations	Length: 3 days
Standards: SCI.PS1.B	Academic Vocabulary: balanced equation, chemical equation, coefficient, skeleton equation, activity series, combination reaction, combustion reaction, decomposition reaction, double-replacement reaction, single-replacement reaction
Lesson Frame:	We will: analyze chemical equations.
Lesson Frame:	I will: describe chemical reactions using word equations.
Lesson Frame:	We will: write correct symbols for chemical reactions.
Performance Tasks: Balancing equations	I will: list the correct symbols to use in order to write skeleton equations for chemical reactions.
Topic 2: Types of Chemical Reactions	We will: write balanced chemical equations.
Standards: SCI.PS1.B	I will: use coefficients to balance chemical equations so that the law of conservation of mass is followed.
Lesson Frame:	Notes:
Lesson Frame:	Length: 3 days Academic Vocabulary: activity series, combination reaction, combustion reaction, decomposition reaction, double-replacement reaction, single-replacement reaction We will: compare and contrast different types of chemical equations.

	<p>I will: define and give general equations for combination, decomposition, single-replacement, and double-replacement reactions.</p> <p>We will: write different types of chemical reactions.</p> <p>I will: classify a reaction as combination, decomposition, single-replacement, double-replacement, or combustion.</p> <p>We will: predict the products of simple reactions, given only the reactants.</p> <p>I will: use the activity series to correctly predict whether a given reaction will occur.</p> <p>Notes:</p>
Lesson Frame:	
Lesson Frame:	
Performance Tasks: Identification equations	

<p>Unit Name: Chemical Nomenclature</p> <p>Standards: SCI.PS1.A</p>	<p>Length: 2 Weeks</p> <p>Outcomes: The sub atomic structural model and interactions between electric charges at the atomic scale can be used to explain the structure and interactions of matter, including chemical reactions and nuclear processes. Repeating patterns of the periodic table reflect patterns of outer electrons. A stable molecule has less energy than the same set of atoms separated; one must provide at least this energy to take the molecule apart.</p>
<p>Essential Questions: What do we call chemicals?</p>	<p>Learning Targets: Distinguish between inorganic and organic chemistry. Interpret a molecular formula. Explain why an ionic compound is represented by an empirical formula. Be able to determine the charges of monatomic ions formed by the representative elements from the position of each element on the periodic table. Use the Stock system to identify the charge of transition metal ions. Name an ionic compound given its formula. Write the correct formula for an ionic compound given its name. Describe the difference between an ionic compound and a molecular compound. Name a molecular compound given its formula. Write the correct formula for a molecular compound given its name. Define acids and bases in terms of the ions that are produced when each type of compound is dissolved in water. Be able to name acids when given their chemical formulas. Write the correct formula for an acid when given its name. Name and write formulas for bases.</p>
<p>Topic 1: Ionic Compounds</p> <p>Standards: SCI.PS1.A</p> <p>Lesson Frame:</p> <p>Lesson Frame:</p> <p>Lesson Frame:</p> <p>Lesson Frame:</p>	<p>Length: 3 days</p> <p>Academic Vocabulary: binary ionic compound, empirical formula, inorganic chemistry, molecular formula, monatomic ion, organic chemistry, polyatomic ion, ternary ionic compound</p> <p>We will: compare inorganic and organic chemistry. I will: distinguish between inorganic and organic chemistry. We will: write molecular formulas. I will: interpret a molecular formula. We will: create a narrative on ionic compounds and empirical formula. I will: explain why an ionic compound is represented by an empirical formula. We will: calculate charges of ions. I will: determine the charges of monatomic ions formed by the representative elements from the position of each element on the periodic table.</p>

Lesson Frame:	We will: use the Stock system to identify the charge of transition metal ions. I will: define the Stock system
Lesson Frame:	We will: write the correct formula for an ionic compound given its name. I will: name an ionic compound given its formula.
Performance Tasks: Ionic compounding	Notes:
Topic 2: Molecular Compounds	
Standards: SCI.PS1.A	Length: 3 days Academic Vocabulary: binary ionic compound, empirical formula, inorganic chemistry, molecular formula, monatomic ion, organic chemistry, polyatomic ion, ternary ionic compound
Lesson Frame:	We will: Compare ionic and molecular compounds. I will: Describe the difference between an ionic compound and a molecular compound.
Lesson Frame:	We will: Name a molecular compound given its formula. I will: Write the correct formula for a molecular compound given its name.
Performance Tasks: Covalent compounding	Notes:
Topic 3: Acids and Bases	
Standards: SCI.PS1.A	Length: 3 days Academic Vocabulary: acid, base, binary acid, oxoacid
Lesson Frame:	We will: compare acids and bases. I will: define acids and bases in terms of the ions that are produced when each type of compound is dissolved in water.
Lesson Frame:	We will: describe naming conventions for acids and bases. I will: name acids when given their chemical formulas.
Lesson Frame:	We will: describe naming conventions for acids and bases. I will: write the correct formula for an acid when given its name.
Lesson Frame:	We will: describe naming conventions for acids and bases. I will: name and write formulas for bases.
Performance Tasks: Acids and bases compounding	Notes:

<p>Unit Name: Stoichiometry</p> <p>Standards: SCI.PS1.B</p>	<p>Length: 4 Weeks</p> <p>Outcomes: Chemical processes are understood in terms of collisions of molecules, rearrangement of atoms, and changes in energy as determined by properties of elements involved.</p>
<p>Essential Questions: Which reactant is limiting and how much is left over?</p>	<p>Learning Targets: Relate balanced chemical equations to everyday analogies, such as a recipe. Define stoichiometry. Use mole ratios to convert between amounts of substances in a chemical reaction. Calculate the amount in moles of a reactant or product from the mass of another reactant or product. Calculate the mass of a reactant or product from the moles of another reactant or product. Calculate the mass of a reactant or product from the mass of another reactant or product. Create volume ratios from a balanced chemical equation. Use volume ratios and other stoichiometric principles to solve problems involving mass, molar amounts, or volumes of gases. Analyze a chemical reaction in order to determine which reactant is the limiting reactant and which is the excess reactant. Calculate the amount of excess reactant remaining after a reaction is complete. Calculate the theoretical yield of a reaction when the available amounts of each reactant are known. Calculate the percent yield of a reaction based on the theoretical and actual yields.</p>
<p>Topic 1: Mole Ratios</p>	<p>Length: 3 days</p>
<p>Standards: SCI.PS1.B</p>	<p>Academic Vocabulary: mole ratio, stoichiometry</p>
<p>Lesson Frame:</p>	<p>We will: analyze chemical equations with cars. I will: relate balanced chemical equations to everyday analogies, such as a recipe.</p>
<p>Lesson Frame:</p>	<p>We will: use mole ratios to convert between amounts of substances in a chemical reaction. I will: define stoichiometry.</p>
<p>Performance Tasks: Mole Ratios POGIL</p>	<p>Notes:</p>
<p>Topic 2: Stoichiometric Calculations</p>	<p>Length: 3 days</p>

Standards: SCI.PS1.B	Academic Vocabulary: stoichiometry
Lesson Frame:	<p>We will: perform stoichiometric calculations.</p> <p>I will: calculate the amount in moles of a reactant or product from the mass of another reactant or product.</p> <p>I will: calculate the mass of a reactant or product from the moles of another reactant or product.</p>
Lesson Frame:	<p>We will: perform stoichiometric calculations.</p> <p>I will: calculate the mass of a reactant or product from the mass of another reactant or product.</p>
Lesson Frame:	<p>We will: create volume ratios from a balanced chemical equation.</p> <p>I will: use volume ratios and other stoichiometric principles to solve problems involving mass, molar amounts, or volumes of gases.</p>
Performance Tasks: Stoichiometric calculations	Notes:
Topic 3: Limiting Reactant and Percent Yield	Length: 3 days
Standards: SCI.PS1.B	Academic Vocabulary: actual yield, excess reactant (reagent), limiting reactant (reagent), percent yield, theoretical yield
Lesson Frame:	<p>We will: analyze a chemical reaction in order to determine which reactant is the limiting reactant and which is the excess reactant.</p> <p>I will: define stoichiometry.</p>
Lesson Frame:	<p>We will: define excess reactant and limiting reactant.</p> <p>I will: calculate the amount of excess reactant remaining after a reaction is complete.</p>
Lesson Frame:	<p>We will: calculate the theoretical yield of a reaction when the available amounts of each reactant are known.</p> <p>I will: calculate the percent yield of a reaction based on the theoretical and actual yields.</p>
Performance Tasks: Limiting reactant	Notes:

<p>Unit Name: The Behavior of Gases</p>	<p>Length: 2 Weeks</p>
<p>Standards: SCI.PS1.A</p>	<p>Outcomes: The sub atomic structural model and interactions between electric charges at the atomic scale can be used to explain the structure and interactions of matter, including chemical reactions and nuclear processes. Repeating patterns of the periodic table reflect patterns of outer electrons. A stable molecule has less energy than the same set of atoms separated; one must provide at least this energy to take the molecule apart.</p>
<p>Essential Questions: How do gases stay together and fall apart?</p>	<p>Learning Targets: Describe how a gas can be compressed. Identify three factors that affect gas pressure. Describe the effects according to the kinetic-molecular theory. Use Boyle's law to calculate pressure-volume changes at constant temperature. Use Charles's law to calculate volume-temperature changes at constant pressure. Use Gay-Lussac's law to calculate pressure-temperature changes at constant volume. Use the combined gas law to solve problems in which pressure, volume, and temperature all change. Use Avogadro's law to calculate volume-number of moles changes at constant temperature and pressure. Know the ideal gas law, and know which of the different values for the ideal gas constant to use in a given situation. Use the ideal gas law to calculate the pressure, volume, temperature, or number of moles of an ideal gas when the other three quantities are known. Use the ideal gas law to calculate the molar mass or the density of a gas. Use the ideal gas law in stoichiometry problems involving gases that are not at STP. Explain the conditions under which real gases are most ideal or least ideal. Use Dalton's law and mole fraction to calculate the partial pressure of a gas in a mixture. Calculate the pressure of a gas that has been collected by water displacement in order to determine the volume of the dry gas. Define diffusion and effusion. Use Graham's law to calculate the velocity ratios of two gases based on their molar masses.</p>
<p>Topic 1: Gas Properties</p>	<p>Length: 3 days</p>

Standards: SCI.PS1.A	Academic Vocabulary: compressibility
Lesson Frame:	We will: draw a gas being compressed.
	I will: describe how a gas can be compressed.
Lesson Frame:	We will: draw a gas with factors of gas pressure.
	I will: identify three factors that affect gas pressure.
	I will: describe the effects according to the kinetic-molecular theory.
Performance Tasks: Gas diagrams	Notes:
Topic 2: Gas Laws	Length: 3 days
Standards: SCI.PS1.A	Academic Vocabulary: Avogadro's law, Boyle's law, Charles's law, Combined gas law, Gay-Lussac's law
Lesson Frame:	We will: perform calculations with gases.
	I will: use Boyle's law to calculate pressure-volume changes at constant temperature.
Lesson Frame:	We will: perform calculations with gases.
	I will: use Charles's law to calculate volume-temperature changes at constant pressure.
Lesson Frame:	We will: perform calculations with gases.
	I will: use Gay-Lussac's law to calculate pressure-temperature changes at constant volume.
Lesson Frame:	We will: perform calculations with gases.
	I will: use the combined gas law to solve problems in which pressure, volume, and temperature all change.
Lesson Frame:	We will: perform calculations with gases.
	I will: use Avogadro's law to calculate volume-number of moles changes at constant temperature and pressure.
Performance Tasks: Gas narratives	Notes:
Topic 3: Ideal Gases	Length: 3 days

Standards: SCI.PS1.A	Academic Vocabulary: ideal gas constant, ideal gas law, real gas
Lesson Frame:	We will: use the ideal gas law to calculate the pressure, volume, temperature, or number of moles of an ideal gas when the other three quantities are known. I will: state the ideal gas law, and know which of the different values for the ideal gas constant to use in a given situation.
Lesson Frame:	We will: perform calculations with gases
Lesson Frame:	I will: use the ideal gas law to calculate the molar mass or the density of a gas.
Lesson Frame:	We will: perform calculations with gases
Lesson Frame:	I will: use the ideal gas law in stoichiometry problems involving gases that are not at STP.
Lesson Frame:	We will: compare real and ideal gases.
Performance Tasks: Gas calculations	I will: explain the conditions under which real gases are most ideal or least ideal. Notes:
Topic 4: Gas Mixtures and Molecular Speeds	Length: 3 days
Standards: SCI.PS1.A	Academic Vocabulary: Dalton's law of partial pressures, diffusion, effusion, mole fraction, partial pressure
Lesson Frame:	We will: calculate partial pressures.
Lesson Frame:	I will: use Dalton's law and mole fraction to calculate the partial pressure of a gas in a mixture.
Lesson Frame:	We will: perform calculations with gases.
Lesson Frame:	I will: calculate the pressure of a gas that has been collected by water displacement in order to determine the volume of the dry gas.
Lesson Frame:	We will: compare diffusion and effusion.
Lesson Frame:	I will: define diffusion and effusion.
Lesson Frame:	We will: compare gases using Graham's law.
Performance Tasks: Phet Gases	I will: use Graham's law to calculate the velocity ratios of two gases based on their molar masses. Notes:

	September	October	November	December	January	February	March	April	May	June
Unit 1		Unit 3	Unit 5	Unit 6	Unit 7	Unit 8	Unit 10	Unit 12	Unit 13	Unit 14
Unit 2		Unit 4	Unit 6			Unit 9	Unit 11		Unit 14	

Course Name:	Physical Science	
Credits:	1	
Prerequisites:	N/A	
Description:	Designed to expose students to various scientific descriptions. The goal is science literacy. The units covered include, but are not limited to: Basic Chemistry (the Nature of Matter and the Changes in Matter) and Basic Physics (Motion, Forces and Energy). Students will learn problem-solving skills and will be shown how science relates to their lives. Lab work is required and large scale cumulative projects replace Final Exams.	
Academic Standards:	Next Generation Science Standards (NGSS)	
Units:	Time	
Nature of Science	2 weeks	<p>Unit Standards:</p> <p>HS-ETS1-1. Analyze a major global challenge to specify qualitative and quantitative criteria and constraints for solutions that account for societal needs and want.</p> <p>HS-ETS1-2. Design a solution to a complex real-world problem by breaking it down into smaller, more manageable problems that can be solved through engineering.</p> <p>HS-PS1-7. Use mathematical representations to support the claim that atoms, and therefore mass, are conserved during a chemical reaction.</p>
Motion	3 weeks	<p>Unit Outcomes:</p> <p>Analyze a major global challenge to specify qualitative and quantitative criteria and constraints for solutions that account for societal needs and want. Design a solution to a complex real-world problem by breaking it down into smaller, more manageable problems that can be solved through engineering. Use mathematical representations to support the claim that atoms, and therefore mass, are conserved during a chemical reaction.</p> <p>Apply scientific and engineering ideas to design, evaluate, and refine a device that minimizes the force on a macroscopic object during a collision.</p> <p>Analyze data to support the claim that Newton's second law of motion describes the mathematical relationship among the net force on a macroscopic object, its mass, and its acceleration. Use mathematical representations to support the claim that the total momentum of a system of objects is conserved when there is no net force on the system. Use mathematical representations of Newton's Law of Gravitation and Coulomb's Law to describe and predict the gravitational and electrostatic forces between objects.</p>

Work, Force and Power	3 weeks	<p>HS-PS1-5. Apply scientific principles and evidence to provide an explanation about the effects of changing the temperature or concentration of the reacting particles on the rate at which a reaction occurs.</p> <p>HS-PS3-4. Plan and conduct an investigation to provide evidence that the transfer of thermal energy when two components of different temperature are combined within a closed system results in a more uniform energy distribution among the components in the system (second law of thermodynamics).</p> <p>HS-PS4-1. Use mathematical representations to support a claim regarding relationships among the frequency, wavelength, and speed of waves traveling in various media.</p>	<p>Apply scientific principles and evidence to provide an explanation about the effects of changing the temperature or concentration of the reacting particles on the rate at which a reaction occurs.</p> <p>Plan and conduct an investigation to provide evidence that the transfer of thermal energy when two components of different temperature are combined within a closed system results in a more uniform energy distribution among the components in the system (second law of thermodynamics). Use mathematical representations to support a claim regarding relationships among the frequency, wavelength, and speed of waves traveling in various media.</p>
Momentum and Mechanical Advantage	3 weeks	<p>HS-PS4-2. Evaluate questions about the advantages of using a digital transmission and storage of information.</p> <p>HS-PS4-3. Evaluate the claims, evidence, and reasoning behind the idea that electromagnetic radiation can be described either by a wave model or a particle model, and that for some situations one model is more useful than the other.</p>	<p>Evaluate questions about the advantages of using a digital transmission and storage of information.</p> <p>Evaluate the claims, evidence, and reasoning behind the idea that electromagnetic radiation can be described either by a wave model or a particle model, and that for some situations one model is more useful than the other.</p>
Energy Conversion and Conservation	4 weeks	<p>HS-PS3-1. Create a computational model to calculate the change in the energy of one component in a system when the change in energy of the other component(s) and energy flows in and out of the system are known.</p> <p>HS-PS3-2. Develop and use models to illustrate that energy at the macroscopic scale can be accounted for as a combination of energy associated with the motions of particles (objects) and energy associated with the relative positions of particles (objects).</p> <p>HS-PS3-3. Design, build, and refine a device that works within given constraints to convert one form of energy into another form of energy.</p>	<p>Create a computational model to calculate the change in the energy of one component in a system when the change in energy of the other component(s) and energy flows in and out of the system are known. Develop and use models to illustrate that energy at the macroscopic scale can be accounted for as a combination of energy associated with the motions of particles (objects) and energy associated with the relative positions of particles (objects). Design, build, and refine a device that works within given constraints to convert one form of energy into another form of energy.</p>

<p>Electricity and Magnetism</p>	<p>4 weeks</p>	<p>HS-PS1-3. Plan and conduct an investigation to gather evidence to compare the structure of substances at the bulk scale to infer the strength of electrical forces between particles. HS-PS2-4. Use mathematical representations of Newton's Law of Gravitation and Coulomb's Law to describe and predict the gravitational and electrostatic forces between objects. HS-PS2-5. Plan and conduct an investigation to provide evidence that an electric current can produce a magnetic field and that a changing magnetic field can produce an electric current. HS-PS3-5. Develop and use a model of two objects interacting through electric or magnetic fields to illustrate the forces between objects and the changes in energy of the objects due to the interaction. HS-PS4-4. Evaluate the validity and reliability of claims in published materials of the effects that different frequencies of electromagnetic radiation have when absorbed by matter.</p>	<p>Plan and conduct an investigation to gather evidence to compare the structure of substances at the bulk scale to infer the strength of electrical forces between particles. Use mathematical representations of Newton's Law of Gravitation and Coulomb's Law to describe and predict the gravitational and electrostatic forces between objects. Plan and conduct an investigation to provide evidence that an electric current can produce a magnetic field and that a changing magnetic field can produce an electric current. Develop and use a model of two objects interacting through electric or magnetic fields to illustrate the forces between objects and the changes in energy of the objects due to the interaction. Evaluate the validity and reliability of claims in published materials of the effects that different frequencies of electromagnetic radiation have when absorbed by matter.</p>
<p>Nature of Matter</p>	<p>5 weeks</p>	<p>HS-PS1-1. Use the periodic table as a model to predict the relative properties of elements based on the patterns of electrons in the outermost energy level of atoms. HS-PS1-2. Construct and revise an explanation for the outcome of a simple chemical reaction based on the outermost electron states of atoms, trends in the periodic table, and knowledge of the patterns of chemical properties. HS-PS1-3. Plan and conduct an investigation to gather evidence to compare the structure of substances at the bulk scale to infer the strength of electrical forces between particles.</p>	<p>Use the periodic table as a model to predict the relative properties of elements based on the patterns of electrons in the outermost energy level of atoms. Construct and revise an explanation for the outcome of a simple chemical reaction based on the outermost electron states of atoms, trends in the periodic table, and knowledge of the patterns of chemical properties. Plan and conduct an investigation to gather evidence to compare the structure of substances at the bulk scale to infer the strength of electrical forces between particles.</p>
<p>Diversity of Matter</p>	<p>5 weeks</p>	<p>HS-PS1-4. Develop a model to illustrate that the release or absorption of energy from a chemical reaction system depends upon the changes in total bond energy. HS-PS2-6. Communicate scientific and technical information about why the molecular-level structure is important in the functioning of designed materials. HS-PS1-5. Apply scientific principles and evidence to provide an explanation about the effects of changing the temperature or concentration of the reacting particles on the rate at which a reaction occurs.</p>	<p>Develop a model to illustrate that the release or absorption of energy from a chemical reaction system depends upon the changes in total bond energy. Communicate scientific and technical information about why the molecular-level structure is important in the functioning of designed materials. Apply scientific principles and evidence to provide an explanation about the effects of changing the temperature or concentration of the reacting particles on the rate at which a reaction occurs.</p>

	<p>Waves</p> <p>4 weeks</p>	<p>HS-ETS1-4. Use a computer simulation to model the impact of proposed solutions to a complex real-world problem with numerous criteria and constraints on interactions within and between systems relevant to the problem.</p> <p>HS-ETS1-2. Design a solution to a complex real-world problem by breaking it down into smaller, more manageable problems that can be solved through engineering.</p> <p>HS-ETS1-3. Evaluate a solution to a complex real-world problem based on prioritized criteria and trade-offs that account for a range of constraints, including cost, safety, reliability, and aesthetics as well as possible social, cultural, and environmental impacts.</p> <p>HS-PS1-8. (if the topic is chosen) Develop models to illustrate the changes in the composition of the nucleus of the atom and the energy released during the processes of fission, fusion, and radioactive decay.</p> <p>HS-PS4-5.(if topic is chosen) Communicate technical information about how some technological devices use the principles of wave behavior and wave interactions with matter to transmit and capture information and energy.</p> <p>HS-PS4-1. Use mathematical representations to support a claim regarding relationships among the frequency, wavelength, and speed of waves traveling in various media.</p>	<p>Use a computer simulation to model the impact of proposed solutions to a complex real-world problem with numerous criteria and constraints on interactions within and between systems relevant to the problem. Design a solution to a complex real-world problem by breaking it down into smaller, more manageable problems that can be solved through engineering. Evaluate a solution to a complex real-world problem based on prioritized criteria and trade-offs that account for a range of constraints, including cost, safety, reliability, and aesthetics as well as possible social, cultural, and environmental impacts. Develop models to illustrate the changes in the composition of the nucleus of the atom and the energy released during the processes of fission, fusion, and radioactive decay. Communicate technical information about how some technological devices use the principles of wave behavior and wave interactions with matter to transmit and capture information and energy. Use mathematical representations to support a claim regarding relationships among the frequency, wavelength, and speed of waves traveling in various media.</p>
--	------------------------------------	--	---

<p>Unit Name: Nature of Science</p> <p>Standards: HS-ETS1-1 HS-ETS1-2 HS-PS1-7</p>	<p>Length: 2 weeks</p> <p>Outcomes: Analyze a major global challenge to specify qualitative and quantitative criteria and constraints for solutions that account for societal needs and want. Design a solution to a complex real-world problem by breaking it down into smaller, more manageable problems that can be solved through engineering. Use mathematical representations to support the claim that atoms, and therefore mass, are conserved during a chemical reaction. This unit is the foundation for determining differentiation of important life skills like: identifying a scientific problem, making assumptions based on prior knowledge, reading measurements from various tools, collecting data, analyzing data, and graphing conclusive evidence.</p>
<p>Essential Questions: The use of measuring devices and their units of measure is essential to learning about scientific phenomenon. What is the difference between "math" math and "science" math?</p> <p>Academic Vocabulary: Part 1 - Scientific Method/PHEOC, Independent Variable, Dependent Variable, Constant;, Controls, Standard Part 2 - Volume, Mass, Density, Qualitative Data, Quantitative Data</p>	<p>Learning Targets: Identify the steps used to solve scientific phenomenon. Describe why scientists use variables. Compare and contrast science vs. technology. Know and apply the prefixes that define the metric system. Identify units measure and symbols for those units of measure. Utilize the correct tools to length, mass, volume, density, time, and temp. Identify the 3 types of graphs and utilize them in conclusions. Analyze data from graphs.</p>
<p>Topic 1: Metric System and Units of Measure</p> <p>Lesson Frame: Metric System Stairway</p> <p>Lesson Frame: Metric Mania Scavenger Hunt</p> <p>Lesson Frame: Metric System Challenge</p>	<p>Length: 1 week</p> <p>We will study and manipulate numbers for the metric system.</p> <p>I will know how to use the metric stairway.</p> <p>We will convert numbers and measures into and out of metric system.</p> <p>I will practice my metric conversions.</p> <p>We will take measurements in length, mass and volume.</p> <p>I will be able to use the proper tool for the job.</p> <p>Notes:</p>
<p>Performance Tasks: Measuring Objects Unit Conversions within Metric System Unit Conversions from Standard to Metric System</p>	
<p>Topic 2: Density</p> <p>Lesson Frame: Density Pyramids</p>	<p>Length: 1 week</p> <p>We will learn to use the density pyramid for converting measures.</p>

	I will make conversion with the density formula for mass and volume. We will demonstrate several ways of measuring. I will make volume measures using a ruler, grad cylinder and displacement. We will analyze Archimedes Principle. I will use buoyancy to learn about displacement, surface area, floating and sinking. Notes:
Lesson Frame: Density Measurements, tools and units	
Lesson Frame: Archimedes' Principle	
Performance Tasks: Graphing Statistical Data of Common Elements	

<p>Unit Name: Motion</p> <p>Standards: HS-PS2-3 HS-PS2-1 HS-PS2-2 HS-PS2-4</p> <p>Essential Questions: What is the connection between the measurements, units and tools and real life scenarios? How can you relate information the to speeding, car accidents, safety and mechanics?</p> <p>Academic Vocabulary: Distance, Displacement, Speed, Average Speed, Instantaneous Speed, Velocity, Acceleration, Deceleration, Newton's 1st Law</p>	<p>Length: 3 weeks</p> <p>Outcomes: Apply scientific and engineering ideas to design, evaluate, and refine a device that minimizes the force on a macroscopic object during a collision. Analyze data to support the claim that Newton's second law of motion describes the mathematical relationship among the net force on a macroscopic object, its mass, and its acceleration. Use mathematical representations to support the claim that the total momentum of a system of objects is conserved when there is no net force on the system. Use mathematical representations of Newton's Law of Gravitation and Coulomb's Law to describe and predict the gravitational and electrostatic forces between objects.</p> <p>Learning Targets: Distinguish between distance and displacement. Explain the difference between speed and velocity. Interpret motion graphs. Identify how acceleration, time, and velocity are related. Explain how positive and negative acceleration affect motion. Describe how to calculate the acceleration of an object.</p>
<p>Topic 1: Speed vs. Velocity</p> <p>Lesson Frame: Exploring Reference Points, Newton's 1st Law</p> <p>Lesson Frame: Calculating speed of vehicles without RADAR</p> <p>Lesson Frame: Unit Conversions Km/m = mph</p> <p>Performance Tasks: Bowling Ball - Change in Velocity Speed Trap 400m walk vs.run</p>	<p>Length: 2 weeks</p> <p>We will devise ways to measure distance and time. I will know what a reference point is. We will analyze speed and velocity. I will calculate the speed and velocity of various objects. We will set a lab to measure speed of cars. I will calculate the speed of random cars and convert the speed to a unit I am familiar with.</p> <p>Notes:</p>
<p>Topic 2: Acceleration and Deceleration</p> <p>Lesson Frame: Describing Acceleration</p> <p>Lesson Frame: Exploring changes in direction</p>	<p>Length: 1 week</p> <p>We will continue with our car speed lab, only this time we will make observation at the stop sign. I will be able to contrast acceleration and deceleration. We will make and use an accelerometer. I will utilize my accelerometer to make measurements.</p>

Lesson Frame: Acceleration Formula and Calculations	We will download an app for acceleration then compare our calculations to the app. I will be able to see how accurately I make measurements.
Performance Tasks: Starting Points vs. Stopping Points Centripetal Force and Ellipses Deceleration at a Stop Sign Olympic Sprinters Acceleration in the 100m	Notes:

<p>Unit Name: Work, Force and Power</p> <p>Standards: HS-PS1-5. HS-PS3-4. HS-PS4-1.</p> <p>Essential Questions: Do our students possess the capacity to take these measurements/calculations and manipulate them to support a real life situation?</p> <p>Academic Vocabulary: Force, Net Force, Balanced Force, Inertia, Work, Power, Types of Force, Free Body Diagram, Newton's 1st Law, 2nd Law, 3rd Law</p>	<p>Length: 3 weeks</p> <p>Outcomes: Apply scientific principles and evidence to provide an explanation about the effects of changing the temperature or concentration of the reacting particles on the rate at which a reaction occurs. Plan and conduct an investigation to provide evidence that the transfer of thermal energy when two components of different temperature are combined within a closed system results in a more uniform energy distribution among the components in the system (second law of thermodynamics). Use mathematical representations to support a claim regarding relationships among the frequency, wavelength, and speed of waves traveling in various media.</p> <p>Learning Targets: Explain how force and motion are related. Describe what inertia is and how it is related to Newton's first law of motion. Identify the forces and motion that are present during a car crash. Apply knowledge of forces to Free Body Diagrams. Site examples for Newton's Laws. Interpret and apply terminology.</p>
<p>Topic 1: Force</p> <p>Lesson Frame: Balanced and Unbalanced forces (Newton's 1st Law)</p> <p>Lesson Frame: Types of Force</p> <p>Lesson Frame: Newton's 2nd Law</p> <p>Performance Tasks: Crash Reconstruction - Inertia Free Body Diagrams Making and Reading Accelerometers Whirlybird Contest</p>	<p>Length: 1 week</p> <p>We will demonstrate inertia. I will define and apply Newton's 1st Law (inertia). We will demonstrate multiple forces. I will be able to determine differences in force. We will utilize the force formula for calculations and then conversions. I will measure mass and acceleration to get force.</p> <p>Notes:</p>

<p>Topic 2: Work and Power</p>	<p>Length: 2 weeks</p>
<p>Lesson Frame: Exploring Work, Direction and Weight</p>	<p>We will observe moving objects and monitor their work output.</p>
<p>Lesson Frame: Calculating Work</p>	<p>I will know how to calculate work. $w = f \cdot d$.</p>
<p>Lesson Frame: Calculating Power</p>	<p>We will demonstrate work in and work out for efficiency.</p> <p>I will be able to calculate the work under several conditions.</p>
<p>Performance Tasks: Family of squirrels creating electricity Can Opener Lab - machines multiplying force Comparing and contrasting horsepower and power from WPS Calculating your own force, work and power (steps lab)</p>	<p>We will demonstrate power.</p> <p>I will know how to calculate power $P = w/t$ under specific conditions.</p>
	<p>Notes: Research and compare horsepower, electrical power and normal power.</p>

Unit Name: Momentum and Mechanical Advantage	Length: 3 weeks
Standards: HS-PS4-2 HS-PS4-3	Outcomes: Evaluate questions about the advantages of using a digital transmission and storage of information. Evaluate the claims, evidence, and reasoning behind the idea that electromagnetic radiation can be described either by a wave model or a particle model, and that for some situations one model is more useful than the other.
Essential Questions: How can the use of simple vs. compound machines be compared and contrasted? How can various mechanical apparatus' that display the intricacies of the laws of motion and gravity be designed, buildt and tested? Academic Vocabulary: Newton's Second Law of Motion, Friction, Static Friction, Sliding Friction, Air Resistance, Gravity, Weight, Centripetal Acceleration, Centripetal Force, Newton's Third Law of Motion, Momentum, Mechanical Advantage, Kinesiology	Learning Targets: Apply Newton's second law of motion. Describe the three different types of friction. Observe the effects of air resistance on falling objects. Describe the gravitational force. Distinguish between mass and weight. Explain why objects that are thrown will follow a curved path. Compare circular motion with motion in a straight line. State Newton's third law of motion. Calculate momentum. Recognize when momentum is conserved. Explain how machines make doing work easier. Calculate the mechanical advantage of a machine. Calculate the efficiency of a machine. Describe the six types of simple machines. Explain how the different types of simple machines make doing work easier. Calculate the ideal mechanical advantage of the different types of simple machines.
Topic 1: Momentum/Newton's Laws	Length: 2 weeks
Lesson Frame: Newton's 3rd Law	We will identify Newton's 3rd Law and apply it.
Lesson Frame: Calculating Momentum Law of Conservation of Momentum	I will know that every action yields an equal and opposite reaction. We will demonstrate momentum under various conditions.
Lesson Frame: Friction and Gravity	I will measure mass and velocity to get momentum. We will demonstrate all different kinds of friction. I will know how to make a free body diagram for multiple scenarios.

<p>Performance Tasks: Fitch Barrier Calculations Action Reaction - Bouncing Ball Collisions - Data Collection and Graphing Construction of the Great Pyramids Friction Labs</p>	<p>Notes:</p>
<p>Topic 2: Mechanical Advantage and Efficiency Lesson Frame: Compare and Contrast MA and Efficiency</p>	<p>Length: 1 week We will demonstrate work in and work out. I will know how to calculate mechanical advantage of a can opener. We will introduce the 6 simple machines with all their variations.</p>
<p>Lesson Frame: Simple Machines</p>	<p>I will ID simple machines. We will learn the basic of kinesiology.</p>
<p>Lesson Frame: Machines in the Human Body</p>	<p>I will be able to match human movement examples to the 3 classes of levers.</p>
<p>Performance Tasks: Whirly Bird Contest (part 2) Identify variations in simple machines Calculate Ideal MA from three types of levers ID Pulleys and Levers in the Human Machine Paper Tower Contest</p>	<p>Notes:</p>

<p>Unit Name: Waves</p> <p>Standards: HS-ETS1-4 HS-ETS1-2 HS-ETS1-3 HS-PS1-8 (if the topic is chosen) HS-PS4-5 (if the topic is chosen) HS-PS4-1</p>	<p>Length: 6 weeks</p> <p>Outcomes: Use a computer simulation to model the impact of proposed solutions to a complex real-world problem with numerous criteria and constraints on interactions within and between systems relevant to the problem. Design a solution to a complex real-world problem by breaking it down into smaller, more manageable problems that can be solved through engineering. Evaluate a solution to a complex real-world problem based on prioritized criteria and trade-offs that account for a range of constraints, including cost, safety, reliability, and aesthetics as well as possible social, cultural, and environmental impacts. Develop models to illustrate the changes in the composition of the nucleus of the atom and the energy released during the processes of fission, fusion, and radioactive decay. Communicate technical information about how some technological devices use the principles of wave behavior and wave interactions with matter to transmit and capture information and energy. Use mathematical representations to support a claim regarding relationships among the frequency, wavelength, and speed of waves traveling in various media.</p>
--	---

<p>Essential Questions: What is the connection with wave properties and anatomy to the senses, namely hearing and sight?</p> <p>Academic Vocabulary: Wave, Medium, Transverse Wave, Compressional Wave, Crests, Troughs, Rarefaction, Wavelength, Frequency, Period, Amplitude, Refraction, Diffraction, Interference, Standing Wave <i>Sound</i> - Resonance, Eardrum: Intensity, Loudness, Decibel, Pitch, Doppler Effect, Music, Acoustics, Sonar <i>Light</i> - Opaque, Translucent, Transparent, Pigment, Polarized Light</p>	<p>Learning Targets: Recognize that waves carry energy but not matter. Define mechanical waves. Compare and contrast transverse waves and compressional waves. Define wavelength, frequency, period, and amplitude. Describe the relationship between frequency and wavelength. Explain how a wave's energy and amplitude are related. Explain how sound travels through different mediums. Identify what influences the speed of sound. Describe how the ear enables you to hear. Recognize how amplitude, intensity, and loudness are related. Describe how sound intensity is measured and what levels can damage hearing. Explain the relationship between frequency and pitch. Discuss the Doppler effect. Distinguish between noise and music. Describe why different instruments have different sound qualities. Discuss the uses of sonar. Describe how light waves interact with matter. Define the index of refraction of a material. Explain why a prism separates white light into different colors. Explain how you see color. Explain how a laser produces coherent light. Distinguish polarized light from unpolarized light. Explain how a hologram is made. Describe the uses of optical fibers.</p>
<p>Length: 3 weeks</p>	
<p>Topic 1: Sound and Hearing</p>	<p>We will study the anatomical features of mechanical waves.</p>
<p>Lesson Frame: Types of Waves, Anatomy of Waves</p>	<p>I will be able to ID the major differences in Longitudinal waves and compressional waves.</p>
<p>Lesson Frame: Sound Through Mediums, Measuring Decibels</p>	<p>We will learn to calculate the characteristics of waves. I will learn and apply the formulas for frequency, amplitude, and wavelength to actual waves.</p>
<p>Lesson Frame: Anatomy and Physiology of the Ear</p>	<p>We will locate and function of the parts within the ear. I will know how sound waves react with the eardrum, ossicles, cochlea and auditory nerve.</p>

<p>Performance Tasks: Superposition Principle - Lab Resonance Tubes - Lab Breaking the Sound Barrier - Timeline Ultrasonic vs. Subsonic Simulating Hearing Loss - Lab Parts of the Outer, Middle and Inner Ear</p>	<p>Notes: Specialize communication and hearing. Match amplitude - decibel frequency - pitch wavelength - speed</p>
<p>Topic 2: Light and Sight</p>	<p>Length: 3 weeks</p>
<p>Lesson Frame: Behavior of Light</p>	<p>We will research statistics on light.</p>
	<p>I will know the speed of light and how travels through mediums.</p>
<p>Lesson Frame: Light and Color</p>	<p>We will analyze the electromagnetic spectrum (ROYGBIV).</p>
	<p>I will observe how we see and determine colors.</p>
<p>Lesson Frame: Anatomy and Physiology of the Eye</p>	<p>We will study the anatomy and physiology of the eye.</p>
	<p>I will know the difference between rods and cones (light and color detection cells on retina).</p>
	<p>Notes:</p>
<p>Performance Tasks: Observing Refraction - Lab Angles of Incidence and Reflection - Laser Lab Knowing the Color Wheel Complementary Color Logos- Who was Henri Matisse? Uses for Lightf: Polarization - Lasers/Barcodes - Fiber Optics Making Holograms</p>	

Unit Name: Energy Conversion and Conservation	Length: 4 weeks
Standards: HS-PS3-1 HS-PS3-2 HS-PS3-3	Outcomes: Create a computational model to calculate the change in the energy of one component in a system when the change in energy of the other component(s) and energy flows in and out of the system are known. Develop and use models to illustrate that energy at the macroscopic scale can be accounted for as a combination of energy associated with the motions of particles (objects) and energy associated with the relative positions of particles (objects). Design, build, and refine a device that works within given constraints to convert one form of energy into another form of energy.
Essential Questions: How can you to plan, build and present a Rube Goldberg Machine? Academic Vocabulary: Kinetic Energy, Joule, Potential Energy, Elastic Potential Energy, Chemical Potential Energy, Gravitational Potential Energy, Temperature, Thermal Energy, Heat, Specific Heat, Conduction, Convection, Radiation, Insulator, Thermodynamics, First Law of Thermodynamics, Second Law of Thermodynamics, Internal Combustion Engine	Learning Targets: Distinguish between kinetic and potential energy. Calculate kinetic energy. Describe different forms of potential energy. Calculate gravitational potential energy. Describe how energy can be transformed from one form to another. Explain how the mechanical energy of a system is the sum of the kinetic and potential energy. Discuss the law of conservation of energy. Define temperature. Calculate the change in thermal energy. Compare and contrast the transfer of thermal energy by conduction, convection, and radiation. Describe the first and second laws of thermodynamics. Explain how an internal combustion engine works. Explain how a refrigerator transfers thermal energy from a cool to a warm temperature.
Topic 1: Energy Conversion	Length: 2 weeks
Lesson Frame: Nature of Energy - Listing Forms and Examples	We will demonstrate various forms of energy. I will know at least 10 different forms of energy.
Lesson Frame: Calculating Potential and Kinetic Energy	We will ID the two types of energy. I will compare and contrast potential and kinetic energy.
Lesson Frame: Measuring and Converting Temperature	We will learn how to measure and convert temperature. I will know the 3 different temperature measurements (F, C, and K).

<p>Performance Tasks: Comeback Can Lab - Data Collection and Graphing Exothermic vs Endothermic Reactions Demo Ice Cube Contest - Design and build an insulated container</p>	<p>Notes:</p>
<p>Topic 2: Energy Conservation</p>	<p>Length: 2 weeks</p>
<p>Lesson Frame: Law of Conservation of Energy</p>	<p>We will analyze the law of conservation of energy.</p>
<p>Lesson Frame: Heat Loss Calculations - Residential Insulation</p>	<p>I will apply the law of conservation of energy by reviewing ecology pyramids.</p>
<p>Lesson Frame: Who was Albert Einstein? Who was Rube Goldberg?</p>	<p>We will research formulas for energy loss and energy conservation.</p>
<p>Performance Tasks: Orbits, Ellipses and Energy What goes up must come down R- Values Rube Goldberg Machines</p>	<p>I will be able to read and understand a heat calc.</p>
	<p>We will build a timeline for Einstein and Goldberg from birth to death.</p>
	<p>I will know 2 influences from AI and Rube dealing with energy science.</p>
	<p>Notes:</p>

<p>Unit Name: Electricity and Magnetism</p> <p>Standards: HS-PS1-3 HS-PS2-4 HS-PS2-5 HS-PS3-5 HS-PS4-4</p>	<p>Length: 4 weeks</p> <p>Outcomes: Plan and conduct an investigation to gather evidence to compare the structure of substances at the bulk scale to infer the strength of electrical forces between particles. Use mathematical representations of Newton's Law of Gravitation and Coulomb's Law to describe and predict the gravitational and electrostatic forces between objects. Plan and conduct an investigation to provide evidence that an electric current can produce a magnetic field and that a changing magnetic field can produce an electric current. Develop and use a model of two objects interacting through electric or magnetic fields to illustrate the forces between objects and the changes in energy of the objects due to the interaction. Evaluate the validity and reliability of claims in published materials of the effects that different frequencies of electromagnetic radiation have when absorbed by matter.</p>
<p>Essential Questions: How do the basics of electricity and power relate to consumer goods and affairs in relation to safety, technology, and conservation?</p> <p>Academic Vocabulary: Static Electricity, Law of Conservation of Charge, Conductor, Insulator, Charging by Contact, Charging by Induction, Electric Current, Voltage Difference, Circuit, Resistance, Ohm's Law, Series Circuit, Parallel Circuit, Electrical Power, AC, DC</p>	<p>Learning Targets: Describe how electric charges exert forces on each other. Compare the strengths of electric and gravitational forces. Distinguish between conductors and insulators. Explain how objects become electrically charged. Describe how voltage difference causes current to flow. Explain batteries produce a voltage difference in a circuit. List the factors that affect an object's electrical resistance. Define Ohm's Law. Describe the difference between series and parallel circuits. Recognize the function of circuit breakers and fuses. Calculate electrical power. Calculate the electrical energy used by a device. Compare and Contrast AC -vs- DC.</p>
<p>Topic 1: Electricity and Ohm's Law</p> <p>Lesson Frame: Electrical Charge</p> <p>Lesson Frame: OHM's Law - Calculations</p> <p>Lesson Frame: Identifying Circuits</p>	<p>Length: 2 weeks</p> <p>We will demonstrate flow of electricity.</p> <p>I will model static electricity.</p> <p>We will learn the three components of electrical conduction.</p> <p>I will use Ohm's law to calculate current, volts and resistance.</p> <p>We will build circuits to get light bulbs to work.</p> <p>I will know the difference between parallel and series circuit.</p>
<p>Performance Tasks: Electricity in Everyday Life - Lab Build a Voltaic Cell - ID Volts, Current, and Resistance- Lab Investigating Battery Additions Build Series and Parallel Circuits - Lab</p>	<p>Notes: Must be able to label (Ohm's Law) volts, current, resistance on circuits.</p>

<p>Topic 2: Electrical Power</p>	<p>Length: 2 weeks</p>
<p>Lesson Frame: Identify and Calculate Residential Electrical Power</p>	<p>We will ID the underwriters laboratory labels on electrical appliances.</p>
	<p>I will know what UL means and where to locate it.</p>
<p>Lesson Frame: Energy as commodity/price per KW/h daily?</p>	<p>We will research the cost energy per Kilowatt Hour daily.</p>
	<p>I will locate major appliances in my home and calculate cost/KWh to run them.</p>
<p>Lesson Frame: Who was Thomas Edison? Who was Nikola Tesla?</p>	<p>We will compare and contrast Edison and Tesla inventions and ideas.</p>
	<p>I will know the history of and difference between AC and DC.</p>
<p>Performance Tasks:</p>	<p>Notes:</p>
<p>Watts Going On - Scavenger Hunt/Calculations of KW/h per month</p>	
<p>Compare and Contrast AC/DC</p>	

Unit Name: Nature of Matter	Length: 4 weeks
Standards: HS-PS1-1 HS-PS1-2 HS-PS1-3	Outcomes: Use the periodic table as a model to predict the relative properties of elements based on the patterns of electrons in the outermost energy level of atoms. Construct and revise an explanation for the outcome of a simple chemical reaction based on the outermost electron states of atoms, trends in the periodic table, and knowledge of the patterns of chemical properties. Plan and conduct an investigation to gather evidence to compare the structure of substances at the bulk scale to infer the strength of electrical forces between particles.
Essential Questions: How do you interpret and apply the rules for the hierarchy of chemistry? How does the learning of a language associate to chemistry? Academic Vocabulary: Atom, Nucleus, Proton, Neutron, Electron, Quark, Electron Cloud, Atomic Number, Mass Number, Isotope, Average Atomic Mass, Periodic Table, Group, Period, Electron Dot Diagram	Learning Targets: Identify the names and symbols of common elements. Identify quarks as subatomic particles of matter. Describe the electron cloud model of the atom. Explain how electrons are arranged in an atom. Interpret the average atomic mass of an element. Explain the composition of the periodic table. Use the periodic table to obtain information. Explain what the terms: Metal, Non-Metal, Metalloid
Topic 1: Trends of the Periodic Table	Length: 2 weeks
Lesson Frame: Language of Chemistry	We will learn how subatomic particles can be traced to substances. I will understand the analogy letters, words, sentences, meanings.
Lesson Frame: How to read the Periodic Table	We will ID the trends of the periodic table.
Lesson Frame: Atomic Structure	I will be able to locate characteristics and statistics of elements. We will use trends of the periodic table to analyze atomic structure. I will be able to sketch then build a Bohr model of any element 1-18.
Performance Tasks: Organizing a Personal Periodic Table Building Bohr Models Predicting an Element's Group and Period	Notes:
Topic 2: Atoms to Compounds	Length: 2 weeks
Lesson Frame: Electron Configuration	We will evaluate the importance of valence electrons.

Lesson Frame: Bonding - Ionic vs. Covalent Molecule vs. Compound	I will be able to calculate electron numbers and locations via trends of the periodic table.
Lesson Frame: Bonding - Ionic vs. Covalent Molecule vs. Compound	We will compare and contrast types of bonding.
	I will ID types of bonds through the elements that bond easily and make simple compounds.
Lesson Frame: Balancing Equations 6 types of Chemical Reactions	We will learn the rule for balancing equations.
	I will balance notable chemical equations and classify the results as one of the 6 chemical reactions.
Performance Tasks: Gizmo Simulation Labs: https://www.explorellearning.com	Notes: List Chemical Reactions

<p>Unit Name: Diversity of Matter: New Materials Through Chemistry</p> <p>Standards: HS-PS1-4 HS-PS2-6 HS-PS1-5 HS-PS1-5</p>	<p>Length: 4 weeks</p> <p>Outcomes: Develop a model to illustrate that the release or absorption of energy from a chemical reaction system depends upon the changes in total bond energy. Communicate scientific and technical information about why the molecular-level structure is important in the functioning of designed materials. Apply scientific principles and evidence to provide an explanation about the effects of changing the temperature or concentration of the reacting particles on the rate at which a reaction occurs. Apply scientific principles and evidence to provide an explanation about the effects of changing the temperature or concentration of the reacting particles on the rate at which a reaction occurs.</p>
<p>Essential Questions: How can metals vs. alloys characteristics be differentiated? Can you identify polymer vs. composite characteristics? What is the scientific, technological and economic importance of materials classified as metal and alloy?</p> <p>Academic Vocabulary: Metal, Malleable, Ductile, Metallic Bonding, Radioactive Element, Transition Element, Nonmetal, Sublimation, Metalloid, Alloy, Luster, Polymer, Monomer, Synthetic, Composite</p>	<p>Learning Targets: Describe the properties of a typical metal. Identify the alkali metals and alkaline earth metals. Differentiate among three groups of transition elements. Recognize hydrogen as a nonmetal. Compare and contrast properties of the halogens. Describe properties and uses of the noble gases. Distinguish among metals, nonmetals, and metalloids. Understand the importance of synthetic elements. Identify how different alloys are used. Explain how the properties of alloys determine their use. Identify what a polymer is and the variety of polymers around us. Compare and contrast soaps and detergents. Explain what a composite material is and why composites are used.</p>
<p>Topic 1: Metals and Alloys</p> <p>Lesson Frame: Materials of the Past</p> <p>Lesson Frame: Observing Properties of Alloys</p> <p>Lesson Frame: Iron Age, Bronze age</p> <p>Performance Tasks: Building Timelines Metallic Glass - Enrichment Observing Properties of Alloys - Lab</p>	<p>Length: 2 weeks</p> <p>We will research the history of various metals.</p> <p>I will build a working timeline for this chapter.</p> <p>We will observe the bonding of metals.</p> <p>I will ID the thing that make substances like metal stronger and weaker.</p> <p>We will continue to add to our timeline.</p> <p>I will be able to cite differences in the iron age vs. bronze age.</p> <p>Notes:</p>

<p>Topic 2: Polymers and Composites</p> <p>Lesson Frame: Composites</p> <p>Lesson Frame: Versatile Materials</p> <p>Performance Tasks: Natural vs. Synthetic Materials Technology Timelines for Ceramic/Glass and Polymer Composite Bowling Balls - History Pole Vaulting - History</p>	<p>Length: 2 weeks</p> <p>I will ID and match various polymers to their subunits.</p> <p>We will list the major differences between polymers and composites.</p> <p>I will show in a model specific examples contrasting and comparing polymers.</p> <p>We will research examples of biomimicry relating to materials both natural and man-made.</p> <p>I will define and model biomimicry citing specific examples.</p> <p>Notes:</p>
---	---

September	October	November	December	January	February	March	April	May	June
Unit 1	Unit 2 cont.	Unit 4	Unit 5 cont		Unit 6	Unit 7	Unit 8	Unit 9	
Unit 2	Unit 3	Unit 5		Semester 1 Final					
								Semester 2 Final	

Course Name:	Course 1		
Credits:	1		
Prerequisites:	5th Grade		
Description:	In this course, students will work in cooperative groups to solve problems, explain their thinking, and listen to others explanations on their thinking.		
Academic Standards:	See Unit List		
Units:	Unit Length:	Unit Standards:	Unit Outcomes:
Introduction and representation	14 days	M.6.G.A.1M.6.SP.B.4M.6.EE.A.1M.6.NS.B.4,	Outcomes:Students will organize data and use mathematical reasoning to make predictions
Arithmetic strategies and area	13 days	M.6.EE.A.3M.6.G.A.1M.6.NS.B.4	Outcomes:Students will investigate area and how to measure it.
Portions and integers	16 days	M.6.G.A.3M.6.NS.B.3M.6.NS.B.4M.6.NS.C.5M.6.NS.C.6aM.6.NS.C.6bM.6.NS.C.6cM.6.NS.C.7aM.6.NS.C.7bM.6.NS.C.7cM.6.NS.C.7dM.6.NS.C.8M.6.RP.A.1	Outcomes:Students will use percents, decimals, and fractions to describe a portion of a whole.
Variables and ratios	12 days	M.6.EE.A.4M.6.EE.A.2aM.6.EE.A.2cM.6.EE.A.4M.6.EE.B.6M.6.RP.A.1	Outcomes:Students will use variables to generalize and to represent unknown quantities.
Multiplying fractions and area	16 days	M.6.RP.A.3cM.6.NS.A.1M.6.G.A.1M.6.NS.B.3	Outcomes:Students will discover how to multiply fractions, mixed numbers, and decimals.
Dividing and building expressions	17 days	M.6.EE.A.1M.6.EE.A.2bM.6.EE.A.2cM.6.EE.A.3M.6.EE.A.4M.6.EE.B.6M.6.NS.A.1M.6.NS.B.2	Outcomes:Students will use the order of operations to find the correct value of a numerical expression.
Rates and operations	16 days	M.6.EE.A.2aM.6.EE.A.3M.6.EE.B.5M.6.EE.B.6M.6.EE.B.7M.6.EE.B.8M.6.NS.A.1M.6.NS.B.3M.6.RP.A.2M.6.RP.A.3a	Outcomes:Students will calculate rates, including unit rates.
Statistics and multiplication equations	16 days	M.6.EE.B.7M.6.EE.C.9M.6.RP.A.3bM.6.RP.A.3dM.6.SP.A.1M.6.SP.A.2M.6.SP.A.3M.6.SP.B.4M.6.SP.B.5a	Outcomes:Students will use measures of central tendency, histograms, stem and leaf plots, and box plots to represent and compare data.
Volume and Percents	19 days	M.6.G.A.2M.6.G.A.4M.6.RP.A.3c	Outcomes:Students will find the volume of three dimensional solids, known as right prisms.

Unit Name: Introduction and representation	Length: 14 days
Standards: M.6.G.A.1M.6.SP.B.4M.6.EE.A.1M.6.NS.B.4,	Outcomes: Students will organize data and use mathematical reasoning to make predictions
Essential Questions: What can I ask about this problem?	Learning Targets: Students will be able to develop several ways to represent mathematical ideas.
Topic 1: Visualizing information	Length: 1 day
Lesson Frame:	We will identify strengths and weaknesses of scatterplots and histograms.
Performance Tasks: Students will be able to analyze histograms.	I will practice precision while communicating my observations of different graphs.
	Notes:
Topic 2: Perimeter and area relationships	Length: 1 day
Lesson Frame:	We will experiment with changing area while keeping the perimeter the same.
	I will construct viable arguments to describe the impact on the area of a shape when I change the measurements without changing the perimeter.
Performance Tasks: Students will be able to look for relationships between perimeter and area.	Notes:
Topic 3: Describing and extending patterns	Length: 1 day
Lesson Frame:	We will make predictions based on extending patterns.
	I will look for and make sense of structure while observing patterns.
Performance Tasks: Students will be able to extend patterns.	Notes:
Topic 4: Representing data	Length: 1 day
Lesson Frame:	We will explore ways to organize data to answer different questions.
	I will reason abstractly and quantitatively to make sense of data.
Performance Tasks: Students will be able to generate questions about data.	Notes:
Topic 5: Making sense of a logic problem	Length: 1 day
Lesson Frame:	We will justify a conjecture as we make sense of logic problems.
	I will explain conjectures using words, symbols, diagrams and models.
Performance Tasks: Students will be able to make conjectures.	Notes:
Topic 6: Multiple representations	Length: 1 day
Lesson Frame:	We will represent quantities with words, symbols, and diagrams.
	I will look for structure as I compare quantities.

Unit Name: Introduction and representation	Length: 14 days
Standards: 6.G.A.1M.6.SP.B.4M.6.EE.A.1M.6.NS.B.4,	Outcomes: Students will organize data and use mathematical reasoning to make predictions
Essential Questions: What can I ask about this problem?	Learning Targets: Students will be able to develop several ways to represent mathematical ideas.
Performance Tasks: Students will be able to decompose quantities into sums of parts.	Notes:
Topic 7: Representing comparisons	Length: 1 day
Lesson Frame:	We will use appropriate symbol notations when comparing expressions. I will make use of structures to compare and contrast decomposed quantities.
Performance Tasks: Students will be able to compare values of numerical expressions.	Notes:
Topic 8: Characteristics of numbers	Length: 1 day
Lesson Frame:	We will categorize numbers as prime, composite, odd and even. I will make use of structure when categorizing numbers.
Performance Tasks: Students will be able to represent whole numbers with rectangular arrays.	Notes:
Topic 9: Products, factors, and factor pairs	Length: 2 days
Lesson Frame:	We will write numbers as products of their prime factors using exponents. I will look for and express regularity in repeated reasoning as I notice repeated multiplication of factors.
Performance Tasks: Students will be able to extend multiplication tables in order to understand factors, factor pairs, and properties of numbers.	Notes:

Unit Name:Arithmetic strategies and area	Length:13 days
Standards:M.6.EE.A.3M.6.G.A.1M.6.NS.B.4	Outcomes:Students will investigate area and how to measure it.
Essential Questions:How do area and perimeter change?	Learning Targets:Students will be able to explore the relationship between area and perimeter.
Topic 1:Dot plots and bar graphs	Length:1 day
Lesson Frame:	We will identify strengths and weaknesses of various graphical representations. I will focus on different modeling of data.
Performance Tasks: Students will be able to analyze graphs.	Notes:
Topic 2:histograms and stem and leaf plots	Length:1 day
Lesson Frame:	We will create ste and leaf plots and histograms. I will make sense of data and model it in the appropriate graph.
Performance Tasks: Students will be able to collect data and display data.	Notes:
Topic 3:Exploring area	Length:1 day
Lesson Frame:	We will develop strategies for measuring area of closed two dimensional regions. I will use the appropriate tool strategically in order to find the are of a region.
Performance Tasks: Students will be able to explore the concept of area.	Notes:
Topic 4:Square units and area of rectangles	Length:1 day
Lesson Frame:	We will understand area as it is related to standard units of measurement. I will attend to precision while finding measurements in order to find area.
Performance Tasks: Students will be able to understand standard units of measurement.	Notes:
Topic 5:Area and perimeter	Length:1 day
Lesson Frame:	We will identify how composing and decomposing area affects perimeter. I will attend to precision while identifying relationships between area and perimeter.
Performance Tasks: Students will be able to compose and decompose area.	Notes:
Topic 6:Using rectangles to multiply	Length:1 day
Lesson Frame:	We will use area models to represent multiplication of multi-digit numbers. I will reason quantitatively while working with generic rectangles.

Unit Name:Arithmetic strategies and area	Length:13 days
Standards:M.6.EE.A.3M.6.G.A.1M.6.NS.B.4	Outcomes:Students will investigate area and how to measure it.
Essential Questions:How do area and perimeter change?	Learning Targets:Students will be able to explore the relationship between area and perimeter.
Performance Tasks: Students will be able to use generic rectangles to find area.	Notes:
Topic 7:Using generic rectangles	Length:1 day
Lesson Frame:	We will multiply multi-digit numbers using generic rectangles.
Performance Tasks: Students will be able to multiply multi-digit numbers.	I will reason quantitatively while multiply multi-digit numbers.
Notes:	Notes:
Topic 8:Generic rectangles and greatest common factor	Length:1 day
Lesson Frame:	We will use the GCF to find dimensions of generic rectangles.
Performance Tasks: Students will be able to define the greatest common factor.	I will look for structure while developing the idea of distribution.
Notes:	Notes:
Topic 9:Distributive property	Length:1 day
Lesson Frame:	We will use generic rectangles to discover the distributive property.
Performance Tasks: Students will be able to apply the distributive property.	I will make use of structure while applying the distributive property.
Notes:	Notes:

Unit Name:Portions and integers	Length:16 days
Standards:M.6.A.3M.6.NS.B.3M.6.NS.B.4M.6.NS.C.5M.6.NS.C.6M.6.NS.C.6M.6.NS.C.6aM.6.NS.C.6bM.6.NS.C.6cM.6.NS.C.7aM.6.NS.C.7bM.6.NS.C.7cM.6.NS.C.7dM.6.NS.C.8M.6.NS.C.8M.6.RP.A.1	Outcomes:Students will use percents, decimals, and fractions to describe a portion of a whole.
Essential Questions:How is it the same or different?	Learning Targets:Students will be able to represent portions as percents, decimals, and fractions with pictures, symbols, and words.
Topic 1:Using the multiplicative identity	Length:2 days
Lesson Frame:	We will use multiplicative identity to find equivalent fractions.
Performance Tasks: Students will be able to create equivalent fractions.	I will use the appropriate tool in order to find equivalent fractions.
	Notes:
Topic 2:Portions as percents	Length:1 day
Lesson Frame:	We will compare portions of a whole in order to understand percents.
Performance Tasks: Students will be able to develop and understanding of percents.	I will use appropriate tools, such as a percent ruler, to understand percents.
	Notes:
Topic 3:Connecting percents with decimals and fractions	Length:2 days
Lesson Frame:	We will identify the connections between fractions, percents, and decimals.
Performance Tasks: Students will be able to recognize the connections between fractions and percents.	I will make use of structure to connect fractions, percents, and decimals.
	Notes:
Topic 4:Multiple representations of a portion	Length:1 day
Lesson Frame:	We will make sense of standard algorithms for adding and subtracting decimals.
Performance Tasks: Students will be able to develop methods to represent portions as percents, fractions, and decimals.	I will attend to precision while adding and subtracting decimals.
	Notes:
Topic 5:Completing the web	Length:1 day
Lesson Frame:	We will work with the 100% block model to move from fractions to decimals.
Performance Tasks: Students will be able to move between equivalent forms of portions.	I will look for and express regularity in repeated reasoning while identifying patterns in the 100% block model.
	Notes:
Topic 6:Investigation ratios	Length:1 day

Unit Name:Portions and integers	Length: 16 days
Standards:M.6.G.A.3M.6.NS.B.4M.6.NS.C.5M.6.NS.C.6aM.6.NS.C.6bM.6.NS.C.6cM.6.NS.C.7aM.6.NS.C.7bM.6.NS.C.7cM.6.NS.C.7dM.6.NS.C.8M.6.RP.A.1	Outcomes:Students will use percents, decimals, and fractions to describe a portion of a whole.
Essential Questions:How is it the same or different?	Learning Targets:Students will be able to represent portions as percents, decimals, and fractions with pictures, symbols, and words.
Lesson Frame:	We will use diagrams and ratio tables to represent ratios. I will make sense of problems and persevere in solving ratio representations.
Performance Tasks: Students will be able to use ration language to describe a relationship between two quantities.	Notes:
Topic 7:Addition, subtraction, and opposites	Length:1 day
Lesson Frame:	We will use number lines to recognize opposites. I will make sense of addition and subtraction of positive whole numbers using a number line.
Performance Tasks: Students will be able to connect movement on a number line with adding and subtracting.	Notes:
Topic 8:Locating negative numbers	Length:1 day
Lesson Frame:	We will make statements about the relative size of numbers using inequalities. I will use an appropriate tool to make sense of comparing rational numbers.
Performance Tasks: Students will be able to position rational numbers on a number line.	Notes:
Topic 9:Absolute value	Length:1 day
Lesson Frame:	We will compare rational numbers using inequalities in contextual situations. I will make use of structure in mathematics in using absolute value operations.
Performance Tasks: Students will be able to understand the meaning of absolute value.	Notes:
Topic 10:Length on a coordinate graph	Length:1 day
Lesson Frame:	We will use coordinates to find length of sides. I will make use of structure and absolute value to find side lengths.
Performance Tasks: Students will be able to draw polygons on a coordinate plane.	Notes:

Unit Name: Variables and ratios	Length: 12 days
Standards: M.6.EE.A.4M.6.EE.A.2cM.6.EE.A.4M.6.EE.B.6M.6.RP.A.1	Outcomes: Students will use variables to generalize and to represent unknown quantities.
Essential Questions: How can I change the size but keep the same shape?	Learning Targets: Students will be able to find the value of an algebraic expression when the value of the variable is known.
Topic 1: Introduction to variables	Length: 1 day
Lesson Frame:	We will evaluate expressions and solve for unknowns.
Performance Tasks: Students will be able to represent unknown quantities as variables.	I will reason abstractly and quantitatively to evaluate expressions.
	Notes:
Topic 2: Writing equivalent expressions	Length: 1 day
Lesson Frame:	We will make general statements about how to count the number of squares in a pattern.
	I will look for and make use of structure while identifying patterns.
Performance Tasks: Students will be able to compare multiple counting strategies.	Notes:
Topic 3: Using variables to generalize	Length: 2 days
Lesson Frame:	We will use a variable to represent a set of solutions.
	I will identify that two expressions are equivalent by evaluating them for specific values.
Performance Tasks: Students will be able to find the number of small squares in and square frame pattern.	Notes:
Topic 4: Enlarging two dimensional shapes	Length: 1 day
Lesson Frame:	We will examine the relationship between the original image and an enlarged image.
	I will attend to precision while enlarging shapes.
Performance Tasks: Students will be able to enlarge and image.	Notes:
Topic 5: Enlarging and reducing figures	Length: 1 day
Lesson Frame:	We will make use of structure to identify patterns between original shapes and enlarged shapes.
	I will make sense of problems to identify similarity and multiplicative property.
Performance Tasks: Students will be able to identify that enlarging a shape means to multiply the original sides by the same number.	Notes:
Topic 6: Enlargement and reduction ratios	Length: 1 day
Lesson Frame:	We will use ratios to make similar figures.
	I will reason abstractly and quantitatively while creating similar figures.

Unit Name: Variables and ratios	Length: 12 days
Standards: M.6.EE.A.4M.6.EE.A.2cM.6.EE.A.4M.6.EE.B.6M.6.RP.A.1	Outcomes: Students will use variables to generalize and to represent unknown quantities.
Essential Questions: How can I change the size but keep the same shape?	Learning Targets: Students will be able to find the value of an algebraic expression when the value of the variable is known.
Performance Tasks: Students will be able to compose similar figures.	Notes:
Topic 7: Ratios in other situations	Length: 1 day
Lesson Frame:	We will use ratios in non-geometric real life contexts.
Performance Tasks: Students will be able to use ratios to solve problems.	I will make sense of ratio problems and persevere in solving them.
	Notes:

Unit Name: Multiplying fractions and area	Length: 16 days
Standards: M.6.RP.A.3c; M.6.NS.A.1M.6.G.A.1M.6.NS.B.3	Outcomes: Students will discover how to multiply fractions, mixed numbers, and decimals.
Essential Questions: How can I break it into smaller pieces?	Learning Targets: Students will be able to find the areas of shapes, including rectangles, triangles, parallelograms, and trapezoids.
Topic 1: Representing fraction multiplication	Length: 1 day
Lesson Frame:	We will use area models to solve multiplication problems.
Performance Tasks: Students will be able to solve multiplication problems in context.	I will make sense of multiplication of fractions to solve problems.
	Notes:
Topic 2: Describing parts of parts	Length: 1 day
Lesson Frame:	We will develop the standard algorithm for multiplying fractions.
	I will make sense of problems and persevere in solving fraction problems.
Performance Tasks: Students will be able to use models to multiply fractions.	Notes:
Topic 3: Calculating parts of parts	Length: 1 day
Lesson Frame:	We will identify how to multiply fractions.
	I will attend to precision while multiplying fractions.
Performance Tasks: Students will be able to apply the standard algorithm for fraction multiplication.	Notes:
Topic 4: Multiplying mixed numbers	Length: 1 day
Lesson Frame:	We will compare the appropriateness of estimations versus exact answers.
Performance Tasks: Students will be able to compare multiplication strategies for mixed numbers.	I will use appropriate tools to understand multiplication of mixed numbers.
	Notes:
Topic 5: Making sense of decimal multiplication	Length: 1 day
Lesson Frame:	We will assess the reasonableness of answers.
Performance Tasks: Students will be able to multiply fractions, decimals and percents.	I will make sense of problems and persevere in solving them.
	Notes:
Topic 6: Fraction multiplication number sense	Length: 1 day
Lesson Frame:	We will identify multipliers that increase and decrease numbers.
	I will reason abstractly and quantitatively to identify how multipliers impact numbers.

Unit Name: Multiplying fractions and area	Length: 16 days
Standards: M.6.RP.A.3c, M.6.NS.A.1M.6.G.A.1M.6.NS.B.3	Outcomes: Students will discover how to multiply fractions, mixed numbers, and decimals.
Essential Questions: How can I break it into smaller pieces?	Learning Targets: Students will be able to find the areas of shapes, including rectangles, triangles, parallelograms, and trapezoids.
Performance Tasks: Students will be able to understand the multiplying can increase and decrease a number.	Notes:
Topic 7: Rearranging areas	Length: 1 day
Lesson Frame:	We will find areas of complex shapes by creating rectangles. I will look for and make use of structure to compose and decompose shapes in order to find area.
Performance Tasks: Students will be able to convert complex shapes into rectangles.	Notes:
Topic 8: Area of parallelogram	Length: 1 day
Lesson Frame:	We will develop the area formula for parallelograms. I will look for and make use of structure while identifying patterns in area to identify the formula for parallelogram.
Performance Tasks: Students will be able to use composite shapes to find area.	Notes:
Topic 9: Area of a triangle	Length: 1 day
Lesson Frame:	We will use relationships to create the formula for area of a triangle. I will look for patterns in data to identify the formula for area of a triangle.
Performance Tasks: Students will be able to identify that rectangles and parallelograms are made up of repeated triangles.	Notes:
Topic 10: Area of a trapezoid	Length: 1 day
Lesson Frame:	We will develop strategies for finding the area of trapezoids. I will look for and make use of structure to develop the formula for area of a trapezoid.
Performance Tasks: Students will be able to find the area of trapezoids.	Notes:

Unit Name:Dividing and building expressions	Length: 17 days
Standards:M.6.EE.A.1M.6.EE.A.2M.6.EE.A.3M.6.EE.A.4M.6.EE.B.6M.6.NS.A.1M.6.NS.B.2	Outcomes:Students will use the order of operations to find the correct value of a numerical expression.
Essential Questions:Are these representations equivalent?	Learning Targets:Students will be able to combine like terms and simplify algebraic expressions.
Topic 1:Dividing	Length:2 days
Lesson Frame:	We will use visual fraction models and equations to represent division.
Performance Tasks: Students will be able to divide quantities and represent the result in multiple ways.	I will make sense of fair share problems and persevere in solving them.
	Notes:
Topic 2:Fractions as division problems	Length:1 day
Lesson Frame:	We will construct various visual models to represent division problems, including long division.
	I will make sense of and persevere in solving long division problems.
Performance Tasks: Students will be able to see that a fraction can be seen as one number formed by division.	Notes:
Topic 3:Problem solving with division	Length:2 days
Lesson Frame:	We will solve division problems and check answers using multiplication.
	I will make sense of problems and persevere in solving them by using verbal descriptions and drawing diagrams.
Performance Tasks: Students will be able to identify problems that can be solved using division.	Notes:
Topic 4:Solving problems involving fraction division	Length:2 days
Lesson Frame:	We will represent fraction division problems in multiple ways.
Performance Tasks: Students will be able to divide fractions.	I will reason quantitatively to make sense of division problems and persevere in solving them.
	Notes:
Topic 5:Order of operations	Length:2 days
Lesson Frame:	We will evaluate expressions with whole number operations.
Performance Tasks: Students will be able to solve real world problems using the order of operations.	I will use mathematical structure in solving order of operation problems.
	Notes:
Topic 6:Area of a rectangular shape	Length:1 day
Lesson Frame:	We will find that area of algebra tiles using variables and constants.

Unit Name: Dividing and building expressions	Length: 17 days
Standards: M.6.EE.A.1M.6.EE.A.2bM.6.EE.A.3M.6.EE.A.4M.6.EE.B.6M.6.NS.A.1M.6.NS.B.2	Outcomes: Students will use the order of operations to find the correct value of a numerical expression.
Essential Questions: Are these representations equivalent?	Learning Targets: Students will be able to combine like terms and simplify algebraic expressions. I will use the appropriate tool to find the area of rectangles.
Performance Tasks: Students will be able to use variables to represent unknown lengths.	Notes:
Topic 7: Naming perimeters of algebra tiles	Length: 1 day
Lesson Frame:	We will find the perimeter of a shape by finding the side lengths of the algebra tiles. I will look for and express regularity in repeated reasoning as I combine like terms to find area.
Performance Tasks: Students will be able to combine like terms through sorting.	Notes:
Topic 8: Combining like terms	Length: 1 day
Lesson Frame:	We will find the perimeter of complex figures composed of algebra tiles. I will make use of mathematical structure of variables and combining like terms.
Performance Tasks: Students will be able to find equivalent expression to find perimeter.	Notes:
Topic 9: Evaluating algebraic expressions	Length: 1 day
Lesson Frame:	We will evaluate expressions by combining like terms. I will look for and make use of structure to find areas of irregular shapes.
Performance Tasks: Students will be able to visually demonstrate that x can represent any number.	Notes:

Unit Name: Rates and operations	Length: 16 days
Standards: M.6.EE.A.2aM.6.EE.A.3M.6.EE.B.5M.6.EE.B.6M.6.EE.B.7M.6.EE.B.8M.6.NS.A.1M.6.NS.B.3M.6.RP.A.2M.6.RP.A.3a	Outcomes: Students will calculate rates, including unit rates.
Essential Questions: What does the comparison tell me?	Learning Targets: Students will be able to rewrite expressions by combining like terms and using the distributive property.
Topic 1: Comparing rates	Length: 1 day
Lesson Frame:	We will convert ratios into different units in order to compare rates. I will make sense of structure in order to compare rates.
Performance Tasks: Students will be able to compare rates that are not unit rates.	Notes:
Topic 2: Comparing rates with tables and graphs	Length: 1 day
Lesson Frame:	We will use tables and graphs to compare rates when numerical comparisons are cumbersome. I will construct viable arguments on when tables and graphs should be used to compare rates.
Performance Tasks: Students will be able to compare rates using tables and graphs.	Notes:
Topic 3: Unit rates	Length: 1 day
Lesson Frame:	We will use tables and graphs to calculate unit rates. I will make sense of problems involving rates.
Performance Tasks: Students will be able to calculate unit rates.	Notes:
Topic 4: Analyzing strategies for dividing fractions	Length: 1 day
Lesson Frame:	We will analyze and apply the common denominator method of fraction division. I will make sense of division of fractions and persevere in solving problems involving them.
Performance Tasks: Students will be able to divide fractions.	Notes:
Topic 5: Another strategy for division	Length: 1 day
Lesson Frame:	We will identify that multiplying by the reciprocal is the same as dividing. I will make sense of traditional algorithms in order to divide fractions.
Performance Tasks: Students will be able to divide fractions by invert and multiply.	Notes:
Topic 6: Division with fractions and decimals	Length: 1 day
Lesson Frame:	We will connect fraction division with decimal division. I will use the appropriate tools when dividing fractions.

Unit Name: Rates and operations	Length: 16 days
Standards: M.6.EE.A.2aM.6.EE.A.3M.6.EE.B.5M.6.EE.B.6.EE.B.7M.6.EE.B.8M.6.NS.A.1M.6.NS.B.3M.6.RP.A.2M.6.RP.A.3a	Outcomes: Students will calculate rates, including unit rates.
Essential Questions: What does the comparison tell me?	Learning Targets: Students will be able to rewrite expressions by combining like terms and using the distributive property.
Performance Tasks: Students will be able to divide fractions using the giant one.	Notes:
Topic 7: Fraction division as ratios	Length: 1 day
Lesson Frame:	We will explore the connections between ratios and dividing fractions.
Performance Tasks: Students will be able to connect ratios with fraction division.	I will reason abstractly and quantitatively to make sense of problems involving dividing fractions.
Topic 8: Inverse operations	Notes:
Lesson Frame:	Length: 1 day
Performance Tasks: Students will be able to apply inverse operations to numbers.	We will represent the steps in a math problem using algebraic expressions. I will look for and make use of structure when using inverses.
Topic 9: Distributive property	Notes:
Lesson Frame:	Length: 1 day
Performance Tasks: Students will be able to translate math steps into expressions.	We will explore the distributive property to create equivalent pictures and expressions. I will look for and make use of the structure of inverses and the use of algebraic expressions.
Topic 10: Distributive property and expressions vocabulary	Notes:
Lesson Frame:	Length: 1 day
Performance Tasks: Students will be able to translate math into steps of the distributive property.	We will use the distributive property in reverse to identify parts of an expression. I will make use of structure in order to use the distributive property.
Topic 11: Writing algebraic equations and inequalities	Notes:
Lesson Frame:	Length: 2 days
	We will informally solve equations and inequalities. I will solve equations and inequalities by modeling with mathematics.

<p>Unit Name: Rates and operations</p>	<p>Length: 16 days</p>
<p>Standards: M.6.EE.A.2a, M.6.EE.A.3, M.6.EE.B.5, M.6.EE.B.6, M.6.EE.B.7, M.6.EE.B.8, M.6.NS.A.1, M.6.NS.B.3, M.6.RP.A.2, M.6.RP.A.3a</p>	<p>Outcomes: Students will calculate rates, including unit rates.</p>
<p>Essential Questions: What does the comparison tell me?</p>	<p>Learning Targets: Students will be able to rewrite expressions by combining like terms and using the distributive property.</p>
<p>Performance Tasks: Students will be able to create equations and inequalities to represent real world situations.</p>	<p>Notes:</p>

Unit Name: Volume and Percents	Length: 19 days
Standards: M.6.G.A.2M.6.G.A.4M.6.RP.A.3c	Outcomes: Students will find the volume of three dimensional solids, known as right prisms.
Essential Questions: Am I learning in one, two, or three dimensions?	Learning Targets: Students will be able to find the surface area and volume of rectangular prisms.
Topic 1: Volume of a rectangular prism	Length: 1 day
Lesson Frame:	We will identify that volume can be found by multiplying the area of the base times the height.
Performance Tasks: Students will be able to calculate the volume of rectangular prisms.	I will look for and express repeated reasoning to develop the formula for volume of a rectangular prism.
	Notes:
Topic 2: Nets and surface area	Length: 1 day
Lesson Frame:	We will predict the appearance of three dimensional shapes given their net.
Performance Tasks: Students will be able to create nets of shapes.	I will calculate surface area of shapes made of rectangles and triangles.
	Notes:
Topic 3: Multiplicative growth and percents	Length: 1 day
Lesson Frame:	We will use ratios and percents to solve multiplicative growth situations.
Performance Tasks: Students will be able to represent ratios and percents.	I will attend to precision as I convert units to solve problems involving percents and ratios.
	Notes:
Topic 4: Composition and decomposition of percents	Length: 1 day
Lesson Frame:	We will solve problems involving parts, wholes, and percentages.
Performance Tasks: Students will be able to determine the parts, whole, and percentages from a problem.	I will use quantitative reasoning to solve problems.
	Notes:
Topic 5: Percent discounts	Length: 2 days
Lesson Frame:	We will solve problems involving percent discounts and sale prices.
Performance Tasks: Students will be able to calculate percent discounts.	I will use appropriate tools to find the cost of items on sale or discounted.
	Notes:
Topic 6: Simple interest and tips	Length: 1 day
Lesson Frame:	We will calculate total cost of items including tip.
	I will identify problems and persevere in solving them involving percents and interest.

Unit Name: Volume and Percents	Length: 19 days
Standards: M.6.G.A.2M.6.G.A.4M.6.RP.A.3c	Outcomes: Students will find the volume of three dimensional solids, known as right prisms.
Essential Questions: Am I learning in one, two, or three dimensions? Performance Tasks: Students will be able to find simple interest.	Learning Targets: Students will be able to find the surface area and volume of rectangular prisms. Notes:
Topic 7: Culminating portions challenge	Length: 2 days
Lesson Frame:	We will solving puzzles involving adding, subtracting, multiplying and dividing fractions. I will make sense of fraction problems and persevere in solving them.
Performance Tasks: Students will be able to solve problems involving fractions.	Notes:
Topic 8: Representing and predicting patterns	Length: 2 days
Lesson Frame:	We will use area and perimeter to solve real world problems. I will make sense of area and perimeter problems and persevere in solving them.
Performance Tasks: Students will be able to solve a problem involving area and perimeter.	Notes:
Topic 9: Analyzing data to identify a trend	Length: 2 days
Lesson Frame:	We will convert measurements in order to compare data represented in multiple ways. I will reason abstractly and quantitatively in order to compare data from different representations.
Performance Tasks: Students will be able to graph and analyze data.	Notes:

Unit Name: Statistics and multiplication equations	Length: 16 days
Standards: M.6.EE.B.7M.6.EE.C.9M.6.RP.A.3bM.6.RP.A.3dM.6.SP.A.1M.6.SP.A.2M.6.SP.A.3M.6.SP.B.4M.6.SP.B.5a	Outcomes: Students will use measures of central tendency, histograms, stem and leaf plots, and box plots to represent and compare data.
Essential Questions: What is the best representation?	Learning Targets: Students will be able to solve problems using distance, rate and time.
Topic 1: Measures of central tendency	Length: 1 day
Lesson Frame:	We will develop methods for finding mean, median, and range of data.
Performance Tasks:	I will analyze the relationship between mean, median, and range.
Students will be able to identify the measures of central tendency.	Notes:
Topic 2: Choosing mean or median	Length: 2 days
Lesson Frame:	We will choose between median and mean to describe the middle value in a distribution of data.
Performance Tasks:	I will graph data and make sense of the problem it is representing.
Students will be able to use mean, median, and range to compare two sets of data.	Notes:
Topic 3: Shape and spread	Length: 1 day
Lesson Frame:	We will identify the mean absolute deviation from a set of data.
Performance Tasks:	I will attend to precision while identifying average distance from a graph.
Students will be able to identify the average distance.	Notes:
Topic 4: Box plots and interquartile range	Length: 2 days
Lesson Frame:	We will interpret box plots and compare sets of data.
Performance Tasks:	I will make sense of data sets including box plots.
Students will be able to construct box plots.	Notes:
Topic 5: Comparing and choosing representations	Length: 1 day
Lesson Frame:	We will determine what kinds of information different representations will provide.
Performance Tasks:	I will make sense of data sets by comparing histograms, stem and leaf plots, and box plots.
Students will be able to create three representations for a single set of data.	Notes:
Topic 6: Statistical questions	Length: 2 days
Lesson Frame:	We will anticipate variability in answers using statistical questions.
	I will use appropriate tools strategically to identify statistical questions.

Unit Name: Statistics and multiplication equations	Length: 16 days
Standards: M.6.EE.B.7M.6.EE.C.9M.6.RP.A.3bM.6.RP.A.3dM.6.SP.A.1M.6.SP.A.2M.6.SP.A.3M.6.SP.B.4M.6.SP.B.5a	Outcomes: Students will use measures of central tendency, histograms, stem and leaf plots, and box plots to represent and compare data.
Essential Questions: What is the best representation?	Learning Targets: Students will be able to solve problems using distance, rate and time.
Performance Tasks: Students will be able to identify statistical questions.	Notes:
Topic 7: Writing multiplication equations	Length: 1 day
Lesson Frame:	We will solve equations in the form of $ax=b$. I will attend to precision while solving equations.
Performance Tasks: Students will be able to write and solve variable equations.	Notes:
Topic 8: Distance, rate, and time	Length: 1 day
Lesson Frame:	We will use $d=rt$ to solve word problems. I will look for and make use of structure to solve distance word problems.
Performance Tasks: Students will be able to identify the relationship between distance, rate and time.	Notes:
Topic 9: Unit conversion	Length: 1 day
Lesson Frame:	We will understand the importance of units when comparing rates. I will make sense of problems and attend to precision when converting units in order to compare rates.
Performance Tasks: Students will be able to solve problems with different units.	Notes:

September Unit 1	October Unit 2	November Unit 3	December Unit 4	January Unit 5	February Unit 6	March Unit 7	April Unit 8	May Unit 9	June
---------------------	-------------------	--------------------	--------------------	-------------------	--------------------	-----------------	-----------------	---------------	------

I	Course 2			
Credits:	1			
Prerequisites:	6th Grade math(Course 1)			
Description:	In this course, students will learn to use new models and methods to think about problems as well as solve them.			
Academic Standards:	M.7.EE.A.1M.7.EE.A.2M.7.EE.B.3M.7.EE.B.4aM.7.EE.B.4bM.7.G.A.1M.7.G.A.2M.7.G.A.3M.7.G.B.4M.7.G.B.5M.7.G.B.6M.7.NS.A.1aM.7.NS.A.1bM.7.NS.A.1c			
Units:	Unit Length:	Unit Standards:	Unit Outcomes:	
Probability	15 days	M.7.SP.C.5M.7.SP.C.6M.7.SP.C.7aM.7.SP.C.7bM.7.SP.C.8a	Outcomes:Students will find the likelihood that a specific event will occur.	
Fractions and integer addition	15 days	M.7.NS.A.1aM.7.NS.A.1bM.7.NS.A.1dM.7.NS.A.2aM.7.NS.A.2d	Outcomes:Students will rewrite numbers in different forms in order to compare them.	
Arithmetic Properties	14 days	M.7.NS.A.1cM.7.NS.A.1dM.7.NS.A.2aM.7.NS.A.2bM.7.NS.A.2cM.7.NS.A.3	Outcomes:Students will simplify expressions with multiple operations.	
Proportions and Expressions	15 days	M.7.EE.A.1M.7.G.A.1M.7.RP.A.1M.7.RP.A.2aM.7.RP.A.2bM.7.RP.A.2cM.7.RP.A.2d	Outcomes:Students will find solutions to problems involving proportional relationships?	
Probability and solving word problems	19 days	M.7.EE.B.3M.7.RP.A.3M.7.SP.C.6M.7.SP.C.7aM.7.SP.C.7bM.7.SP.C.8aM.7.SP.C.8bM.7.SP.C.8c	Outcomes:Students will find and use percentages to solve problems.	
Solving inequalities and equations	17 days	M.7.EE.B.4bM.7.EE.B.4aM.7.EE.B.3	Outcomes:Students will simplify and compare two algebraic expressions.	
Proportions and percents	14 days	M.7.EE.A.2M.7.EE.B.3M.7.EE.B.4aM.7.NS.A.3M.7.RP.A.2cM.7.RP.A.2dM.7.RP.A.3	Outcomes:Students will solve problems involving distance, rate, and time.	
Statistics and angle relationships	14 days	M.7.G.A.2M.7.G.B.5M.7.SP.A.1M.7.SP.A.2M.7.SP.B.3M.7.SP.B.4	Outcomes:Students will describe, analyze and compare sets of data using measures of central tendency.	
Circles and volume	15 days	M.7.G.A.3M.7.G.B.4M.7.G.B.6	Outcomes:Students will calculate circumference and areas of circles.	

Unit Name: Introduction and Probability	Length: 15 days
Standards: M.7.SP.C.5M.7.SP.C.6M.7.SP.C.7aM.7.SP.C.7bM.7.SP.C.8a	Outcomes: Students will find the likelihood that a specific event will occur.
Essential Questions: How can I represent this?	Learning Targets: Students will be able to calculate probabilities of separate events to decide which is more likely to happen.
Topic 1: Finding shared and unique characteristics	Length: 1 day
Lesson Frame:	We will begin learning effective strategies for working in teams.
Performance Tasks: Students will be able to identify shared characteristics to make generalizations across a set.	I will make sense of problems by analyzing criteria and relationships.
Notes:	
Topic 2: Analyzing a game	Length: 1 day
Lesson Frame:	We will analyze probability in order to determine if a game is fair.
Performance Tasks: Students will be able to determine if a game is fair.	I will construct viable arguments and critique the reasoning of others while analyzing probabilities.
Notes:	
Topic 3: Finding unknowns	Length: 1 day
Lesson Frame:	We will begin to identify solutions to equations.
Performance Tasks: Students will be able to understand that a variable can have a single number solution, many solutions or no solutions.	I will reason abstractly and quantitatively to determine the number of solutions I may find.
Notes:	
Topic 4: Investigating a proportional relationship	Length: 1 day
Lesson Frame:	We will make predictions using proportional reasoning in more than one way.
Performance Tasks: Students will be able to make a prediction based on a set of data.	I will look for and make use of structure while analyzing proportional reasoning.
Notes:	
Topic 5: Investigating number patterns	Length: 1 day
Lesson Frame:	We will understand the meaning of repeating and terminating decimals.
Performance Tasks: Students will be able to investigate number patterns.	I will look for and express regularity in repeated reasoning while looking at number patterns.
Notes:	
Topic 6: Introduction to probability	Length: 1 day

Unit Name: Introduction and Probability	Length: 15 days
Standards: M.7.SP.C.5M.7.SP.C.6M.7.SP.C.7aM.7.SP.C.7bM.7.SP.C.8a	Outcomes: Students will find the likelihood that a specific event will occur.
Essential Questions: How can I represent this?	Learning Targets: Students will be able to calculate probabilities of separate events to decide which is more likely to happen.
Lesson Frame:	We will be introduced to the difference between experimental and theoretical probabilities. I will construct viable arguments and critique the reasoning of others while defending my solutions.
Performance Tasks: Students will be able to understand that probability is a fraction of the outcomes in a sample space.	Notes:
Topic 7: Investigating probability	Length: 1 day
Lesson Frame:	We will investigate the role that the number of trials plays in the relationship between experimental and theoretical probabilities. I will make sense of problems based on probabilities.
Performance Tasks: Students will be able to develop probability models.	Notes:
Topic 8: Modifying the sample space	Length: 1 day
Lesson Frame:	We will observe how multiplying the sample space impacts the probability. I will attend to precision in using my vocabulary while describing probabilities.
Performance Tasks: Students will be able to describe what happens to the probability of an event when the sample space is changed.	Notes:
Topic 9: Expressing fractions and percents	Length: 1 day
Lesson Frame:	We will use a 10 by 10 grid as a geometric model. I will attend to precision as I make sense of a hundreds grid.
Performance Tasks: Students will be able to convert fractions to percents.	Notes:
Topic 10: Rewriting fractions	Length: 1 day
Lesson Frame:	We will compare probabilities written in different forms. I will use appropriate tools strategically in comparing rectangular arrays.
Performance Tasks: Students will be able to represent portions in different ways.	Notes:
Topic 11: Fraction addition	Length: 1 day

Unit Name: Introduction and Probability	Length: 15 days
Standards: M.7.SP.C.5M.7.SP.C.6M.7.SP.C.7aM.7.SP.C.7bM.7.SP.C.8a	Outcomes: Students will find the likelihood that a specific event will occur.
Essential Questions: How can I represent this?	Learning Targets: Students will be able to calculate probabilities of separate events to decide which is more likely to happen.
Lesson Frame:	We will add fractions with unlike denominators. I will use the giant one as an appropriate tool for adding fractions.
Performance Tasks: Students will be able to add fractions.	Notes:
Topic 12: Compound probability	Length: 1 day
Lesson Frame:	We will determine where either one of the outcomes or the other is desired. I will construct viable arguments and critique the reasoning of teammates while comparing events.
Performance Tasks: Students will be able to calculate probabilities of compound events.	Notes:
Topic 13: Subtracting probabilities	Length: 1 day
Lesson Frame:	We will find the missing portions by subtracting fractions from one. I will look for and make use of structure of probabilities.
Performance Tasks: Students will be able to apply strategies for calculating and comparing probabilities.	Notes:

Unit Name: Fractions and Integer Addition	Length: 15 days
Standards: M.7.NS.A.1aM.7.NS.A.1bM.7.NS.A.1dM.7.NS.A.2aM.7.NS.A.2d	Outcomes: Students will rewrite numbers in different forms in order to compare them.
Essential Questions: How are the numbers written and are they equal?	Learning Targets: Students will be able to determine whether a fraction can be rewritten as a repeating or terminating decimal.
Topic 1: Fraction to decimal conversions	Length: 2 days
Lesson Frame:	We will develop an understanding of why decimals repeat or terminate.
Performance Tasks: Students will be able to convert fractions to decimals using long division.	I will make sense of using long division to convert fractions to decimals.
Notes:	
Topic 2: Rewriting decimals as fractions	Length: 1 day
Lesson Frame:	We will convert terminating and repeating decimals to fractions.
Performance Tasks: Students will be able to develop strategies for rewriting terminating and repeating decimals as fractions.	I will look for and express regularity in repeated reasoning while rewriting decimals.
Notes:	
Topic 3: Composing integers	Length: 1 day
Lesson Frame:	We will develop an understanding of how to compose and decompose integers.
Performance Tasks: Students will compose and decompose numbers in multiple ways.	I will look for structure within a quantity to develop the idea of integer addition.
Notes:	
Topic 4: Adding integers and rational numbers	Length: 1 day
Lesson Frame:	We will investigate the concept of opposites and zero pairs.
Performance Tasks: Students will be able to solve real world problems involving composing numbers.	I will make use of structure of addition of signed numbers.
Notes:	
Topic 5: More addition of integers and rational numbers	Length: 1 day
Lesson Frame:	We will add integers in a variety of settings.
Performance Tasks: Students will be able to use a new model to understand adding integers.	I will attend to precisions while communicating my strategies within my group.
Notes:	
Topic 6: Multiplication as repeated addition	Length: 1 day
Lesson Frame:	We will identify that multiplication is just repeated addition.

Unit Name: Fractions and Integer Addition	Length: 15 days
Standards: M.7.NS.A.1aM.7.NS.A.1bM.7.NS.A.1dM.7.NS.A.2aM.7.NS.A.2d	Outcomes: Students will rewrite numbers in different forms in order to compare them.
Essential Questions: How are the numbers written and are they equal?	Learning Targets: Students will be able to determine whether a fraction can be rewritten as a repeating or terminating decimal.
Performance Tasks: Students will be able to multiply integers.	I will look for and express regularity in repeated reasoning while looking for patterns in multiplication.
	Notes:
Topic 7: Multiplication of portions	Length: 1 day
Lesson Frame:	We will multiply positive and negative fractions, decimals and percents.
Performance Tasks: Students will be able to represent fractions parts with diagrams.	I will use an appropriate tool to multiply portions.
	Notes:
Topic 8: Multiplying mixed numbers	Length: 1 day
Lesson Frame:	We will use generic rectangles to multiply mixed numbers.
Performance Tasks: Students will be able to use the standard algorithm for multiplying fractions.	I will make use of structure when using the multiplication algorithm.
	Notes:
Topic 9: Choosing a scale and graphing data	Length: 1 day
Lesson Frame:	We will choose appropriate scales, draw axes, and plot points.
Performance Tasks: Students will be able to plot points on a coordinate graph.	I will attend to precision while making graphs.
	Notes:
Topic 10: More graph scaling	Length: 1 day
Lesson Frame:	We will plot data for which the placement of points must be approximated.
Performance Tasks: Students will be able to fix scaling errors.	I will model with mathematics in order to map relationships using graphs.
	Notes:

Unit Name:Arithmetic Properties	Length:14 days
Standards:M.7.NS.A.1cM.7.NS.A.1dM.7.NS.A.2aM.7.NS.A.2bM.7.NS.A.2cM.7.NS.A.3	Outcomes:Students will simplify expressions with multiple operations.
Essential Questions:How can I calculate it and what strategy should I use?	Learning Targets:Students will be able to subtract and multiply positive and negative numbers.
Topic 1:Grouping expressions	Length:1 day
Lesson Frame:	We will learn to group numbers with parenthesis.
Performance Tasks: Students will be able to begin to perform the order of operations.	I will look for and make use of structure of the order of operations.
	Notes:
Topic 2:Identify terms in expressions	Length:1 day
Lesson Frame:	We will: simplify expressions correctly.
Performance Tasks: Students will be able to identify terms that have sums inside grouping symbols.	I will understand structure while using the order of operations.
	Notes:
Topic 3:Subtracting integers	Length:1 day
Lesson Frame:	We will use tiles to develop an understanding of integer subtraction.
Performance Tasks: Students will be able to subtract integer tiles.	I will attend to precision while working with signed numbers.
	Notes:
Topic 4:Connecting addition and subtraction	Length:1 day
Lesson Frame:	We will recognize that every subtraction problem can be rewritten as an addition problem.
Performance Tasks: Students will be able to connect concepts of addition and subtraction.	I will reason quantitatively as I am looking for connections between adding and subtracting problems.
	Notes:
Topic 5:Multiplication as repeated subtraction	Length:1 day
Lesson Frame:	We will multiply integers.
Performance Tasks: Students will be able to multiply positive and negative integers.	I will attend to precision and make sense of signs while multiplying integers.
	Notes:
Topic 6:Multiplication of decimals	Length:1 day
Lesson Frame:	We will use a variety of formats in order multiply decimals.
	I will use appropriate tools strategically when multiplying portions.

Unit Name:Arithmetic Properties	Length:14 days
Standards:M.7.NS.A.1cM.7.NS.A.1dM.7.NS.A.2aM.7.NS.A.2bM.7.NS.A.2cM.7.NS.A.3	Outcomes:Students will simplify expressions with multiple operations.
Essential Questions:How can I calculate it and what strategy should I use?	Learning Targets:Students will be able to subtract and multiply positive and negative numbers.
Performance Tasks: Students will be able to multiply decimals using hundredths grids.	Notes:
Topic 7:Addition, subtraction, multiplication, and division of integers	Length:1 day
Lesson Frame:	We will solve word problems using many integer processes.
Performance Tasks: Students will be able to add, subtract, multiply, and divide integers within a word problem.	I will reason abstractly and quantitatively while completing problems involving integers.
	Notes:
Topic 8:Division of ration numbers	Length:1 day
Lesson Frame:	We will divide fractions, mixed numbers, and decimals.
Performance Tasks: Students will be able to understand what a rational number is.	I will use appropriate tools while dividing rational numbers.
	Notes:
Topic 9:Division of decimals	Length:1 day
Lesson Frame:	We will work with problems involving decimal division.
Performance Tasks: Students will be able to make sense of problems involving standard algorithms.	I will make sense of decimal problems and persevere in solving them.
	Notes:
Topic 10:Arithmetic properties	Length:2 days
Lesson Frame:	We will use operations of decimals and fractions to consolidate learning.
Performance Tasks: Students will be able to determine which of the four basic operations are commutative.	I will make sense of operations with rational numbers and persevere in solving problems using them.
	Notes:

Unit Name:Proportions and Expressions	Length:15 days
Standards:M.7.EE.A.1M.7.G.A.1M.7.RP.A.1M.7.RP.A.2aM.7.RP.A.2bM.7.RP.A.2cM.7.RP.A.2d	Outcomes:Students will find solutions to problems involving proportional relationships?
Essential Questions:Which shapes are similar?	Learning Targets:Students will be able to identify proportional relationships in tables, graphs, and equations.
Topic 1:Similar Figures	Length:1 day
Lesson Frame:	We will compare ratios of corresponding sides.
Performance Tasks: Students will be able to identify corresponding sides of similar shapes.	I will attend to precision while drawing representations of problems and ratios.
	Notes:
Topic 2:Scale drawings	Length:1 day
Lesson Frame:	We will create drawings and compute actual lengths and areas from scale drawings.
	I will analyze the relationships mathematically and draw conclusions from scale drawings.
Performance Tasks: Students will be able to solve problems involving scale drawings of geometric figures.	Notes:
Topic 3:Recognizing proportional relationships	Length:1 day
Lesson Frame:	We will identify proportional relationships within real world problems.
	I will interpret mathematical results within the context of real world problems.
Performance Tasks: Students will be able to identify the difference between proportional relationships and other linear relationships.	Notes:
Topic 4:Proportional relationships with tables and graphs	Length:1 day
Lesson Frame:	We will identify proportional relationships from graphs and tables.
	I will look for and make use of structure while analyzing graphs.
Performance Tasks: Students will be able to create tables and graph proportional relationships.	Notes:
Topic 5:Unit rate and proportional equations	Length:1 day
Lesson Frame:	We will solve word problems involving proportional relationships.
	I will model with algebraic equations while solving proportional relationships.
Performance Tasks: Students will be able to calculate unit rates.	Notes:
Topic 6:Connecting representations of proportional relationships	Length:2 days

Unit Name:Proportions and Expressions	Length:15 days
Standards:M.7.EE.A.1M.7.G.A.1M.7.RP.A.1M.7.RP.A.2aM.7.RP.A.2bM.7.RP.A.2cM.7.RP.A.2d	Outcomes:Students will find solutions to problems involving proportional relationships?
Essential Questions:Which shapes are similar?	Learning Targets:Students will be able to identify proportional relationships in tables, graphs, and equations.
Lesson Frame:	We will discover connections between all representations of proportional relationships.
Performance Tasks: Students will be able to look at different ways to represent proportional relationships.	I will compare and contrast representations to make sense of proportional relationship problems.
	Notes:
Topic 7:Combining like terms	Length:2 days
Lesson Frame:	We will find the area and perimeter of algebra tiles using variables and constants.
Performance Tasks: Students will be able to use variables to represent unknown lengths.	I will use algebra tiles to look for and make use of the structure of algebraic notation as I combine like terms.
	Notes:
Topic 8:Distributive property	Length:2 days
Lesson Frame:	We will combine like terms using distributive property.
Performance Tasks: Students will be able to use distributive property to find area and perimeter.	I will use the structure of algebraic notation while using the distributive property.
	Notes:
Topic 9:Simplifying with zero	Length:2 days
Lesson Frame:	We will combine like terms to simplify expressions.
Performance Tasks: Students will be able to simplify expressions.	I will look for and make use of the structure of zero in order to combine like terms.
	Notes:

Unit Name:Probability and solving word problems	Length:19 days
Standards:M.7.EE.B.3M.7.RP.A.3M.7.SP.C.6M.7.SP.C.7aM.7.SP.C.7bM.7.SP.C.8aM.7.SP.C.8bM.7.SP.C.8c	Outcomes:Students will find and use perctagesto solve problems.
Essential Questions:How can I represent the relationship?	Learning Targets:Students will be able to calculate the proobability of compound events.
Topic 1:Part-whole relationships	Length:1 day
Lesson Frame:	We will develop strategies and their connections to percents.
	I will make sense of percents, a percent ruler.
Performance Tasks: Students will be able to use linear model to examine part-whole relationships.	Notes:
Topic 2:Finding and using percentages	Length:1 day
Lesson Frame:	We will find percentages, portions and wholes.
	I will use the percent ruler to make sense of problems and persevere in solving them.
Performance Tasks: Students will be able to interpret situations related to percent discount.	Notes:
Topic 3:Probability games	Length:1 day
Lesson Frame:	We will work to find the complement of events.
	I will attend to precision as I find the probability of events and their complement.
Performance Tasks: Students will understand uniform probability models.	Notes:
Topic 4:Computer simulations of probability	Length:1 day
Lesson Frame:	We will make sense of complicated complex probabilities.
	I will reason abstractly and quantitatively as I analyze complex probabilities.
Performance Tasks: Students will be able to find the experimental probabilities of complex compound probabilities.	Notes:
Topic 5:Compound independent events	Length:1 day
Lesson Frame:	We will determine whether pairs of events are dependent or independent.
	I will construct viable arguments while determining if an event is dependent or independent.
Performance Tasks: Students will be able to find probabilities of compound independent events.	Notes:
Topic 6:Probability tables	Length:1 day
Lesson Frame:	We will generate a list of possible outcomes of compound events.

Unit Name:Probability and solving word problems	Length:19 days
Standards:M.7.EE.B.3M.7.RP.A.3M.7.SP.C.6M.7.SP.C.7aM.7.SP.C.7bM.7.SP.C.8aM.7.SP.C.8bM.7.SP.C.8c	Outcomes:Students will find and use perctagesto solve problems.
Essential Questions:How can I represent the relationship?	Learning Targets:Students will be able to calculate the proobability of compound events. I will use an appropriate tool such as a probability table.
Performance Tasks: Students will be able to use probability tables.	Notes:
Topic 7:Probability trees	Length:1 day
Lesson Frame:	We will use probability trees to model outcomes. I will conctruct probability trees to compare outcomes of events.
Performance Tasks: Students will be able to create systematic lists.	Notes:
Topic 8:Compound events	Length:2 days
Lesson Frame:	We will review an area model for fraction multiplication. I will model with mathematics while learning compound probabilities.
Performance Tasks: Students will be able to calculate probabilities in which outcomes are not equally likely.	Notes:
Topic 9:Describing relationships between quantities	Length:1 day
Lesson Frame:	We will construct diagrams in order to represent a situation. I will make sense of problems by using diagrams.
Performance Tasks: Students will be able to represent relationships with pictures.	Notes:
Topic 10:Solving a word problem	Length:1 day
Lesson Frame:	We will apply 5D to word problems. I will use the tool 5d to solve word problems.
Performance Tasks: Students will be able to use the 5 step problem solving process.	Notes:
Topic 11:Strategies for using the 5-d process	Length:1 day
Lesson Frame:	We will solve word problems using the 5D process. I will make sense of problems and persevere in solving them.

Unit Name:Probability and solving word problems	Length: 19 days
Standards:M.7.EE.B.3M.7.SP.A.3M.7.SP.C.6M.7.SP.C.7aM.7.SP.C.7bM.7.SP.C.8aM.7.SP.C.8bM.7.SP.C.8c	Outcomes:Students will find and use perctagesto solve problems.
Essential Questions:How can I represent the relationship?	Learning Targets:Students will be able to calculate the proobability of compound events.
Performance Tasks: Students will be able to apply the 5D process to complex word problems.	Notes:
Topic 12:Using variables to represent quantities in word problems	Length: 1 day
Lesson Frame:	We will use appropriate tools to grapple with word problems. I will construct viable arguments and critique the reasoning of others while working through the 5D process.
Performance Tasks: Students will be able to use variables to define quantities.	Notes:
Topic 13:More word problem solving	Length: 1 day
Lesson Frame:	We will define terms using a variety of variables. I will make sense of problems and model mathematics while explaining the process within our group.
Performance Tasks: Students will be able to solve complex word problems using the 5D process.	Notes:

Unit Name:Solving inequalities and equations	Length:17 days
Standards:M.7.EE.B.4bM.7.EE.B.4aM.7.EE.B.3	Outcomes:Students will simplify and compare two algebraic expressions.
Essential Questions:Are they equivalent?	Learning Targets:students will be able to write and solve algebraic inequalities.
Topic 1:Comparing expressions	Length:1 day
Lesson Frame:	We will use legal moves to compare expressions. I will use algebra tiles to simplify expressions.
Performance Tasks: Students will be able to simplify expressions using a mat.	Notes:
Topic 2:Comparing quantities with variables	Length:1 day
Lesson Frame:	We will learn all legal moves. I will use algebra tiles to compare expressions.
Performance Tasks: Students will be able to understand that all expressions can't be compared.	Notes:
Topic 3:One variable inequalities	Length:1 day
Lesson Frame:	We will record steps and answers on number lines. I will make sense of problems and persevere in solving them using algebra tiles.
Performance Tasks: Students will be able to represent solutions to one variable inequalities.	Notes:
Topic 4:Solving one variable inequalities	Length:1 day
Lesson Frame:	We will express our solutions on a graph and with the words. I will model with mathematics answers to inequalities.
Performance Tasks: Students will be able to solve one variable inequalities.	Notes:
Topic 5:Solving equations	Length:1 day
Lesson Frame:	We will determine if one expression is larger than the other. I will find solutions when expressions are equal.
Performance Tasks: Students will be able to apply strategies for simplifying expressions.	Notes:
Topic 6:Checking solutions and the distributive property	Length:1 day
Lesson Frame:	We will solve equations using the distributive property. I will critique the reasoning of others while discussing solutions to equations.

Unit Name: Solving inequalities and equations	Length: 17 days
Standards: M.7.EE.B.4bM.7.EE.B.4aM.7.EE.B.3	Outcomes: Students will simplify and compare two algebraic expressions.
Essential Questions: Are they equivalent?	Learning Targets: students will be able to write and solve algebraic inequalities.
Performance Tasks: Students will be able to check solutions.	Notes:
Topic 7: Solving equations and recording work	Length: 2 days
Lesson Frame:	We will compare arithmetic and algebraic methods of solving problems. I will attend to precision as I solve word problems.
Performance Tasks: Students will be able to use formal notation while simplifying expressions.	Notes:
Topic 8: Using a table to write equations from word problems	Length: 1 day
Lesson Frame:	We will write expressions as equations. I will make sense of problems and persevere in solving them.
Performance Tasks: Students will be able to extend and modify the 5D process.	Notes:
Topic 9: Writing and solving equations	Length: 2 days
Lesson Frame:	We will use estimation to check the reasonableness of a solution. I will attend to precision as I am solving equations.
Performance Tasks: Students will be able to write and solve problems from a context.	Notes:
Topic 10: Cases with infinite or no solutions	Length: 1 day
Lesson Frame:	We will solve equations that have no solution and many solutions. I will reason abstractly and quantitatively while solving the three types of equations.
Performance Tasks: Students will be able to identify equations with no solution.	Notes:
Topic 11: Choosing a solving strategy	Length: 1 day
Lesson Frame:	We will solve word problems using algebra tiles. I will use appropriate tools strategically to solve problems.
Performance Tasks: Students will be able to solve equations using algebra tiles.	Notes:

Unit Name:Proportions and percents	Length:14 days
Standards:M.7.EE.A.2M.7.EE.B.3M.7.EE.B.4M.7.NS.A.3M.7.RP.A.2cM.7.RP.A.2dM.7.RP.A.3	Outcomes:Students will solve problems involving distance, rate, and time.
Essential Questions:How is it changing?	Learning Targets:Students will be able to solve equations that have fractional and decimal coefficients.
Topic 1:Distance, rate and time	Length:1 day
Lesson Frame:	We will relate distance to time for objects.
Performance Tasks: Students will be able to make table, graphs and rules.	I will determine the relationships between distance, rate, and time.
Notes:	
Topic 2:Scaling quantities	Length:1 day
Lesson Frame:	We will connect finding percents of a number with multiplying by an equivalent fraction.
Performance Tasks: Students will be able to use multiplication to scale a quantity.	I will make sense of problems involving percents.
Notes:	
Topic 3:Solving problems involving percents	Length:1 day
Lesson Frame:	We will solve percent discount problems.
Performance Tasks: Students will be able to recognize the different multipliers to find different related quantities.	I will use diagrams to make sense of percent problems.
Notes:	
Topic 4:Equations with fraction and decimal coefficients	Length:1 day
Lesson Frame:	We will discover how to eliminate decimal and fractional coefficients.
Performance Tasks: Students will be able to solve an equation with fractional coefficients.	I will use the appropriate tool to solve equations.
Notes:	
Topic 5:Creating integer coefficients	Length:1 day
Lesson Frame:	We will create integer coefficients in equations.
Performance Tasks: Students will be able to solve equations with both fractions and decimals.	I will make sense of problems while comparing multiple equations.
Notes:	
Topic 6:Creating integer coefficients efficiently	Length:1 day

Unit Name:Proportions and percents	Length:14 days
Standards:M.7.EE.A.2M.7.EE.B.3M.7.EE.B.4M.7.NS.A.3M.7.RP.A.2cM.7.RP.A.2dM.7.RP.A.3	Outcomes:Students will solve problems involving distance, rate, and time.
Essential Questions:How is it changing?	Learning Targets:Students will be able to solve equations that have fractional and decimal coefficients.
Lesson Frame:	We will make complex equations into integer equations.
Performance Tasks: Students will be able to make more equations into integer equations.	I will make sense of equations by solving them.
	Notes:
Topic 7:Percent increase and decrease	Length:1 day
Lesson Frame:	We will identify the multiplier related to a change.
Performance Tasks: Students will be able to understand percent increase and decrease problems.	I will attend to precision while finding percent increase and decrease.
	Notes:
Topic 8:Simple interest	Length:1 day
Lesson Frame:	We will identify the rate if we know the interest.
Performance Tasks: Students will be able to find simple interest.	I will make sense of percent problems and persevere in solving them.
	Notes:
Topic 9:Finding missing information in proportional relationships	Length:1 day
Lesson Frame:	We will not use the term cross multiply.
Performance Tasks: Students will be able to find missing information in proportions.	I will attend to precision in solving for the correct unit.
	Notes:
Topic 10:Solving proportions	Length:1 day
Lesson Frame:	We will identify different strategies for solving proportions.
Performance Tasks: Students will be able to solve proportions.	I will attend to precision while solving proportions.
	Notes:

Unit Name: Statistics and angle relationships	Length: 14 days
Standards: M.7.G.A.2M.7.G.B.5M.7.SP.A.1M.7.SP.A.2M.7.SP.B.3M.7.SP.B.4	Outcomes: Students will describe, analyze and compare sets of data using measures of central tendency.
Essential Questions: How can I select a good sample?	Learning Targets: Students will be able to attempt to find random and representative samples to complete a survey.
Topic 1: Measuring precision	Length: 2 days
Lesson Frame:	We will compare data creating histograms.
Performance Tasks:	I will make sense of measurement depending on how I collect data.
Students will be able to generate two sets of data using different tools.	Notes:
Topic 2: Comparing distributions	Length: 1 day
Lesson Frame:	We will quantify the difference between medians.
Performance Tasks:	I will make sense of problems using histograms and box plots.
Students will be able to compare two populations based on making inferences from samples.	Notes:
Topic 3: Representative samples	Length: 1 day
Lesson Frame:	We will critique how well a sample represents a certain population.
Performance Tasks:	I will reason abstractly and quantitatively as I consider representative samples.
Students will be able to analyze methods of sampling.	Notes:
Topic 4: Inference from random samples	Length: 1 day
Lesson Frame:	We will generate multiple samples of the same size to gauge the variation in sample statistics.
Performance Tasks:	I will make sense of data sets.
Students will be able to use random sampling to draw inferences.	Notes:
Topic 5: Introduction to angles	Length: 1 day
Lesson Frame:	We will learn about angle measuring tools.
Performance Tasks:	I will use the appropriate tool when measuring angles.
Students will be able to understand angles and how to measure them.	Notes:
Topic 6: Classifying angles	Length: 1 day
Lesson Frame:	We will classify angles and angle pairs.

Unit Name: Statistics and angle relationships	Length: 14 days
Standards: M.7.G.A.2M.7.G.B.5M.7.SP.A.1M.7.SP.A.2M.7.SP.B.3M.7.SP.B.4	Outcomes: Students will describe, analyze and compare sets of data using measures of central tendency.
Essential Questions: How can I select a good sample?	Learning Targets: Students will be able to attempt to find random and representative samples to complete a survey.
Performance Tasks: Students will be able to measure angles with a protractor.	I will look for and make use of structure while classifying angles.
	Notes:
Topic 7: Constructing shapes	Length: 1 day
Lesson Frame:	We will use rulers and technology to draw shapes.
Performance Tasks: Students will be able to draw geometric shapes.	I will attend to precision as I use tools to create shapes given certain conditions.
	Notes:
Topic 8: Building triangles	Length: 2 days
Lesson Frame:	We will determine how many triangles can be made given 3 angle measurements.
Performance Tasks: Students will be able to construct triangles from three angle measures.	I will look for and make use of the structure of angles and angle measurement.
	Notes:

Unit Name:Circles and volume	Length:15 days
Standards:M.7.G.A.3M.7.G.B.4M.7.G.B.6	Outcomes:Students will calculate circumference and areas of circles.
Essential Questions:How are the parts of a circle related?	Learning Targets:Students will be able to find the areas of shapes made up of special quadrilaterals, circles and triangles.
Topic 1:Circumference, diameter, and pi	Length:2 days
Lesson Frame:	We will identify the relationship between C and D. I will look for and express repeated reasoning in order to define Pi.
Performance Tasks: Students will be able to graph Pi.	Notes:
Topic 2:Area of circles	Length:2 days
Lesson Frame:	We will find the area of a circle within the context of word problems. I will attend to precision while approximating the area of a circle.
Performance Tasks: Students will be able to find the area of a circle.	Notes:
Topic 3:Area of composite shapes	Length:1 day
Lesson Frame:	We will find the area of shapes made up of rectangles, triangles and circles. I will reason abstractly and quantitatively as I make sense of area problems.
Performance Tasks: Students will be able to find the area of composite shapes.	Notes:
Topic 4:Surface area and volume	Length:1 day
Lesson Frame:	We will investigate the relationship between surface area and volume. I will attend to precision as I find the units of my labels.
Performance Tasks: Students will be able to find the surface area and volume of rectangular prisms.	Notes:
Topic 5:Cross sections	Length:1 day
Lesson Frame:	We will slice three dimensional shapes to create two dimensional views. I will reason abstractly as I visualize the two dimensional shapes.
Performance Tasks: Students will be able to describe two dimensional shapes.	Notes:
Topic 6:Volume of a prism	Length:1 day
Lesson Frame:	We will create 1 unit high layers in order to find the volume of prisms. I will look for and express regularity in repeated reasoning to find the formula for volume.

Unit Name:Circles and volume	Length:15 days
Standards:M.7.G.A.3M.7.G.B.4M.7.G.B.6	Outcomes:Students will calculate circumference and areas of circles.
Essential Questions:How are the parts of a circle related?	Learning Targets:Students will be able to find the areas of shapes made up of special quadrilaterals, circles and triangles.
Performance Tasks: Students will be able to find the volume of prisms.	Notes:
Topic 7:Volume of nonrectangular prisms	Length:1 day
Lesson Frame:	We will identify characteristics of nonrectangular prisms. I will construct viable arguments for my volume measurements.
Performance Tasks: Students will be able to find the volume of nonrectangular prisms.	Notes:
Topic 8:Volume and scaling	Length:2 days
Lesson Frame:	We will find volumes using scaling. I will attend to precision while comparing volume of scaled shapes.
Performance Tasks: Students will be able to find proportional increases.	Notes:
Topic 9:Using multiple math ideas to create an interior design	Length:2 days
Lesson Frame:	We will multiply, add and subtract fractions to convert between units. I will convert units of measurement.
Performance Tasks: Students will be able to create scale drawings.	Notes:
Topic 10:Applying ratios	Length:2 days
Lesson Frame:	We will use appropriate tools in order to solve ratios. I will use diagrams when comparing ratios within a word problem.
Performance Tasks: Students will be able to solve application problems involving proportions.	Notes:

September Unit 1	October Unit 2	November Unit 3	December Unit 4	January Unit 5	February Unit 6	March Unit 7	April Unit 8	May Unit 9	June
---------------------	-------------------	--------------------	--------------------	-------------------	--------------------	-----------------	-----------------	---------------	------

Course Name:	Course 3	
Credits:	1	
Prerequisites:	7th Grade Math	
Description:	Students will use new models and methods to think about problems and solve them. Students will work at teams to complete problems and activities that will help students discover mathematical ideas and develop solution methods.	
Academic Standards:	M.8.EE.A.1M.8.EE.A.2M.8.EE.A.3M.8.EE.A.4M.8.EE.B.5M.8.EE.B.6M.8.EE.C.7aM.8.EE.C.7bM.8.EE.C.8aM.8.EE.C.8bM.8.EE.C.8cM.8.EE.C.8dM.8.EE.C.8eM.8.EE.C.8fM.8.EE.C.8gM.8.EE.C.8hM.8.EE.C.8iM.8.EE.C.8jM.8.EE.C.8kM.8.EE.C.8lM.8.EE.C.8mM.8.EE.C.8nM.8.EE.C.8oM.8.EE.C.8pM.8.EE.C.8qM.8.EE.C.8rM.8.EE.C.8sM.8.EE.C.8tM.8.EE.C.8uM.8.EE.C.8vM.8.EE.C.8wM.8.EE.C.8xM.8.EE.C.8yM.8.EE.C.8zM.8.EE.D.1M.8.EE.D.2M.8.EE.D.3M.8.EE.D.4M.8.EE.D.5M.8.EE.D.6M.8.EE.D.7M.8.EE.D.8M.8.EE.D.9M.8.EE.D.10M.8.EE.D.11M.8.EE.D.12M.8.EE.E.1M.8.EE.E.2M.8.EE.E.3M.8.EE.E.4M.8.EE.E.5M.8.EE.E.6M.8.EE.E.7M.8.EE.E.8M.8.EE.E.9M.8.EE.E.10M.8.EE.E.11M.8.EE.E.12M.8.EE.F.1M.8.EE.F.2M.8.EE.F.3M.8.EE.F.4M.8.EE.F.5M.8.EE.F.6M.8.EE.F.7M.8.EE.F.8M.8.EE.F.9M.8.EE.F.10M.8.EE.F.11M.8.EE.F.12M.8.EE.G.1M.8.EE.G.2M.8.EE.G.3M.8.EE.G.4M.8.EE.G.5M.8.EE.G.6M.8.EE.G.7M.8.EE.G.8M.8.EE.G.9M.8.EE.G.10M.8.EE.G.11M.8.EE.G.12M.8.EE.H.1M.8.EE.H.2M.8.EE.H.3M.8.EE.H.4M.8.EE.H.5M.8.EE.H.6M.8.EE.H.7M.8.EE.H.8M.8.EE.H.9M.8.EE.H.10M.8.EE.H.11M.8.EE.H.12M.8.EE.I.1M.8.EE.I.2M.8.EE.I.3M.8.EE.I.4M.8.EE.I.5M.8.EE.I.6M.8.EE.I.7M.8.EE.I.8M.8.EE.I.9M.8.EE.I.10M.8.EE.I.11M.8.EE.I.12M.8.EE.J.1M.8.EE.J.2M.8.EE.J.3M.8.EE.J.4M.8.EE.J.5M.8.EE.J.6M.8.EE.J.7M.8.EE.J.8M.8.EE.J.9M.8.EE.J.10M.8.EE.J.11M.8.EE.J.12M.8.EE.K.1M.8.EE.K.2M.8.EE.K.3M.8.EE.K.4M.8.EE.K.5M.8.EE.K.6M.8.EE.K.7M.8.EE.K.8M.8.EE.K.9M.8.EE.K.10M.8.EE.K.11M.8.EE.K.12M.8.EE.L.1M.8.EE.L.2M.8.EE.L.3M.8.EE.L.4M.8.EE.L.5M.8.EE.L.6M.8.EE.L.7M.8.EE.L.8M.8.EE.L.9M.8.EE.L.10M.8.EE.L.11M.8.EE.L.12M.8.EE.M.1M.8.EE.M.2M.8.EE.M.3M.8.EE.M.4M.8.EE.M.5M.8.EE.M.6M.8.EE.M.7M.8.EE.M.8M.8.EE.M.9M.8.EE.M.10M.8.EE.M.11M.8.EE.M.12M.8.EE.N.1M.8.EE.N.2M.8.EE.N.3M.8.EE.N.4M.8.EE.N.5M.8.EE.N.6M.8.EE.N.7M.8.EE.N.8M.8.EE.N.9M.8.EE.N.10M.8.EE.N.11M.8.EE.N.12M.8.EE.O.1M.8.EE.O.2M.8.EE.O.3M.8.EE.O.4M.8.EE.O.5M.8.EE.O.6M.8.EE.O.7M.8.EE.O.8M.8.EE.O.9M.8.EE.O.10M.8.EE.O.11M.8.EE.O.12M.8.EE.P.1M.8.EE.P.2M.8.EE.P.3M.8.EE.P.4M.8.EE.P.5M.8.EE.P.6M.8.EE.P.7M.8.EE.P.8M.8.EE.P.9M.8.EE.P.10M.8.EE.P.11M.8.EE.P.12M.8.EE.Q.1M.8.EE.Q.2M.8.EE.Q.3M.8.EE.Q.4M.8.EE.Q.5M.8.EE.Q.6M.8.EE.Q.7M.8.EE.Q.8M.8.EE.Q.9M.8.EE.Q.10M.8.EE.Q.11M.8.EE.Q.12M.8.EE.R.1M.8.EE.R.2M.8.EE.R.3M.8.EE.R.4M.8.EE.R.5M.8.EE.R.6M.8.EE.R.7M.8.EE.R.8M.8.EE.R.9M.8.EE.R.10M.8.EE.R.11M.8.EE.R.12M.8.EE.S.1M.8.EE.S.2M.8.EE.S.3M.8.EE.S.4M.8.EE.S.5M.8.EE.S.6M.8.EE.S.7M.8.EE.S.8M.8.EE.S.9M.8.EE.S.10M.8.EE.S.11M.8.EE.S.12M.8.EE.T.1M.8.EE.T.2M.8.EE.T.3M.8.EE.T.4M.8.EE.T.5M.8.EE.T.6M.8.EE.T.7M.8.EE.T.8M.8.EE.T.9M.8.EE.T.10M.8.EE.T.11M.8.EE.T.12M.8.EE.U.1M.8.EE.U.2M.8.EE.U.3M.8.EE.U.4M.8.EE.U.5M.8.EE.U.6M.8.EE.U.7M.8.EE.U.8M.8.EE.U.9M.8.EE.U.10M.8.EE.U.11M.8.EE.U.12M.8.EE.V.1M.8.EE.V.2M.8.EE.V.3M.8.EE.V.4M.8.EE.V.5M.8.EE.V.6M.8.EE.V.7M.8.EE.V.8M.8.EE.V.9M.8.EE.V.10M.8.EE.V.11M.8.EE.V.12M.8.EE.W.1M.8.EE.W.2M.8.EE.W.3M.8.EE.W.4M.8.EE.W.5M.8.EE.W.6M.8.EE.W.7M.8.EE.W.8M.8.EE.W.9M.8.EE.W.10M.8.EE.W.11M.8.EE.W.12M.8.EE.X.1M.8.EE.X.2M.8.EE.X.3M.8.EE.X.4M.8.EE.X.5M.8.EE.X.6M.8.EE.X.7M.8.EE.X.8M.8.EE.X.9M.8.EE.X.10M.8.EE.X.11M.8.EE.X.12M.8.EE.Y.1M.8.EE.Y.2M.8.EE.Y.3M.8.EE.Y.4M.8.EE.Y.5M.8.EE.Y.6M.8.EE.Y.7M.8.EE.Y.8M.8.EE.Y.9M.8.EE.Y.10M.8.EE.Y.11M.8.EE.Y.12M.8.EE.Z.1M.8.EE.Z.2M.8.EE.Z.3M.8.EE.Z.4M.8.EE.Z.5M.8.EE.Z.6M.8.EE.Z.7M.8.EE.Z.8M.8.EE.Z.9M.8.EE.Z.10M.8.EE.Z.11M.8.EE.Z.12	
Units:	Unit Length:	Unit Outcomes:
Problem Solving	12 days	Student will collect data, find patterns, write equations, and work backwards to solve problems.
Simplifying with Variables	13 days	Students will write and simplify algebraic expressions.
Graphs and Equations	17 days	Students will learn what it means for something to be the solution to an equation, and what it means for an equation to have no solutions.
Multiple Representations	13 days	Students will learn how to change any representation of data to any other representation.
Systems of equations	13 days	Students will learn how to use the connections between graphs, tables, rules, and patterns to solve problems.
Transformations and Similarity	14 days	Students will transform shapes by flipping, turning, and sliding them on a coordinate graph.
Slope and Association	15 days	Students will create scatterplots that show the relationship between two variables.
Exponents and Functions	15 days	Students will determine whether a relationship grows linearly or exponentially.
Angles and the Pythagorean Theorem	17 days	Students will find the measurements of missing angles made by lines that intersect parallel lines.
Surface Area and Volume	16 days	Students will find the volumes of non-rectangular shapes, including cylinders, pyramids, cones and spheres.

Unit Name: Problem Solving	Length: 12 days
Standards: M.8.SP.A.2M.8.EE.B.5M.8.EE.C.7a,M.8.EE.C.7b	Outcomes: Student will collect data, find patterns, write equations, and work backwards to solve problems.
Essential Questions: How can I solve a problem that I have never seen before?	Learning Targets: Students will be able to apply their current math knowledge to solve problems.
Topic 1: Interpreting graphs	Length: 1 day
Lesson Frame:	We will be given the opportunity to know the members of our study teams while interpreting the graphs.
Performance Tasks: Students will be able to interpret points and continuous graphs.	I will construct viable arguments and critique the reasoning of others to create stories for graphs. Notes:
Topic 2: Finding and generalizing patterns	Length: 1 day
Lesson Frame:	We will be able to generalize a geometric description of a pattern. I will look for and express regularity in repeated reasoning in order to identify the specific figure number.
Performance Tasks: Students will be able to extend a tile pattern.	Notes:
Topic 3: The algebra walk	Length: 1 day
Lesson Frame:	We will informally be introduced to linear functions. I will look for and make use of structure as I use input and output values of equations to make graphs.
Performance Tasks: Students will be able to experience the xy coordinate system.	Notes:
Topic 4: Collecting, organizing, and analyzing data	Length: 2 days
Lesson Frame:	We will be introduced to the concept of dependent and independent measures. I will model with mathematics while collecting data and identifying trends from graphs.
Performance Tasks: Students will be able to organize data in scatterplots and make predictions.	Notes:
Topic 5: Proportional relationship with graphs and tables	Length: 1 day
Lesson Frame:	We will compare rates in different representations of proportional relationships I will make sense of problems by recognizing proportional relationships and their multiplicative property.
Performance Tasks: Students will be able to explore proportional relationships using graphs and tables.	Notes:
Topic 6: Strategies for solving proportional relationships.	Length: 1 day
Lesson Frame:	We will investigate different strategies to solve proportions. I will abstract and quantitative reasoning as I identify connections between things I see.

<p>Unit Name: Problem Solving</p>	<p>Length: 12 days</p>
<p>Standards: M.8.SP.A.2, M.8.EE.B.5, M.8.EE.C.7a, M.8.EE.C.7b</p>	<p>Outcomes: Student will collect data, find patterns, write equations, and work backwards to solve problems.</p>
<p>Essential Questions: How can I solve a problem that I have never seen before?</p>	<p>Learning Targets: Students will be able to apply their current math knowledge to solve problems.</p>
<p>Performance Tasks: Students will be able to solve proportions written as equivalent fractions.</p>	<p>Notes:</p>

Unit Name: Simplifying with Variables	Length: 13 days
Standards: M.8.EE.C.7.a, M.8.EE.C.7.b	Outcomes: Students will write and simplify algebraic expressions.
Essential Questions: What is a variable and what can I do with a variable?	Learning Targets: Students will be able to solve for a variable if they know that two expressions are equal.
Topic 1: Exploring variables and expressions	Length: 1 day
Lesson Frame:	We will name each tile by its areas and learn how to simplify expressions. I will look for and make use of structure of algebraic notation as I combine like terms.
Performance Tasks: Students will be able to use tiles to manipulate algebraic expressions.	Notes:
Topic 2: Simplifying expressions by combining like terms	Length: 1 day
Lesson Frame:	We will differentiate between the dimensions of the tiles and the area. I will find the perimeter and area of algebra tiles.
Performance Tasks: Students will be able to find the perimeter of shapes formed with tiles.	Notes:
Topic 3: Writing algebraic expressions	Length: 1 day
Lesson Frame:	We will construct and simplify algebraic expressions using algebra tiles. I will make sense of the meaning of minus.
Performance Tasks: Students will be able to represent negatives with algebra tiles.	Notes:
Topic 4: Using zero to simplify algebraic expressions	Length: 1 day
Lesson Frame:	We will deepen our understanding of the concept of zero. I will make sense of problems by recognizing simpler algebraic expressions.
Performance Tasks: Students will be able to build and simplify algebraic expressions using tiles.	Notes:
Topic 5: Using algebra tiles to simplify algebraic expressions	Length: 1 day
Lesson Frame:	We will begin to simplify expression use tiles and comparison mats. I will reason abstractly and quantitatively as I compare expressions.
Performance Tasks: Students will be able to use different interpretations of minus to represent negatives with algebra tiles.	Notes:
Topic 6: Simplifying and recording work	Length: 1 day
Lesson Frame:	We will learn how to record work and show our solution in steps.

Unit Name: Simplifying with Variables	Length: 13 days
Standards: M.8.EE.C.7a, M.8.EE.C.7b	Outcomes: Students will write and simplify algebraic expressions.
Essential Questions: What is a variable and what can I do with a variable?	Learning Targets: Students will be able to solve for a variable if they know that two expressions are equal.
Performance Tasks: Students will be able to compare expressions using tiles to identify which expression is greater.	I will attend to precision as I practice recording my work and communicating with others my thinking. Notes:
Topic 7: Using algebra tiles to solve for x	Length: 1 day
Lesson Frame:	We will strengthen our simplifying skills by solving equations for x. I will use equation mats to solve equations.
Performance Tasks: Students will be able to solve equations for x.	Notes:
Topic 8: More solving equations	Length: 1 day
Lesson Frame:	We will strengthen our simplification and recording skills. I will critique the reasoning of others to clarify the structure of meaning in my mind.
Performance Tasks: Students will be able to consider special types of solutions such as all numbers and no solution.	Notes:

Unit Name:Graphs and Equations	Length:17 days
Standards:M.8.EE.C.7aM.8.EE.C.7bM.8.F.A.1M.8.F.A.2M.8.F.A.3M.8.F.B.4	Outcomes:Students will learn what it means for something to be the solution to an equation, and what it means for an equation to have no solutions.
Essential Questions:How many different ways can I represent it?	Learning Targets:Students will be able to represent a situation using a table, a graph or a rule.
Topic 1:Extending patterns and finding rules	Length:1 day
Lesson Frame:	We will work toward concise and descriptive rules using words.
Performance Tasks: Students will be able to identify the rule for a pattern.	I will look for and express regularity in repeated reasoning as I investigate tile patterns.
Notes:	
Topic 2:Using tables, graphs, and rules to make predictions	Length:1 day
Lesson Frame:	We will evaluate algebraic expressions to make predictions about a pattern.
	I will model with mathematics as I find an equation for predicting the height of a tree.
Performance Tasks: Students will be able to write rules using symbolic notation.	Notes:
Notes:	
Topic 3:Using a graphing calculator and identifying solutions	Length:2 days
Lesson Frame:	We will learn the difference between discrete and continuous graphs.
	I will use graphing calculators to verify that the equation of my line matches the points on the table.
Performance Tasks: Students will be able to graph data points from a pattern on the xy coordinate plane.	Notes:
Notes:	
Topic 4:Completing tables and drawing graphs	Length:1 day
Lesson Frame:	We will practice setting up appropriate axes for a data set.
	I will look for and make use of structure as I graph equations.
Performance Tasks: Students will be able to plot point from and xy table.	Notes:
Notes:	
Topic 5:Graphs, tables and rules	Length:1 day
Lesson Frame:	We will practice graphing decimal values.
	I will use what I have learned about structure to solve word problems.
Performance Tasks: Students will be able to set up and complete a table, plot points, and draw a graph when given a situation or equation.	Notes:
Notes:	
Topic 6:Complete graphs	Length:1 day
Lesson Frame:	We will draw and complete quadratic and linear equations.

Unit Name: Graphs and Equations	Length: 17 days
Standards: M.8.EE.C.7aM.8.EE.C.7bM.8.FA.1M.8.FA.2M.8.FA.3M.8.FB.4	Outcomes: Students will learn what it means for something to be the solution to an equation, and what it means for an equation to have no solutions.
Essential Questions: How many different ways can I represent it?	Learning Targets: Students will be able to represent a situation using a table, a graph or a rule. I will attend to precision as I create complete graphs.
Performance Tasks: Students will be able to create tables and scale axes when given a quadratic equation.	Notes:
Topic 7: Identifying common graphing errors	Length: 1 day
Lesson Frame:	We will use graphs and rules to analyze a contextual situation with a limited domain. I will reason abstractly and quantitatively as I analyze situations.
Performance Tasks: Students will be able to identify common errors in scaling and plotting points.	Notes:
Topic 8: Solving equations and checking solutions	Length: 1 day
Lesson Frame:	We will recognize that a solution is a value that makes an equation true. I will make sense of legal moves use on my equation mat to record work and persevere in solving problems.
Performance Tasks: Students will be able to check their answers.	Notes:
Topic 9: Determining the number of solutions	Length: 1 day
Lesson Frame:	We will work with equations that have one, many, and no solutions. I will reason abstractly and quantitatively to solve equations with infinite and no solutions.
Performance Tasks: Students will be able to develop their understanding of what makes a solution to an equation.	Notes:
Topic 10: Problem solving with equations	Length: 1 day
Lesson Frame:	We will expand the idea of a solution to include its meaning in relation to an application. I will use appropriate tools strategically to solve equations and understand the meaning of the solutions.
Performance Tasks: Students will be able to identify the meaning of a solution.	Notes:
Topic 11: More solving equations to solve problems	Length: 1 day
Lesson Frame:	We will think of our solutions in terms of real world applications. I will create mathematical models for situations given to us in real world settings.

Unit Name: Graphs and Equations	Length: 17 days
Standards: M.8.EE.C.7a, M.8.EE.C.7b, M.8.F.A.1, M.8.F.A.2, M.8.F.A.3, M.8.F.B.4	Outcomes: Students will learn what it means for something to be the solution to an equation, and what it means for an equation to have no solutions.
Essential Questions: How many different ways can I represent it?	Learning Targets: Students will be able to represent a situation using a table, a graph or a rule.
Performance Tasks: Students will be able to understand why some equations can't be solved.	Notes:
Topic 12: Distributive property equations	Length: 1 day
Lesson Frame:	We will use the distributive property to solve linear equations. I will critique the reasoning of others to clarify a concept for myself.
Performance Tasks: Students will be able to use the distributive property.	Notes:

Unit Name: Multiple Representations	Length: 13 days
Standards: M.8.EE.B.6M.8.F.A.2M.8.F.B.4	Outcomes: Students will learn how to change any representation of data to any other representation.
Essential Questions: How does a pattern grow and show up in a table, graph and rule?	Learning Targets: Students will be able to use the connections between patterns, tables, graphs, and rules to solve problems.
Topic 1: Finding connections between representations	Length: 2 days
Lesson Frame:	We will discover connections between the representations of a pattern. I will investigate the connections between tile patterns, tables, graphs, and rules.
Performance Tasks: Students will be able to look at different ways to represent connections.	Notes:
Topic 2: Seeing growth in different representations	Length: 1 day
Lesson Frame:	We will identify connections between growth and its linear equation. I will look for and make use of structure within linear equations.
Performance Tasks: Students will be able to write linear algebraic rules.	Notes:
Topic 3: Connecting linear rules and graphs	Length: 1 day
Lesson Frame:	We will focus on how a geometric pattern grows and how the size of figure 0 can be determined on a graph. I will look for and express regularity in repeated reasoning as I identify growth patterns.
Performance Tasks: Students will be able to connect linear geometric patterns with patterns on a graph.	Notes:
Topic 4: $Y=MX+B$	Length: 1 day
Lesson Frame:	We will develop new connections between multiple representations and patterns. I will make use of structure of linear equations to write a rule for a graph.
Performance Tasks: Students will identify rules for patterns in slope intercept form.	Notes:
Topic 5: Checking the connections	Length: 2 days
Lesson Frame:	We will apply our understanding of growth and figure 0 in order to generate complete representations. I will make sense of word problems within a real world setting.
Performance Tasks: Students will be able to make connections between multiple representations when they are presented with disparate pieces of information	Notes:
Topic 6: Graphing a line without an x/y table	Length: 1 day

Unit Name: Multiple Representations	Length: 13 days
Standards: M.8.EE.B.6M.8.F.A.2M.8.F.B.4	Outcomes: Students will learn how to change any representation of data to any other representation.
Essential Questions: How does a pattern grow and show up in a table, graph and rule?	Learning Targets: Students will be able to use the connections between patterns, tables, graphs, and rules to solve problems.
Lesson Frame:	We will graph equations quickly without making a table.
Performance Tasks: Students will be able to make graphs quickly given m and b.	I will look for and make use of structure of a linear equation while creating graphs.
	Notes:
Topic 7: Completing the web	Length: 1 day
Lesson Frame:	We will use the representations of patterns web to identify linear models.
Performance Tasks: Students will be able to graph and write equations from various representations.	I will make sense of problems involving moving between representations.
	Notes:

Unit Name: Systems of equations	Length: 13 days
Standards: M.8.EE.C.7b, M.8.EE.C.8a, M.8.EE.C.8c, M.8.EE.C.8b	Outcomes: Students will learn how to use the connections between graphs, tables, rules, and patterns to solve problems.
Essential Questions: In how many different ways can a pattern be represented?	Learning Targets: Students will be able to solve multi-variable equations for one of the variables.
Topic 1: Working with multi-variable equations	Length: 1 day
Lesson Frame:	We will solve two variable linear equations.
Performance Tasks:	I will rewrite linear equations in slope intercept form.
Students will be able to identify equations with multiple variables.	Notes:
Topic 2: Solving equations with fractions	Length: 1 day
Lesson Frame:	We will learn how to change fractional and decimal coefficients and constants to integers.
Performance Tasks:	I will use repeated reasoning of multiplying an equation with fractional coefficients by the LCD.
Students will be able to solve equations with integer coefficients.	Notes:
Topic 3: Introduction to systems of equations	Length: 1 day
Lesson Frame:	We will focus on systems of equations and their intersection point.
Performance Tasks:	I will reason abstractly and quantitatively while I examine graphs.
Students will be able to examine the meaning of points of intersection.	Notes:
Topic 4: Writing rules from word problems	Length: 1 day
Lesson Frame:	We will find intersections of equations in the contexts of word problems.
Performance Tasks:	I will use appropriate tools strategically to make sense of word problems and the intersections of equations.
Students will be able to write rules to word problems.	Notes:
Topic 5: Solving systems algebraically	Length: 1 day
Lesson Frame:	We will solve systems algebraically by rewriting equations in slope intercept form.
Performance Tasks:	I will use appropriate tools strategically so solve systems of equations by using the equal values method.
Students will be able to solve systems algebraically.	Notes:
Topic 6: Strategies for solving systems	Length: 1 day
Lesson Frame:	We will identify systems that are the same line or parallel lines.

<p>Unit Name: Systems of equations</p> <p>Standards: M.8.EE.C.7, M.8.EE.C.8a, M.8.EE.C.8c, M.8.EE.C.8b</p> <p>Essential Questions: In how many different ways can a pattern be represented?</p>	<p>Length: 13 days</p> <p>Outcomes: Students will learn how to use the connections between graphs, tables, rules, and patterns to solve problems.</p> <p>Learning Targets: Students will be able to solve multi-variable equations for one of the variables.</p> <p>I will look for and express regularity in repeated reasoning as I write linear equations in slope intercept form in order to use the equal values method.</p>
<p>Performance Tasks: Students will be able to solve systems of equations using the equal values method.</p>	<p>Notes:</p>

Unit Name: Transformations and Similarity	Length: 14 days
Standards: M.8.G.A.1aM.8.G.A.1bM.8.G.A.1cM.8.G.A.2M.8.G.A.3M.8.G.A.4	Outcomes: Students will transform shapes by flipping, turning, and sliding them on a coordinate graph.
Essential Questions: How can I describe the motion?	Learning Targets: Students will be able to compare shapes and use similarity to find missing side lengths of polygons.
Topic 1: Rigid transformations	Length: 1 day
Lesson Frame:	We will translate, rotate, and reflect shapes. I will make sense of rigid transformations.
Performance Tasks: Students will be able to move a shape on a coordinate graph using rigid transformations.	Notes:
Topic 2: Rigid transformations on a coordinate graph	Length: 1 day
Lesson Frame:	We will use coordinates to describe the positions of objects in a plane. I will attend to precision as I describe the transformation using correct mathematical vocabulary.
Performance Tasks: Students will be able to describe complete transformations.	Notes:
Topic 3: Describing transformations	Length: 1 day
Lesson Frame:	We will identify whether a shape has been translated, rotated or reflected. I will attend to precision as I describe rigid transformations.
Performance Tasks: Students will extend their techniques for using integer expressions to record movement on a number line.	Notes:
Topic 4: Using rigid transformations	Length: 1 day
Lesson Frame:	We will identify each type of transformation. I will make use of structure as I look for reasoning to make a unique drawing.
Performance Tasks: Students will be able to move shapes on a coordinate graph to create drawings.	Notes:
Topic 5: Multiplication and dilation	Length: 1 day
Lesson Frame:	We will practice dilations using shapes and coordinates. I will write a conjecture to construct a viable argument.
Performance Tasks: Students will be able to dilate.	Notes:
Topic 6: Dilation of similar figures	Length: 1 day

Unit Name: Transformations and Similarity	Length: 14 days
Standards: M.8.G.A.1aM.8.G.A.1bM.8.G.A.1cM.8.G.A.2M.8.G.A.3M.8.G.A.4	Outcomes: Students will transform shapes by flipping, turning, and sliding them on a coordinate graph.
Essential Questions: How can I describe the motion?	Learning Targets: Students will be able to compare shapes and use similarity to find missing side lengths of polygons.
Lesson Frame:	We will compare shapes to determine similarity.
Performance Tasks: Students will be able to understand how dilations by different numbers result in changes in shapes.	I will be able to identify how scale factors determine if an object gets larger or smaller.
	Notes:
Topic 7: Identifying similar shapes	Length: 1 day
Lesson Frame:	We will develop an understanding of congruence and how it relates to similarity.
Performance Tasks: Students will be able to explore different scale factors.	I will make sense of and persevere in solving problems with scale factors.
	Notes:
Topic 8: Similar figures and transformations	Length: 1 day
Lesson Frame:	We will use sequences of transformations to show two figures similar or congruent.
Performance Tasks: Students will be able to use sequences of transformations.	I will attend to precision when I describe transformations and similar figures.
	Notes:
Topic 9: Working with correspondings sides	Length: 1 day
Lesson Frame:	We will develop our understanding of ratio and similarity.
Performance Tasks: Students will be able to identify actions that enlarge and reduce shapes.	I will reason abstractly and quantitatively to evaluate ratios in order to determine similarity.
	Notes:
Topic 10: Solving problems involving similar shapes	Length: 1 day
Lesson Frame:	We will recognize that equivalent fractions can be used to find missing sides of shapes.
Performance Tasks: Students will be able to find missing parts of similar figures.	I will evaluate ratios in order to determine similarity.
	Notes:

Unit Name:Slope and Association	Length: 15 days
Standards: M.8.EE.B.5M.8.EE.B.6M.8.F.A.3M.8.SP.A.1M.8.SP.A.2M.8.SP.A.3M.8.SP.A.4	Outcomes: Students will create scatterplots that show the relationship between two variables.
Essential Questions: What information is needed to find the equation of a line?	Learning Targets: Students will be able to identify associations between sets of data and represent the relationship with a trend line.
Topic 1: Circle graphs	Length: 1 day
Lesson Frame:	We will interpret circle graphs using central angles and percents.
Performance Tasks: Students will be able to construct circle graphs.	I will construct viable arguments about given circle graphs.
Notes:	
Topic 2: Organizing data in a scatterplot	Length: 1 day
Lesson Frame:	We will identify whether there is a relationship between two sets of data.
Performance Tasks: Students will be able to create scatterplots.	I will model with mathematics as I create scatterplots and draw lines of best fit.
Notes:	
Topic 3: Identifying and describing associations	Length: 1 day
Lesson Frame:	We will create and use scatterplots to make predictions.
Performance Tasks: Students will be able to understand the relationship between different associations.	I will attend to precision when creating and labeling scatter plots.
Notes:	
Topic 4: $Y=MX+B$ revisited	Length: 1 day
Lesson Frame:	We will strengthen our knowledge of $y=mx+b$ form.
Performance Tasks: Students will be able to show that data is linear with a constant growth.	I will attend to precision as I write equations of lines.
Notes:	
Topic 5: Slope	Length: 1 day
Lesson Frame:	We will use ratios between vertical change and horizontal change to describe slope.
Performance Tasks: Students will be able to describe the rate of change of a line.	I will reason abstractly and quantitatively to find slope and connect it to unit rate.
Notes:	
Topic 6: Slope in different representations	Length: 1 day
Lesson Frame:	We will recognize the effect of scaling on the steepness of a line.

Unit Name:Slope and Association	Length: 15 days
Standards: M.8.EE.B.5M.8.EE.B.6M.8.F.A.3M.8.SP.A.1M.8.SP.A.2M.8.SP.A.3M.8.SP.A.4	Outcomes: Students will create scatterplots that show the relationship between two variables.
Essential Questions: What information is needed to find the equation of a line?	Learning Targets: Students will be able to identify associations between sets of data and represent the relationship with a trend line. I will look for and express regularity in repeated reasoning as I recognize slope relationships.
Performance Tasks: Students will be able to identify slope from a graph.	Notes:
Topic 7: More about slope	Length: 1 day
Lesson Frame:	We will use slope to describe the average rate when the rate is not a constant. I will make use of structure of slope to describe growth and make predictions.
Performance Tasks: Students will be able to connect negative slope with negative rates of change.	Notes:
Topic 8: Proportional equations	Length: 1 day
Lesson Frame:	We will connect the constant of proportionality to the slope of a graph to the unit rate. I will look for and express regularity in repeated reasoning as I recognize proportional relationships.
Performance Tasks: Students will be able to write equations representing proportional relationships.	Notes:
Topic 9: Using equations to make predictions	Length: 1 day
Lesson Frame:	We will use the equation and a graph to make and justify predictions. I will make sense of quantities and their relationships to problem situations.
Performance Tasks: Students will be able to write the equations for line of best fit.	Notes:
Topic 10: Describing association fully	Length: 1 day
Lesson Frame:	We will continue to write equations for lines of best fit. I will connect the ideas of slope and y intercepts to make sense of problems and persevere in solving them
Performance Tasks: Students will be able to fully describe an association between two numerical variables using form, direction, strength, and outliers.	Notes:
Topic 11: Association between categorical variables	Length: 1 day
Lesson Frame:	We will develop an understanding that association can be seen in table rows or in table columns.

<p>Unit Name: Slope and Association</p>	<p>Length: 15 days</p>
<p>Standards: M.8.EE.B.5M.8.EE.B.6M.8.F.A.3M.8.SP.A.1M.8.SP.A.2M.8.SP.A.3M.8.SP.A.4</p>	<p>Outcomes: Students will create scatterplots that show the relationship between two variables.</p>
<p>Essential Questions: What information is needed to find the equation of a line?</p>	<p>Learning Targets: Students will be able to identify associations between sets of data and represent the relationship with a trend line.</p>
	<p>I will use the appropriate tool strategically to identify associations between categorical variables.</p>
<p>Performance Tasks: Students will be able to informally look for and describe associations between two categorical variables in a two way table.</p>	<p>Notes:</p>

Unit Name: Exponents and Functions	Length: 15 days
Standards: M.8.EE.A.1M.8.EE.A.3M.8.EE.A.4M.8.F.A.1M.8.F.A.3M.8.F.B.5	Outcomes: Students will determine whether a relationship grows linearly or exponentially.
Essential Questions: How is the pattern changing and how can I describe it?	Learning Targets: Students will be able to determine if a relation is a function by looking at a table or a graph.
Topic 1: Patterns and growth in tables and graphs	Length: 1 day
Lesson Frame:	We will use tables and graphs to compare linear and nonlinear data.
Performance Tasks: Students will be able to recognize linear and nonlinear situations.	I will look for and express regularity in repeated reasoning as I identify linear and nonlinear situations.
	Notes:
Topic 2: Compound interest	Length: 1 day
Lesson Frame:	We will recognize that compound interest is an example of multiplicative growth.
Performance Tasks: Students will be able to calculate compound interest.	I will model exponential growth in the context of compound interest.
	Notes:
Topic 3: Linear and exponential growth	Length: 1 day
Lesson Frame:	We will identify each of interest in multiple situations.
Performance Tasks: Students will be able to compare simple and compound interest.	I will look for and make sense of structure as I identify patterns.
	Notes:
Topic 4: Exponents and scientific notation	Length: 2 days
Lesson Frame:	We will build our understanding of exponents by writing numbers greater than one in scientific notations.
Performance Tasks: Students will be able to simplify expressions written with positive exponents.	I will make use of the structure of exponent notation to write numbers using scientific notation.
	Notes:
Topic 5: Exponent rules	Length: 1 day
Lesson Frame:	We will recognize the difference between raising a single number to a power and raising a grouped quantity to a power.
Performance Tasks: Students will develop methods for simplifying expressions with exponents.	I will reason abstractly as I simplify expressions with exponents.
	Notes:
Topic 6: Negative exponents	Length: 2 days

Unit Name: Exponents and Functions	Length: 15 days
Standards: M.8.EE.A.1M.8.EE.A.3M.8.EE.A.4M.8.F.A.1M.8.F.A.3M.8.F.B.5	Outcomes: Students will determine whether a relationship grows linearly or exponentially.
Essential Questions: How is the pattern changing and how can I describe it?	Learning Targets: Students will be able to determine if a relation is a function by looking at a table or a graph.
Lesson Frame:	We will develop methods for simplifying expressions with exponents.
Performance Tasks: Students will be able to represent expressions with zero and negative exponents.	I will look for and express regularity in repeated reasoning in patterns with exponents.
	Notes:
Topic 7: Operations with scientific notation	Length: 1 day
Lesson Frame:	We will connect our knowledge of scientific notation with simplifying expressions.
Performance Tasks: Students will be able to compare and perform computations with numbers in scientific notation.	I will make use of structure to perform computations with scientific notation.
	Notes:
Topic 8: Functions in graphs and tables	Length: 2 days
Lesson Frame:	We will practice identifying and describing functions.
Performance Tasks: Students will be able to determine which relationship are functions and which are not.	I will attend to precision as I describe functions.
	Notes:

Unit Name:Angles and the Pythagorean Theorem	Length:17 days
Standards:M.8.EE.A.2M.8.G.A.5M.8.G.B.6M.8.G.B.7M.8.G.B.8M.8.NS.A.1M.8.NS.A.2	Outcomes:Students will find the measurements of missing angles made by lines that intersect parallel lines.
Essential Questions:What do I know about this triangle?	Learning Targets:Students will be able to determine if two triangles are similar by looking at their angles.
Topic 1:Parallel line angle pair relationships	Length:1 day
Lesson Frame:	We will explore angles made with parallel lines and a transversal.
Performance Tasks: Students will be able to establish facts about angles.	I will construct viable arguments and critique the reasoning of other about angle pairs.
	Notes:
Topic 2:Finding unknown angles in triangles	Length:1 day
Lesson Frame:	We will identify missing angles of a triangle.
	I will reason abstractly and quantitatively to find the missing angles of a triangle.
	Notes:
Performance Tasks: Students will be able to identify that the three angles of a triangle.	
Topic 3:Exterior angles in triangles	Length:1 day
Lesson Frame:	We will identify that the exterior angle of a triangle is equal to the sum of the two remote interior angles.
	I will reason quantitatively, using repeated reasoning to elicit the exterior angles theorem.
	Notes:
Performance Tasks: Students will be able to find the measures of exterior angles of a triangle.	
Topic 4:AA triangle similarity	Length:1 day
Lesson Frame:	We will identify the criterion for similarity using AA.
	I will make sense of and persevere in solving problems using similar triangles.
Performance Tasks: Students will identify AA triangle similarity.	Notes:
Topic 5:Side lengths and triangles	Length:2 days
Lesson Frame:	We will focus on triangles to identify patterns in combinations that make right, acute, and obtuse angles.
	I will reason abstractly and quantitatively as I investigate combinations of side lengths of triangles.
Performance Tasks: Students will be able to see what combinations of side lengths make triangles.	Notes:
Topic 6:Pythagorean theorem	Length:1 day

Unit Name: Angles and the Pythagorean Theorem	Length: 17 days
Standards: M.8.EE.A.2, M.8.G.A.5, M.8.G.B.6, M.8.G.B.7, M.8.G.B.8, M.8.NS.A.1, M.8.NS.A.2	Outcomes: Students will find the measurements of missing angles made by lines that intersect parallel lines.
Essential Questions: What do I know about this triangle?	Learning Targets: Students will be able to determine if two triangles are similar by looking at their angles.
Lesson Frame:	We will identify relationships between side lengths of a right triangle.
Performance Tasks: Students will be able to apply the pythagorean theorem.	I will look for and make use of structure of the pythagorean theorem.
Notes:	
Topic 7: Understanding square roots	Length: 2 days
Lesson Frame:	We will find values of square roots by estimation.
Performance Tasks: Students will be able to understand the definition of square roots and irrational numbers.	I will reason quantitatively and look for and make use of the structure of a square root.
Notes:	
Topic 8: Real numbers	Length: 2 days
Lesson Frame:	We will convert terminating and repeating decimals into fractions.
Performance Tasks: Students will be able to distinguish rational numbers from irrational numbers.	I will look for and make use of structure when converting decimals to fractions.
Notes:	
Topic 9: Applications of pythagorean theorem	Length: 1 day
Lesson Frame:	We will use the pythagorean theorem to solve everyday real life problems.
Performance Tasks: Students will be able to apply the pythagorean theorem to word problems.	I will make sense of problems and persevere in solving them with the pythagorean theorem.
Notes:	
Topic 10: Pythagorean theorem in three dimensions	Length: 1 day
Lesson Frame:	We will use the pythagorean theorem to solve everyday real life three dimensional problems.
Performance Tasks: Students will be able to apply the pythagorean theorem to problems involving three dimensions.	I will use the appropriate tool to solve pythagorean theorem real world problems.
Notes:	
Topic 11: Pythagorean theorem proofs	Length: 1 day
Lesson Frame:	We will proof why the pythagorean theorem works.

<p>Unit Name: Angles and the Pythagorean Theorem</p>	<p>Length: 17 days</p>
<p>Standards: M.8.EE.A.2, M.8.G.A.5, M.8.G.B.6, M.8.G.B.7, M.8.G.B.8, M.8.NS.A.1, M.8.NS.A.2</p>	<p>Outcomes: Students will find the measurements of missing angles made by lines that intersect parallel lines.</p>
<p>Essential Questions: What do I know about this triangle?</p>	<p>Learning Targets: Students will be able to determine if two triangles are similar by looking at their angles. I will construct viable arguments and critique the reasoning of others as I explain proofs of the pythagorean theorem.</p>
<p>Performance Tasks: Students will be able to explain a proof of the pythagorean theorem.</p>	<p>Notes:</p>

Unit Name:Surface Area and Volume	Length:16 days
Standards:M.8.EE.A.2M.8.G.C.9	Outcomes:Students will find the volumes of non-rectangular shapes, including cylinders, pyramids, cones and spheres.
Essential Questions:Am I measuring in one, two, or three dimensions?	Learning Targets:Students will be able to find the surface areas of cylinders and pyramids.
Topic 1:Cube roots	Length:1 day
Lesson Frame:	We will find the length of a side of the cube given the volume.
Performance Tasks: Students will be able to find the volume of a cube.	I will reason quantitatively as I find volume or side lengths of cubes.
	Notes:
Topic 2:Surface area and volume of cylinders	Length:1 day
Lesson Frame:	We will compare the process of finding SA and volume of cylinders and rectangular prisms.
	I will attend to precision when distinguishing between surface area and volume.
	Notes:
Performance Tasks: Students will be able to find surface area and volume of cylinders.	
Topic 3:Volumes of cones and pyramids	Length:1 day
Lesson Frame:	We will demonstrate that the volume of a prism is three times the volume of a cone.
	I will create mathematical models to demonstrate how the volume of a prism and pyramid compare.
	Notes:
Performance Tasks: Students will be able to compare the volume of a cylinder and a cone with the same dimensions.	
Topic 4:Volume of a sphere	Length:1 day
Lesson Frame:	We will generalize the formula for a sphere through collecting data.
	I will make sense of problems and persevere in solving problems involving the volume of a sphere.
	Notes:
Performance Tasks: Students will be able to find the volume of a sphere.	
Topic 5:Applications of volume	Length:2 days
Lesson Frame:	We will apply our knowledge of volume to solve real world word problems involving volume.
	I will make sense of and persevere in solving problems involving cones and spheres.
	Notes:
Performance Tasks: Students will be able to create a cone with a maximum volume.	
Topic 6:Indirect measurement	Length:2 days

Unit Name:Surface Area and Volume	Length: 16 days
Standards:M.8.EE.A.2M.8.G.C.9	Outcomes:Students will find the volumes of non-rectangular shapes, including cylinders, pyramids, cones and spheres.
Essential Questions:Am I measuring in one, two, or three dimensions?	Learning Targets:Students will be able to find the surface areas of cylinders and pyramids.
Lesson Frame:	We will solve triangle problems connected to real life situations.
Performance Tasks: Students will be able to solve problems requiring them to use length, slope and angles.	I will describe the connections between slope and triangles.
Notes:	
Topic 7:Finding unknowns	Length:2 days
Lesson Frame:	We will solve problems involving values that are unknown.
Performance Tasks: Students will be able to solve problems involving equivalent and unknown vallues.	I will solve real world problems where I need to find a missing value.
Notes:	
Topic 8:Analyzing data to identify a trend	Length:2 days
Lesson Frame:	We will determine rates and percents from a trend line.
Performance Tasks: Students will be able to graph data given to them in different forms.	I will identify trend lines from data that creates scatterplots.
Notes:	

September Unit 1	October Unit 2	November Finish unit 3	December Finish unit 4	January Finish unit 5	February Unit 7	March Unit 8	April Unit 9	May Unit 10	June
	Start unit 3	Start unit 4	Start unit 5	Unit 6					

Course Name:	Core Connections Algebra GPM		
Credits:	1		
Prerequisites:	None		
Description:	This course is designed to introduce the student to the topics needed to go into the upper level Algebra courses. It stresses rational expressions and problem solving with variables, number sets and real numbers, solving linear equations, graphing linear equations, writing linear equations, solving and graphing linear inequalities, systems of linear equations and inequalities, exponential functions, polynomials and factoring, rational expressions and equations, matrices, and radicals.		
Academic Standards:	Wisconsin State Standards in Mathematics		
Units: 11	Unit Length:		
Functions	14 Days	M.F.IF.A.1 (F2Y), .F.IF.A.2 (F2Y) M.F.IF.C.7a (F2Y), .F.IF.C.7e, M.A.REI.D.10, (F2Y), M.F.IF.B.4 (F2Y), M.A.REI.D.10 (F2Y), M.F.IF.B.4 (F2Y), M.F.IF.C.7b, M.F.IF.B.5	Unit Outcomes:
Linear Relationships	14 Days	M.A.CED.A.2 (F2Y)M.A.REI.D.10 (F2Y)M.A.SSE.A.1aM.A.SSE.A.1bM.F.BF.A.1aM.F.IF.B.4 (F2Y)M.F.IF.B.6M.F.IF.C.7a (F2Y)M.F.IF.C.7bM.F.IF.C.9M.F.IE.A.1 (F2Y)M.F.IE.A.1a (F2Y)M.F.IE.A.1b (F2Y)M.F.IE.A.2 (F2Y)M.F.IE.B.5 (F2Y)M.N.Q.A.1 (F2Y)M.N.Q.A.2 (F2Y)	Students will explore nonlinear functions and learn how to describe a function completely.
Simplifying and Solving	15 Days	M.A.APR.A.1M.A.CED.A.4 (F2Y)M.A.REI.A.1 (F2Y)M.A.REI.B.3 (F2Y)M.A.SSE.A.1aM.A.SSE.B.3a	Students will multiply and solve equations.
Systems of Equations	15 Days	M.A.CED.A.1 (F2Y)M.A.REI.C.5 (F2Y)M.A.REI.C.6 (F2Y)M.A.REI.D.10 (F2Y)M.A.SSE.A.1bM.F.IE.A.1b (F2Y)M.N.Q.A.1 (F2Y)M.N.Q.A.2 (F2Y)	Students will learn how to solve word problems by writing a system of equations.
Sequences	16 Days	M.F.BF.A.2M.F.IF.7eM.F.IF.A.3 (F2Y)M.F.IF.B.6M.F.IE.A.1a (F2Y)M.F.IE.A.1c (F2Y)M.F.IE.A.2 (F2Y)M.F.IE.A.3 (F2Y)M.N.Q.A.2 (F2Y)	Students will look for patterns and make tables to write algebraic equations describing sequences of numbers.
Modeling Two-Variable Data	16 Days	M.N.Q.A.1 (F2Y)M.N.Q.A.3 (F2Y)M.SP.ID.B.6a (F2Y)M.SP.ID.B.6c (F2Y)M.SP.ID.C.7 (F2Y)M.SP.ID.C.8 (F2Y)M.SP.ID.C.9 (F2Y)	Students will use scatterplots of data to create lines and curves that model the data.
Exponential Functions	15 Days	M.A.CED.A.1 (F2Y)M.A.CED.A.2 (F2Y)M.A.REI.D.10 (F2Y)M.A.SSE.A.1bM.A.SSE.B.3cM.F.BF.A.1aM.F.IF.7bM.F.IF.7eM.F.IF.B.4 (F2Y)M.F.IF.B.5M.F.IF.B.6M.F.IF.C.7bM.F.IF.C.8 (F2Y)M.F.IF.C.9M.F.IE.A.1a (F2Y)M.F.IE.A.1c (F2Y)M.F.IE.A.2 (F2Y)	Students will simplify and rewrite exponential expressions while working with fractional exponents.

Quadratic Functions	14 Days	<p>M.A.CED.A.2 (F2Y)M.A.REI.B.4 (F2Y)M.A.SSE.A.1bM.A.SSE.B.3aM.A.SSE.B.3bM.F.BF.A.1aM.F.IF.B.4 (F2Y)M.F.IF.B.5M.F.IF.C.7a (F2Y)M.F.IF.C.8 (F2Y)M.F.IF.C.9M.N.Q.A.1 (F2Y)</p> <p>Students will find connections between the different representations of a quadratic function.</p>
Solving Quadratics and Inequalities	15 Days	<p>M.A.CED.A.2 (F2Y)M.A.REI.B.4 (F2Y)M.A.SSE.A.1bM.A.SSE.B.3aM.A.SSE.B.3bM.F.BF.A.1aM.F.IF.B.4 (F2Y)M.F.IF.B.5M.F.IF.C.7a (F2Y)M.F.IF.C.8 (F2Y)M.F.IF.C.9M.N.Q.A.1 (F2Y)</p> <p>Students will learn how to deal with two expressions that are not of equal value, inequalities.</p>
Solving Complex Equations	18 Days	<p>M.A.REI.A.1 (F2Y)M.A.REI.B.3 (F2Y)M.A.REI.B.4 (F2Y)M.A.REI.C.7 (F2Y)M.A.REI.D.11 (F2Y)M.A.SSE.A.1bM.A.SSE.B.3cM.N.RN.B.3M.SP.ID.B.5 (F2Y)</p> <p>Students will solve equations with square roots, absolute value, variable exponents, and messy fractions.</p>
Functions and Data	20 Days	<p>M.A.CED.A.1 (F2Y)M.A.CED.A.3 (F2Y)M.A.SSE.B.3M.F.BF.B.4M.F.IF.A.1 (F2Y)M.F.IF.B.4 (F2Y)M.F.IF.B.5M.F.IF.C.7a (F2Y)M.F.IF.C.8 (F2Y)M.F.LE.A.1a (F2Y)M.F.LE.A.1c (F2Y)M.F.LE.A.2 (F2Y)M.F.LE.B.5 (F2Y)M.N.Q.A.2 (F2Y)M.N.Q.A.3 (F2Y)M.SP.ID.A.1 (F2Y)M.SP.ID.A.2 (F2Y)</p> <p>Students will learn how to change and "undo" functions.</p>

Unit Name: Functions	Length: 14 days
Standards: M.F.IF.A.1 (F2Y), F.IF.A.2 (F2Y) M.F.IF.C.7a (F2Y), F.IF.C.7e, M.A.REI.D.10, (F2Y), M.F.IF.B.4 (F2Y), M.A.REI.D.10 (F2Y), M.F.IF.B.4 (F2Y), M.F.IF.C.7b, M.F.IF.B.5	Outcomes: Students will explore nonlinear functions and learn how to describe a function completely.
Essential Questions: Can I identify important quantities in situations and describe their relationships using graphs?	Learning Targets: Students will be able to describe nonlinear functions completely.
Topic 1: Solving Puzzles in Teams	Length: 1 day
Standard(s): F-IF.1, F-IF.2	Academic Vocabulary: Team roles
Lesson Frame:	We will be able to work in teams. I will know the main roles in a team.
Performance Tasks: Students will be able to identify multiple representations of linear functions.	Notes:
Topic 2 Investigating Growth Patterns	Length: 2 days
Standard(s): F-IF.7a, F-IF.7e	Academic Vocabulary: Growth Patterns
Lesson Frame:	We will collect and analyze data. I will use tables and graphs to collect and analyze data.
Performance Tasks: Students will be able to collect and analyze data with tables and graphs.	Notes:
Topic 3 Investigating Graphs of Quadratic Functions	Length: 1 day
Standard(s): A-REI.10, F-IF.4, F-IF.7a	Academic Vocabulary: Linear Function, inverse variation, exponential functions
Lesson Frame:	We will describe a parabola using intercepts, minima, maxima, vertex, and symmetry. I will be able to describe the key characteristics of parabolas.
Performance Tasks: Students will be able to describe a parabola.	Notes:
Topic 4 Describing a Graph	Length: 2 days
Standard(s): A-REI.10, F-IF.4, F-IF.7b	Academic Vocabulary: Diamond problem
Lesson Frame:	We will write summary statements describing graphs. I will be able to write a summary statement from a square root graph.
Performance Tasks: Students will be able to write summary statements describing the graph of square roots.	Notes:
Topic 5 Cube Roots and Absolute Value Functions	Length: 1 day
Standard(s): A-REI.10, F-IF.7b	Academic Vocabulary: Cube root and absolute value
Lesson Frame:	We will graph and describe cube root and absolute value functions. I will accurately graph and describe cube root and absolute value functions.

Unit Name: Functions	Length: 14 days
Standards: M.F.IF.A.1 (F2Y), F.IF.A.2 (F2Y), M.F.IF.C.7a (F2Y), F.IF.C.7e, M.A.REI.D.10, (F2Y), M.F.IF.B.4 (F2Y), M.A.REI.D.10 (F2Y), M.F.IF.B.4 (F2Y), M.F.IF.C.7b, M.F.IF.B.5	Outcomes: Students will explore nonlinear functions and learn how to describe a function completely.
Essential Questions: Can I identify important quantities in situations and describe their relationships using graphs?	Learning Targets: Students will be able to describe nonlinear functions completely.
Performance Tasks: Students will be able to graph and describe cube roots and absolute value functions.	Notes:
Topic 6 Function Machines	Length: 1 days
Standard(s): F-IF.1, F-IF.2	Academic Vocabulary: Quadratic Function,
Lesson Frame:	We will understand the input/output nature of functions.
Performance Tasks: Students will be able to understand the input/output nature of functions.	I will understand the limitations for the domain and range of a function.
Notes:	Notes:
Topic 7 Functions	Length: 1 days
Standard(s): F-IF.1, F-IF.2	Academic Vocabulary: Function
Lesson Frame:	We will determine which relationships are functions.
Performance Tasks: Students will be able to determine which relationships are functions and which are not.	I will identify graphs and tables that are functions.
Notes:	Notes:
Topic 8 Domain and Range	Length: 1 days
Standard(s): F-IF.1, F-IF.2, F-IF.5	Academic Vocabulary: Domain, range
Lesson Frame:	We will describe the domain and range of a function.
Performance Tasks: Students will be able to describe the domain and range of a function.	I will look at an equation and graph and determine the domain and range.
Notes:	Notes:

Unit Name: Linear Relationships	Length: 14 days
Standards: M.A.CED.A.2 (F2Y)M.A.REI.D.10 (F2Y)M.A.SSE.A.1aM.A.SSE.A.1bM.F.BF.A.1aM.F.BF.B.4 (F2Y)M.F.IF.B.6M.F.IF.C.7a (F2Y)M.F.IF.C.7bM.F.IF.C.9M.F.LE.A.1 (F2Y)M.F.LE.A.1a (F2Y)M.F.LE.A.1b (F2Y)M.F.LE.A.2 (F2Y)M.F.LE.B.5 (F2Y)M.N.Q.A.1 (F2Y)M.N.Q.A.2 (F2Y)	Outcomes: Students will look for connections between the multiple representations of linear functions: table, graph, equation, and situation.
Essential Questions: Can I create a representation of a problem, consider the units involved, and understand the meaning of the quantities using tables, graphs and equations?	Learning Targets: Students will be able to find connections between multiple representations of a linear function.
Topic 1: Seeing Growth in Linear Representations	Length: 1 day
Standard(s): F-IF.7a, F-LE.1a, F-LE.2, F-LE.5	Academic Vocabulary: Linear representation
Lesson Frame:	We will write linear algebraic equations relating the figure number of a geometric pattern. I will work with tiles to look for growth patterns in a geometric pattern.
Performance Tasks: Students will be able to write linear functions from a geometric pattern.	Notes:
Topic 2 Slope	Length: 1 day
Standard(s): F-IF.7a, F-LE.1a, F-LE.2, F-LE.5	Academic Vocabulary: Slope triangle, lattice points
Lesson Frame:	We will gain abstract understanding of slope. I will discover that slope is a relationship between the change in Y and change in X.
Performance Tasks: Students will be able to understand slope abstractly.	Notes:
Topic 3 Comparing Change in Y and Change in X	Length: 1 day
Standard(s): F-IF.4, F-IF.7a, F-LE.1a, F-LE.5	Academic Vocabulary: Trends
Lesson Frame:	We will compare relative steepness of lines. I will use slope triangles to build intuition about positive, negative and zero slopes.
Performance Tasks: Students will be able to use slope triangles to compare steepness.	Notes:
Topic 4 Slope Intercept Form	Length: 1 day
Standard(s): A-SSE.1a, A-SSE.1b, A-REI.10, F-IF.4, F-IF.7a, F-BF.1a, F-LE.1a, F-LE.2, F-LE.5	Academic Vocabulary: Variables, parameters, coefficient
Lesson Frame:	We will formulate $y=mx+b$ form. I will explore information that is needed to determine a line in slope intercept form.
Performance Tasks: Students will be able to formalize $Y=MX + B$	Notes:
Topic 5 Slope as Motion	Length: 1 day
Standard(s): A-CED.2, F-IF.4, F-IF.7a, F-BF.1a, F-LE.1b, F-LE.2, F-LE.5	Academic Vocabulary: Motion

<p>Unit Name: Linear Relationships</p>	<p>Length: 14 days</p>
<p>Standards: M.A.CED.A.2 (F2Y)M.A.REI.D.10 (F2Y)M.A.SSE.A.1aM.A.SSE.A.1bM.F.BF.A.1aM.F.IF.B.4 (F2Y)M.F.IF.B.6M.F.IF.C.7a (F2Y)M.F.IF.C.7bM.F.IF.C.9M.F.LE.A.1 (F2Y)M.F.LE.A.1a (F2Y)M.F.LE.A.1b (F2Y)M.F.LE.A.2 (F2Y)M.F.LE.B.5 (F2Y)M.N.Q.A.1 (F2Y)M.N.Q.A.2 (F2Y)</p>	<p>Outcomes: Students will look for connections between the multiple representations of linear functions: table, graph, equation, and situation.</p>
<p>Essential Questions: Can I create a representation of a problem, consider the units involved, and understand the meaning of the quantities using tables, graphs and equations?</p>	<p>Learning Targets: Students will be able to find connections between multiple representations of a linear function.</p>
<p>Lesson Frame:</p>	<p>We will apply their knowledge of finding the equation of a line from a graph to a motion problem. I will begin to connect slope as a rate.</p>
<p>Performance Tasks: Students will be able to apply their knowledge of slope to a motion problem.</p>	<p>Notes:</p>
<p>Topic 6 Rate of Change</p>	<p>Length: 2 days</p>
<p>Standard(s): N-Q.1, N-Q.2, A-CED.2, F-IF.4, F-IF.6, F-IF.7a, F-IF.7b, F-IF.9, F-BF.1a, F-LE.1b, F-LE.2, F-LE.5</p>	<p>Academic Vocabulary: Rate of change, Piecewise graph</p>
<p>Lesson Frame:</p>	<p>We will understand speed as a rate. I will apply contextual meaning to m and b.</p>
<p>Performance Tasks: Students will be able to understand speed as a rate.</p>	<p>Notes:</p>
<p>Topic 7 Equations of Lines in Situations</p>	<p>Length: 1 day</p>
<p>Standard(s): N-Q.2, A-CED.2, F-IF.4, F-IF.7a, F-BF.1a, F-LE.1b, F-LE.2, F-LE.5</p>	<p>Academic Vocabulary: X and Y intercept We will practice finding slopes and writing linear equations. I will solve challenging team puzzles finding slopes.</p>
<p>Lesson Frame:</p>	<p>Notes:</p>
<p>Performance Tasks: Students will be able to find slopes and write equations from a puzzle.</p>	<p>Notes:</p>
<p>Topic 8 Finding an Equation Given a Slope and a Point</p>	<p>Length: 1 day</p>
<p>Standard(s): N-Q.2, A-CED.2, F-IF.4, F-IF.7a, F-BF.1a, F-LE.1b, F-LE.2, F-LE.5</p>	<p>Academic Vocabulary: Representation chart We will employ multiple methods to find the y intercept of a line given its slope and one point. I will learn how to solve for the y intercept algebraically.</p>
<p>Lesson Frame:</p>	<p>Notes:</p>
<p>Performance Tasks: Students will be able to find the Y intercept of a graph given a slope and a point.</p>	<p>Notes:</p>
<p>Topic 9 Finding the Equation of a Line Through Two Points</p>	<p>Length: 1 day</p>
<p>Standard(s): A-REI.10, F-IF.7a, F-BF.1a, F-LE.2</p>	<p>Academic Vocabulary: Slope intercept form We will use their knowledge of slope intercept form to find the equations of lines.</p>
<p>Lesson Frame:</p>	<p>Notes:</p>

<p>Unit Name: Linear Relationships</p> <p>Standards: M.A.CED.A.2 (F2Y)M.A.REI.D.10 (F2Y)M.A.SSE.A.1aM.A.SSE.A.1bM.F.BF.A.1aM.F.IF.B.4 (F2Y)M.F.IF.B.6M.F.IF.C.7a (F2Y)M.F.IF.C.7bM.F.IF.C.9M.F.LE.A.1 (F2Y)M.F.LE.A.1a (F2Y)M.F.LE.A.1b (F2Y)M.F.LE.A.2 (F2Y)M.F.LE.B.5 (F2Y)M.N.Q.A.1 (F2Y)M.N.Q.A.2 (F2Y)</p> <p>Essential Questions: Can I create a representation of a problem, consider the units involved, and understand the meaning of the quantities using tables, graphs and equations?</p>	<p>Length: 14 days</p> <p>Outcomes: Students will look for connections between the multiple representations of linear functions: table, graph, equation, and situation.</p> <p>Learning Targets: Students will be able to find connections between multiple representations of a linear function.</p> <p>I will use a table or graph to write equations of lines.</p>
<p>Performance Tasks: Students will be able to find an equation given to points.</p>	<p>Notes:</p>

Unit Name:Simplifying and Solving	Length:15 days
Standards:M.A.APR.A.1M.A.CED.A.4 (F2Y)M.A.REI.A.1 (F2Y)M.A.REI.B.3 (F2Y)M.A.SSE.A.1aM.A.SSE.B.3a	Outcomes:Students will multiply and solve equations.
Essential Questions:How can algebra tiles and area models help me better understand multiplication?	Learning Targets:Students will be able to solve polynomial equations.
Topic 1:Simplifying Exponential Expressions	Length:1 day
Standard(s):A-SSE.3c	Academic Vocabulary:Exponent
Lesson Frame:	We will expand exponential expressions. I will use repeated multiplication to expand exponential functions.
Performance Tasks: Students will be able to simplify expressions with exponents.	Notes:
Topic 2 Zero and negative exponents	Length:1 day
Standard(s):A-SSE.3c	Academic Vocabulary:Negative exponents
Lesson Frame:	We will formulize laws of exponents. I will deduce the mean of zero and negative exponents.
Performance Tasks: Students will be able to simplify expressions with zero and negative exponents.	Notes:
Topic 3 Equations using algebra tiles	Length:2 days
Standard(s):A-REI.1, A-REI.3	Academic Vocabulary:Algebra tiles, Equation mat, counterexample
Lesson Frame:	We will use alegbra tiles to represent equations and expressions. I will begin to understand the foundation of equation solving with algebra tiles.
Performance Tasks: Students will be able to represent equations with algebra tiles.	Notes:
Topic 4 Exploring an area model	Length:1 day
Standard(s):A-SSE.3a	Academic Vocabulary:Factors, generic rectangle
Lesson Frame:	We will start to identify dimensions of rectangles formed with algebra tiles. I will write the area as a sum and as a product.
Performance Tasks: Students will be able to demonstrate how to multiply using the area model.	Notes:

Unit Name: Simplifying and Solving	Length: 15 days
Standards: M.A.APR.A.1M.A.CED.A.4 (F2Y)M.A.REI.B.3 (F2Y)M.A.SSE.A.1aM.A.SSE.B.3a	Outcomes: Students will multiply and solve equations.
Essential Questions: How can algebra tiles and area models help me better understand multiplication?	Learning Targets: Students will be able to solve polynomial equations.
Topic 5 Multiplying binomials and the distributive property	Length: 1 day
Standard(s): A-APR.1	Academic Vocabulary: Distributive property, whole numbers, closed set, polynomial, binomial
Lesson Frame:	We will multiply polynomial expressions using algebra tiles. I will apply the distributive property using algebra tiles.
Performance Tasks: Students will be able to multiply binomials.	Notes:
Topic 6 Using generic rectangles to multiply	Length: 1 day
Standard(s): A-APR.1	Academic Vocabulary: Generic rectangle, product, associative property, commutative property
Lesson Frame:	We will continue to practice multiplying expressions. I will find missing dimensions of generic rectangles given the area.
Performance Tasks: Students will be able to use generic rectangles to multiply polynomials.	Notes:
Topic 7 Solving equations with multiplication and absolute value.	Length: 1 day
Standard(s): A-REI.1, A-REI.3, (A-REI.3.1)	Academic Vocabulary: Inverse
Lesson Frame:	We will solve linear equations that involve multiplication. I will solve problems that involve absolute value.
Performance Tasks: Students will be able to solve equations with multiplication and absolute value in them.	Notes:
Topic 8 Working with multi-variable equations	Length: 2 days
Standard(s): A-REI.1, A-REI.3, (A-REI.3.1)	Academic Vocabulary: Standard form
Lesson Frame:	We will solve multi-variable equations for one of the variables. I will work with algebra tiles to solve multi-step multi-variable equations.
Performance Tasks: Students will begin working with equations with more than one variable.	Notes:
Topic 9 Summary of Solving Equations	Length: 1 day

Unit Name: Simplifying and Solving	Length: 15 days
Standards: M.A.APR.A.1M.A.CED.A.4 (F2Y)M.A.REI.A.1 (F2Y)M.A.REI.B.3 (F2Y)M.A.SSE.A.1aM.A.SSE.B.3a	Outcomes: Students will multiply and solve equations.
Essential Questions: How can algebra tiles and area models help me better understand multiplication?	Learning Targets: Students will be able to solve polynomial equations.
Standard(s): A-CED.4, A-REI.3	Academic Vocabulary: Area as a product and sum
Lesson Frame:	We will solve single and multi variable equations. I will solve single and multiple variable equations given to me in different forms.
Performance Tasks: Students will be able to solve equations in a variety of settings.	Notes:

Unit Name: Systems of Equations	Length: 15 days
Standards: M.A.CED.A.1 (F2Y)M.A.REI.C.5 (F2Y)M.A.REI.C.6 (F2Y)M.A.REI.D.10 (F2Y)M.A.SSE-A.1bM.F.LE.A.1b (F2Y)M.N.Q.A.1 (F2Y)M.N.Q.A.2 (F2Y)	Outcomes: Students will learn how to solve word problems by writing a system of equations.
Essential Questions: Am I using correct vocabulary and clear explanations in discussions with my team, while paying attention to small details?	Learning Targets: Students will be able to solve systems of equations.
Topic 1: Solving word problems by writing equations	Length: 2 days
Standard(s): N-Q.2, A-SSE.1b, A-CED.1, A-REI.6, F-LE.1b	Academic Vocabulary: math sentence, let statement, models, line of best fit
Lesson Frame:	We will define variables and write equations to solve word problems. I will review the connections between a graph, table, and an equation.
Performance Tasks: Students will be able to write equations from word problems.	Notes:
Topic 2 One equation or two	Length: 1 day
Standard(s): N-Q.2, A-CED.1, A-CED.2, A-REI.6	Academic Vocabulary: Equal values method, system of equations
Lesson Frame:	We will continue to learn how to write equations from word problems. I will solve a system of equations by rewriting one of the equations.
Performance Tasks: Students will be able to decide the number of equations that need to be written given specific information.	Notes:
Topic 3 Solving systems of equations using substitution	Length: 1 day
Standard(s): A-REI.6	Academic Vocabulary: Substitution method, form, nonlinear, associations, outlier, strength
Lesson Frame:	We will understand how to use substitution to solve systems of linear equations. I will recognize the benefits of using substitution in certain situations.
Performance Tasks: Students will be able to solve equations using substitution.	Notes:
Topic 4 Systems, solutions and graphs	Length: 1 day
Standard(s): N-Q.2, A-REI.5, A-REI.6, A-REI.10	Academic Vocabulary: Substitution method, solution
Lesson Frame:	We will examine how a solution to a system of equations relates to those equations. I will graph equations to see how the solution connections to equations.
Performance Tasks: Students will be able to connect equations, graphs and word problems that represent each other.	Notes:

Unit Name:Sequences	Length: 16 days
Standards:M.F.BF.A.2M.F.IF.7eM.F.IF.A.3 (F2Y)M.F.IF.B.6M.F.LE.A.1a (F2Y)M.F.LE.A.1c (F2Y)M.F.LE.A.2 (F2Y)M.F.LE.A.3 (F2Y)M.N.Q.A.2 (F2Y)	Outcomes:Students will look for patterns and make tables to write algebraic equations describing sequences of numbers.
Essential Questions:When patterns are repeated, can I find shortcuts that lead to an equation?	Learning Targets:Students will be able to write equations of sequences.
Topic 1:Representing Exponential Growth	Length:2 days
Standard(s):N-Q.2, F-LE.1c	Academic Vocabulary:Exponential function, growth
Lesson Frame:	We will represent exponential growth in a table, graph, and diagram. I will write descriptions of exponential growth based on patterns I see.
Performance Tasks: The students will be able to write exponential equations given a situation.	Notes:
Topic 2 Rebound ratios	Length:1 day
Standard(s):F-LE.1c	Academic Vocabulary:Ratio, continuous, discrete, independent, dependent
Lesson Frame:	We will generate data and model the data in tables, equations, and graphs. I will calculate the rebound rate from the data collected.
Performance Tasks: The students will identify rebound ratios and make a connection to exponential equations.	Notes:
Topic 3 Exponential decay	Length:1 day
Standard(s):F-IF.7e, F-LE.1c	Academic Vocabulary:Exponential decay,
Lesson Frame:	We will investigate exponential decay. I will compare exponential decay functions to linear functions.
Performance Tasks: The students will be able to write equations represented by exponential decay situations.	Notes:
Topic 4 Generating and investigating sequences	Length:2 days
Standard(s):F-BF.2, F-LE.2	Academic Vocabulary:Sequence, 1st term, arithmetic sequence, geometric sequence
Lesson Frame:	We will sort sequences into groups based on patterns in their representations. I will identify sequences generated by adding a constant and by multiplying by a constant.
Performance Tasks: Students will be able to identify patterns in sequences.	Notes:

Topic 5 Arithmetic sequences	Length: 1 day
Standard(s): F-IF.3, F-BF.2, F-LE.2	Academic Vocabulary: Common difference,
Lesson Frame:	We will learn the vocabulary and notation for arithmetic sequences. I will develop equations in the n th term.
Performance Tasks: Students will be able to write equations from arithmetic sequences.	Notes:
Topic 6 Recursive sequences	Length: 1 day
Standard(s): F-IF.3, F-BF.2, F-LE.2	Academic Vocabulary: Explicit, recursive
Lesson Frame:	We will write sequences from recursive equations. I will convert between explicit and recursive equations in arithmetic sequences.
Performance Tasks: Students will be able to write equations for recursive sequences.	Notes:
Topic 7 Patterns of growth in tables and graphs	Length: 1 day
Standard(s): F-IF.6, F-LE.1a, F-LE.3	Academic Vocabulary: Patterns
Lesson Frame:	We will compare patterns of growth in linear and exponential tables. I will identify patterns of growth in various tables.
Performance Tasks: Students will be able to identify growth patterns from both tables and graphs.	Notes:
Topic 8 Using multipliers to solve problems	Length: 2 days
Standard(s): F-LE.1c, F-LE.2	Academic Vocabulary: Multiplier
Lesson Frame:	We will find equations for geometric sequences. I will see relationships between geometric sequences and exponential sequences.
Performance Tasks: Students will be able to use multipliers from situations to solve word problems.	Notes:
Topic 9 Comparing functions to sequences	Length: 1 day
Standard(s): F-IF.3, F-BF.2, F-LE.2	Academic Vocabulary:
Lesson Frame:	We will recognize that all sequences are functions with domains limited to positive integers. I will use graphical methods to solve exponential equations.

Performance Tasks:

Students will be able to see similarities and differences between functions and related sequences.

Notes:

Unit Name: Modeling Two-Variable Data	Length: 16 days
Standards: M.N.Q.A.1 (F2Y)M.N.Q.A.3 (F2Y)M.SP.ID.B.6a (F2Y)M.SP.ID.B.6c (F2Y)M.SI	Outcomes: Students will use scatterplots of data to create lines and curves that model the data.
Essential Questions: Can I model relationships mathematically in order to describe, analyze	Learning Targets: Students will be able to write equations of lines of best fit from scatterplots.
Topic 1: Line of best fit	Length: 1 day
Standard(s): N-Q.1, S-ID.6a, S-ID.6c, S-ID.7	Academic Vocabulary: Strong and weak correlation
Lesson Frame:	We will review drawing a line of best fit. I will make predictions based on the linear model and will interpret slope and y intercept in context.
Performance Tasks: Students will be able to find the line of best fit given a set of data.	Notes:
Topic 2 Residuals	Length: 1 day
Standard(s): N-Q.1, S-ID.6a, S-ID.6c	Academic Vocabulary: Residual, slope, extrapolating
Lesson Frame:	We will learn how to calculate and interpret a residual. I will extrapolate data within a statistical model.
Performance Tasks: Students will be able to identify residuals from a set of data.	Notes:
Topic 3 Upper and lower bounds	Length: 1 day
Standard(s): N-Q.1, N-Q.3, S-ID.6a, S-ID.6c	Academic Vocabulary: Bounds
Lesson Frame:	We will graphically determine the upper and lower bounds. I will make a prediction from a linear best fit model.
Performance Tasks: Students will be able to identify upper and lower bounds from a given set of data.	Notes:
Topic 4 Least squares regression line	Length: 2 days
Standard(s): N-Q.1, S-ID.6a, S-ID.6c	Academic Vocabulary: Least squares regression line
Lesson Frame:	We will find the least squares regression line using their calculators. I will understand that the line minimizes the sum of the squares of the residuals.
Performance Tasks: Students will be able to develop a least squares regression line from a given set of data.	Notes:
Topic 5 Residual plots	Length: 2 days
Standard(s): N-Q.1, S-ID.6a, S-ID.6b	Academic Vocabulary: Residual plot

<p>Lesson Frame:</p> <p>We will observe the impact of an outlier on the LSRL. I will determine if a linear model is a good fit for the data by creating and visually analyzing residual plots.</p>	
<p>Performance Tasks: Students will be able to create residual plots from a set of data points.</p>	<p>Notes:</p>
<p>Topic 6 Correlations Standard(s): N-Q.1, S-ID.6a, S-ID.8 Lesson Frame:</p>	<p>Length: 1 day Academic Vocabulary: Correlation coefficient We will calculate the correlation coefficient and observe the scatter for various extremes of r. I will describe the association between two variables in more mathematical terms.</p>
<p>Performance Tasks: Students will be able to identify correlations from plots and tables.</p>	<p>Notes:</p>
<p>Topic 7 Association is not a causation Standard(s): N-Q.1, S-ID.6a, S-ID.9 Lesson Frame:</p>	<p>Length: 1 day Academic Vocabulary: Associations, lurking variable We will understand that cause and effect cannot be determined from a study that reports an association. I will analyze how associations impact cause and effect.</p>
<p>Performance Tasks: Students will understand the associations do not necessarily always lead to a specific result.</p>	<p>Notes:</p>
<p>Topic 8 Interpreting correlations in a context Standard(s): N-Q.1, S-ID.6a, S-ID.8 Lesson Frame:</p>	<p>Length: 1 day Academic Vocabulary: Correlations We will interpret correlation coefficient square in context. I will identify the correlation coefficient square within a word problem.</p>
<p>Performance Tasks: Students will be able to understand correlations in the setting of a word problem.</p>	<p>Notes:</p>
<p>Topic 9 Curved best-fit models Standard(s): N-Q.1, S-ID.6a Lesson Frame:</p>	<p>Length: 2 days Academic Vocabulary: r squared We will fit a non-linear model to data that shows a curved trend. I will identify the differences between linear and non-linear models and their trends.</p>
<p>Performance Tasks: Students will be able to fit a curve to model a set of data in a graph or table.</p>	<p>Notes:</p>

Unit Name: Exponential Functions	Length: 15 days
Standards: M.A.CED.A.1 (F2Y)M.A.CED.A.2 (F2Y)M.A.REI.D.10 (F2Y)M.A.SSE.A.1bM.A.SSE.B.3cM.F.BF.A.1aM.F.IF.7bM.F.IF.7eM.F.IF.B.4 (F2Y)M.F.IF.B.5M.F.IF.B.6M.F.IF.C.7bM.F.IF.C.8 (F2Y)M.F.IF.C.9M.F.LE.A.1a (F2Y)M.F.LE.A.1c (F2Y)M.F.LE.A.2 (F2Y)	Outcomes: Students will simplify and rewrite exponential expressions while working with fractional exponents.
Essential Questions: Am I making connections between the multiple representations and making sense of the situations?	Learning Targets: Students will be able to simplify exponential expressions and equations.
Topic 1: Investigating slope intercept form	Length: 2 days
Standard(s): F-IF.4, F-IF.7e	Academic Vocabulary: Asymptotes
Lesson Frame:	We will investigate the family of functions $y=b$ to the x . I will make and justify statements about the behaviors of graphs in this family.
Performance Tasks: Students will be able to apply slope intercept form to different situations.	Notes:
Topic 2 Multiple representations of exponential functions.	Length: 1 day
Standard(s): A-CED.1, A-CED.2, F-IF.7e, F-IF.8b, F-LE.1c, F-LE.2, F-LE.5	Academic Vocabulary: Representations
Lesson Frame:	We will deepen and extend their understanding of exponential functions. I will examine the multiplier and starting point in different representations.
Performance Tasks: Students will be able to identify exponential functions from graphs, equations, tables, and situations.	Notes:
Topic 3 Applications of exponential growth	Length: 1 day
Standard(s): A-SSE.1b, A-CED.1, A-CED.2, F-IF.7b, F-IF.7e, F-IF.8b, F-LE.1a, F-LE.1c, F-LE.2, F-LE.5	Academic Vocabulary: Compound interest, simple interest
Lesson Frame:	We will use what we know about linear and exponential functions to investigate the relationship between simple and compound interest. I will explore simple and compound interest within real world situations.
Performance Tasks: Students will be able to apply exponential growth in a variety of situations.	Notes:
Topic 4 Exponential decay	Length: 2 days
Standard(s): A-SSE.3c, A-CED.1, A-CED.2, F-IF.7e, F-IF.8b, F-LE.1c, F-LE.2, F-LE.5	Academic Vocabulary: Exponential decay, half-life
Lesson Frame:	We will represent exponential decay in multiple ways. I will further investigate the effect when the exponent is zero or a negative.

Performance Tasks: Students will be able to work with exponential decay from tables, equations, graphs, and situations.	Notes:
Topic 5 Graph to equation	Length: 1 day
Standard(s): A-CED.1, A-CED.2, F-IF.4, F-IF.5, F-IF.7b, F-IF.7e, F-IF.8b, F-LE.1c, F-LE.2, F-LE.5	Academic Vocabulary: Step function
Lesson Frame:	We will write equations for exponential functions. I will study graphs in order to write exponential functions.
Performance Tasks: Students will be able to graph various types of equations.	Notes:
Topic 6 Completing the multiple representations web	Length: 1 day
Standard(s): N-Q.1, N-Q.2, A-CED.1, A-CED.2, F-IF.4, F-IF.5, F-IF.7e, F-IF.8b, F-IF.9, F-LE.1c, F-LE.2, F-LE.5	Academic Vocabulary: Scatterplot
Lesson Frame:	We will complete the exponential multiple representations web. I will make connections between tables, equations, graphs and situations of an exponential function.
Performance Tasks: Students will be able to work with growth and decay problems in various settings.	Notes:
Topic 7 Curve fitting and fractional exponents	Length: 1 day
Standard(s): N-RN.1, N-RN.2, F-IF.5, F-IF.7e, F-BF.1a, F-LE.2	Academic Vocabulary: Curve fitting
Lesson Frame:	We will find equations of linear and exponential functions with missing parameters. I will interpret fractional exponents.
Performance Tasks: Students will be able to work with exponents that are fractions.	Notes:
Topic 8 Curve fitting	Length: 1 day
Standard(s): A-REI.10, F-IF.7e, F-BF.1a, F-LE.2	Academic Vocabulary:
Lesson Frame:	We will find linear and exponential functions. I will use two points to write exponential functions.
Performance Tasks: Students will be able to fit curves to equations and data points.	Notes:
Topic 9 Solving a system of exponential functions graphically	Length: 1 day

Standard(s):N-Q.2, F-IF.7e, F-BF.1a, F-LE.1c	Academic Vocabulary:Exponential Systems
Lesson Frame:	We will write a system of exponential functions the context of used car prices.
	I will use a graph to write and solve a system of equations.
Performance Tasks: Students will be able to solve systems of exponential functions.	Notes:

Unit Name: Quadratic Functions	Length: 14 days
Standards: M.A.CED.A.2 (F2Y)M.A.REI.B.4 (F2Y)M.A.SSE.A.1bM.A.SSE.B.3aM.A.SSE.B.3bM.F.BF.A.1aM.F.IF.B.4 (F2Y)M.F.IF.C.7a (F2Y)M.F.IF.C.8 (F2Y)M.F.IF.C.9M.N.Q.A.1 (F2Y)	Outcomes: Students will find connections between the different representations of a quadratic function.
Essential Questions: Can I explain my understanding of mathematics accurately to others?	Learning Targets: Students will be able to make connections of different representations of quadratic equations.
Topic 1: Factoring quadratics	Length: 1 day
Standard(s): A-SSE.3a	Academic Vocabulary: Factoring, trinomial
Lesson Frame:	We will review how to build rectangles with tiles and learn shortcuts for finding the dimensions. I will discover that the products of the terms in each diagonal are equal.
Performance Tasks: Students will be able to factor basic quadratic functions	Notes:
Topic 2 Factoring with generic rectangles	Length: 1 day
Standard(s): A-SSE.3a	Academic Vocabulary: Factored form
Lesson Frame:	We will develop an algorithm to factor quadratic expressions. I will factor quadratic expressions without using algebra tiles.
Performance Tasks: Students will be able to factor using generic rectangles.	Notes:
Topic 3 Factoring special cases	Length: 1 day
Standard(s): A-SSE.3a	Academic Vocabulary: Standard quadratic form
Lesson Frame:	We will practice factoring while learning about special quadratic cases. I will solve quadratics with missing terms and not in standard form.
Performance Tasks: Students will be able to factor special square quadratics.	Notes:
Topic 4 Factoring completely	Length: 1 day
Standard(s): A-SSE.2, A-SSE.3a	Academic Vocabulary: Factoring completely
Lesson Frame:	We will complete their focus on factoring by finding common factors. I will factor quadratics using the quadratic factoring method.
Performance Tasks: Students will be able to factor quadratics completely.	Notes:
Topic 5 Factoring shortcuts	Length: 1 day

Standard(s):A-SSE.2, A-SSE.3a	Academic Vocabulary:Common factor
Lesson Frame:	We will learn a quick way to factor perfect square trinomials. I will learn the difference of squares.
Performance Tasks: Students will be able to discover shortcuts for factoring.	Notes:
Topic 6 More Quadratic Function	Length:1 day
Standard(s):N-Q.1, A-SSE.3a, A-CED.2, F-IF.4, F-IF.5, F-IF.7a, F-IF.8a, F-IF.9, F-BF.1a, (F-LE.6)	Academic Vocabulary:Rules
Lesson Frame:	We will make connections between different representations of quadratics. I will connect the intercepts and vertex of a parabola to a situation.
Performance Tasks: Students will be able to factor quadratics with leading coefficients other than 1.	Notes:
Topic 7 Zero product property	Length:1 day
Standard(s):A-SSE.3a, A-CED.2, A-REI.4b, F-IF.8a, F-BF.1a	Academic Vocabulary:Zero product,
Lesson Frame:	We will sketch the graph of a quadratic equation using intercepts. I will apply the zero product property to discover the intercepts.
Performance Tasks: Students will be able to apply the zero product property.	Notes:
Topic 8 Finding x intercepts	Length:1 day
Standard(s):A-SSE.3a, A-CED.2, A-REI.4b, F-IF.4, F-IF.7a, F-IF.8a, F-BF.1a	Academic Vocabulary:Graphing form
Lesson Frame:	We will use graphing calculators to find the x intercepts and vertex of a parabola. I will use graphing form to find the intercepts.
Performance Tasks: Students will be able to find the x intercepts of quadratic functions.	Notes:
Topic 9 Completing the quadratic web	Length:1 day
Standard(s):A-SSE.3a, A-CED.2, F-IF.4, F-IF.7a, F-IF.8a, F-IF.9, F-BF.1a	Academic Vocabulary:Quadratic web
Lesson Frame:	We will practice moving from a table, graph or situation to a rule. I will discover the rule from a graph.

<p>Performance Tasks: Students will be able to find the connections between tables, equations, graphs and situations in a quadratic context.</p>	<p>Notes:</p>
<p>Topic 10 Completing the Square Standard(s):A-SSE.1b, A-SSE.3b, A-REI.4a, F-IF.7a, F-IF.8a Lesson Frame:</p>	<p>Length:1 day Academic Vocabulary:Completing the square We will convert the equation of a graph into graphing form. I will complete the square to write an equation in graphing form.</p>
<p>Performance Tasks: Students will be able to solve quadratics by completing the square</p>	<p>Notes:</p>

Unit Name:Solving Quadratics and Inequalities	Length:15 days
Standards:M.A.CED.A.2 (F2Y)M.A.REI.B.4 (F2Y)M.A.SSE.A.1bM.A.SSE.B.3aM.A.SSE.B.3bM.F.BF.A.1aM.F.IF.B.4 (F2Y)M.F.IF.C.7a (F2Y)M.F.IF.C.8 (F2Y)M.F.IF.C.9M.N.Q.A.1 (F2Y)	Outcomes:Students will learn how to deal with two expressions that are not of equal value, inequalities.
Essential Questions:Can I look closely to see a pattern or structure in these functions?	Learning Targets:Students will be able to solve inequalities within equations and graphs.
Topic 1:Solving quadratic equations	Length:1 day
Standard(s):A-SSE.3b, A-REI.4a, A-REI.4b	Academic Vocabulary:irrational numbers, radical form
Lesson Frame:	We will apply the zero product property so solve quadratic equations. I will develop a method of completing the square to solve equations.
Performance Tasks: Students will be able to solve quadratic equations algebraically.	Notes:
Topic 2 Quadratic Formula	Length:1 day
Standard(s):A-REI.4a, A-REI.4b	Academic Vocabulary:Quadratic formula, perfect square form
Lesson Frame:	We will begin to understand the quadratic formula. I will use the quadratic formula to solve quadratic equations.
Performance Tasks: Students will be able to use the quadratic formula to solve quadratic equations.	Notes:
Topic 3 More solving quadratic equations.	Length:1 day
Standard(s):A-CED.1, A-CED.2, A-REI.4a, A-REI.4b, F-IF.8a, (F-LE.6)	Academic Vocabulary:Zeros
Lesson Frame:	We will continue to solve quadratic equations. I will solve quadratic equations that have one or no solutions.
Performance Tasks: Students will be able to solve complex quadratics algebraically.	Notes:
Topic 4 Choosing a strategy	Length:1 day
Standard(s):A-CED.1, A-CED.2, A-REI.4a, A-REI.4b, F-IF.8a, (F-LE.6)	Academic Vocabulary:Real numbers
Lesson Frame:	We will investigate quadratic equations using a variety of methods. I will create graphs and tables to estimate solutions.
Performance Tasks: Students will identify the best strategy for solving a quadratic equation.	Notes:
Topic 5 Solving linear one step inequalities.	Length:1 day

Standard(s):A-CED.1, A-REI.3	Academic Vocabulary:Inequalities
Lesson Frame:	We will learn how to solve linear inequalities with one variable. I will represent solutions to inequalities on a number line.
Performance Tasks: Students will be able to solve simple inequalities.	Notes:
Topic 6 2 step inequalities	Length:1 day
Standard(s):N-Q.2, A-CED.1, A-REI.3	Academic Vocabulary:Infinite
Lesson Frame:	We will develop our ability to solve linear one variable inequalities by finding a boundary point. I will use inequalities to solve word problems.
Performance Tasks: Students will be able to solve two step inequalities.	Notes:
Topic 7 Graphing 2 variable inequalities	Length:1 day
Standard(s):A-REI.10, A-REI.12, A-CED.3	Academic Vocabulary:Solution set
Lesson Frame:	We will learn to graph two variable inequalities. I will discover the solution set to two variable inequalities on a graph.
Performance Tasks: Students will be able to graph 2 variable inequalities.	Notes:
Topic 8 Linear and nonlinear inequalities	Length:1 day
Standard(s):A-REI.12	Academic Vocabulary:Constraint, boundary point
Lesson Frame:	We will graph linear and nonlinear inequalities. I will solve inequalities by graphing.
Performance Tasks: Students will be able to graph both linear and parabolic inequalities.	Notes:
Topic 9 Systems of inequalities.	Length:1 day
Standard(s):N-Q.2, A-CED.3, A-REI.12	Academic Vocabulary:Systems of inequalities
Lesson Frame:	We will discover constraints to a system of linear inequalities. I will solve a system of inequalities by graphing.
Performance Tasks: Students will be able to solve systems of inequalities.	Notes:
Topic 10 Applying inequalities to solve word problems.	Length:1 day

Standard(s): N-Q.2, A-CED.3, A-REI.12	Academic Vocabulary:
Lesson Frame:	We will continue to graph systems of inequalities. I will apply my understanding of systems and inequalities to solve word problems.
Performance Tasks: Students will be able to solve word problems involving inequalities.	Notes:

Unit Name:Solving Complex Equations	Length:18 days
Standards:M.A.REI.A.1 (F2Y)M.A.REI.B.3 (F2Y)M.A.REI.B.4 (F2Y)M.A.REI.C.7 (F2Y)M.A.REI.D.11 (F2Y)M.A.SSE.A.1bM.A.SSE.B.3cM.N.RN.B.3M.SP.ID.B.5 (F2Y)	Outcomes:Students will solve equations with square roots, absolute value, variable exponents, and messy fractions.
Essential Questions:Am I considering all of the available tools as I approach this problem?	Learning Targets:Students will be able to solve equations other than quadratic and linear equations.
Topic 1:Association in two way tables	Length:2 days
Standard(s):	Academic Vocabulary:Independent variables, categorical data, mutually exclusive
Lesson Frame:	We will calculate the probabilities and determine the association from data in a two way table. I will create conditional relative frequency tables.
Performance Tasks: Students will be able to identify connections within a two way table.	Notes:
Topic 2Solving by rewriting	Length:1 day
Standard(s):A-SSE.3c, A-REI.3	Academic Vocabulary:Equivalent equations,
Lesson Frame:	We will learn how to solve complicated equations. I will solve simple exponential equations by rewriting and solving simpler equations.
Performance Tasks: Students will be able to solve problems by rewriting given information.	Notes:
Topic 3 Fraction Busters	Length:1 day
Standard(s):A-REI.1, A-REI.3	Academic Vocabulary:Fraction Buster
Lesson Frame:	We will solve complicated quadratic equations. I will rewrite and solve equivalent equations.
Performance Tasks: Students will be able to work with fractions by using the fraction buster method.	Notes:
Topic 4Multiple methods for solving equations.	Length:1 day
Standard(s):A-SSE.1b, A-REI.1	Academic Vocabulary:Imaginary numbers
Lesson Frame:	We will learn multiple methods for solving single variable equations. I will solve single variable square root equations.
Performance Tasks: Students will be able to solve various types of equations in multiple ways.	Notes:
Topic 5 Determining the number of solutions.	Length:1 day
Standard(s):A-REI.4b	Academic Vocabulary:Approximate form, exact form

Lesson Frame:	We will determine the number of solutions to an absolute value equation or a quadratic equations. I will express my solution in exact and approximate form.
Performance Tasks: Students will be able to determine the number of solutions an equation has.	Notes:
Topic 6 Driving the quadratic formula and the number system. Standard(s):N-RN.3, A-REI.4a, A-REI.4b	Length:1 day Academic Vocabulary:Complex numbers
Lesson Frame:	We will derive the quadratic formula by completing the square. I will discover how imaginary numbers fall in the number system.
Performance Tasks: Students will discover how the quadratic formula was created.	Notes:
Topic 7 Applications of the quadratic formula Standard(s):A-SSE.1b, A-REI.1, A-REI.3, (A-REI.3.1), A-REI.4b, (F-LE.6)	Length:1 day Academic Vocabulary:Isolate
Lesson Frame:	We will practice solving various equations using various methods. I will select the best method to solve quadratic inequalities.
Performance Tasks: Students will apply the quadratic formula in multiple settings.	Notes:
Topic 8 Intersections of two functions. Standard(s):A-REI.7, A-REI.11	Length: 2 days Academic Vocabulary:Intersect, intersection
Lesson Frame:	We will distinguish between intercepts and intersections. I will use intersections to find solutions to related single variable equations.
Performance Tasks: Students will be able to identify the meaning of the intersection of two functions.	Notes:
Topic 9 Number of parabola interstections Standard(s):A-REI.7, A-REI.11	Length:1 day Academic Vocabulary:Parabola
Lesson Frame:	We will investigate possible ways two parabols intersect. I will find the points of intersection algebraically.
Performance Tasks: Students will be able to determine the number of intersections of parabolas.	Notes:
Topic 10 Solving quadratic and absolute value inequalities.	Length:1 day

Standard(s):A-REI.3, (A-REI.3.1)	Academic Vocabulary:
Lesson Frame:	We will solve complicated single variable inequalities.
Performance Tasks: Students will be able to solve quadratic and absolute value inequalities.	I will solve absolute value inequalities with squared terms.
Notes:	

Unit Name: Functions and Data	Length: 20 days
Standards: M.A.CED.A.1 (F2Y) M.A.CED.A.3 (F2Y) M.A.SSE.B.3 M.F.BF.B.4 M.F.IF.A.1 (F2Y) M.F.IF.B.4 (F2Y) M.F.IF.B.5 M.F.IF.C.7a (F2Y) M.F.IF.C.8 (F2Y) M.F.LE.A.1a (F2Y) M.F.LE.A.1c (F2Y) M.F.LE.A.2 (F2Y) M.F.LE.B.5 (F2Y) M.N.Q.A.2 (F2Y) M.N.Q.A.3 (F2Y) M.SP.ID.A.1 (F2Y) M.SP.ID.A.2 (F2Y)	Outcomes: Students will learn how to change and "undo" functions.
Essential Questions: Am I taking advantage of everything I have learned this year to really engage with the mathematics and understanding the problems I am solving?	Learning Targets: Students will be able to work with inverse functions.
Topic 1: Transforming functions	Length: 2 days
Standard(s): M.F.IF.A.1 (F2Y), M.F.IF.C.7a (F2Y), M.F.BF.B.3	Academic Vocabulary: Data
Lesson Frame:	We will add and multiply by a constant. I will transform linear, quadratic and exponential functions by multiplying.
Performance Tasks: Students will be able to understand how to change functions within a problem.	Notes:
Topic 2 Inverse functions	Length: 1 day
Standard(s): M.F.BF.B.4	Academic Vocabulary: Inverse functions
Lesson Frame:	We will undo functions. I will find inverses to functions.
Performance Tasks: Students will be able to solve and work with inverse functions.	Notes:
Topic 3 Investigating data representations	Length: 2 days
Standard(s): M.SP.ID.A.1 (F2Y), M.SP.ID.A.3 (F2Y)	Academic Vocabulary: Statistic, Quartiles
Lesson Frame:	We will see the differences between graphical representations. I will investigate single variable data to identify differences.
Performance Tasks: Students will be able to work and apply information represented in various models.	Notes:
Topic 4 Comparing data	Length: 2 days
Standard(s): M.SP.ID.A.1 (F2Y), M.SP.ID.A.2 (F2Y), M.SP.ID.A.3 (F2Y)	Academic Vocabulary: Range
Lesson Frame:	We will compare the center, shape, spread and outliers of two sets of data. I will analyze and compare two different sets of data.
Performance Tasks: Students will be able to compare data from different models.	Notes:

Topic 5 Standard deviation	Length:1 day
Standard(s):M.SP.ID.A.1 (F2Y), M.SP.ID.A.2 (F2Y), M.SP.ID.A.3 (F2Y)	Academic Vocabulary:Standard deviation
Lesson Frame:	We will find the standard deviation from a set of data. I will interpret the meaning of the standard deviation of a set of numbers.
Performance Tasks: Students will be able to identify the standard deviation of a set of numbers.	Notes:
Topic 6 Using a line of best fit to make a prediction	Length:2 days
Standard(s):M.SP.ID.B.6a (F2Y), M.SP.ID.B.6b, M.SP.ID.B.6c, M.SP.ID.C.7 (F2Y), M.SP.ID.C.8 (F2Y)	Academic Vocabulary:Symmetric
Lesson Frame:	We will summarize the mathematics that we learned this year by applying a line of best fit to data. I will make sense of word problems and data by identifying a line of best fit.
Performance Tasks: Students will be able to make a prediction from a line of best fit.	Notes:
Topic 7 Investigating complex function	Length:1 day
Standard(s):M.F.IF.B.5	Academic Vocabulary:Relations, complex functions
Lesson Frame:	We will use the domain and range to identify the relationship of functions. I will apply my knowledge of intercepts and symmetry to solve word problems.
Performance Tasks: Students will be able to identify characteristics fo complex functions.	Notes:
Topic 8 Using Algebra to find a Maximum	Length:2 days.
Standard(s):M.F.IF.B.5	Academic Vocabulary:Maximum and minimums
Lesson Frame:	We will use multiple representations to maximize a set of quadratic data. I will interpret algebraic and graphical results.
Performance Tasks: Students will be able to find a maximum from a set of data a graph.	Notes:

September Unit 1	October Unit 3	November 2nd half of unit 4	December Unit 6	January Unit 7	February Unit 8	March Unit 9	April Unit 10	May Unit 11	June
Unit 2	First half of unit 4	Unit 5							

Course Name:	Geometry	
Credits:	1	
Prerequisites:	Algebra	
Description:	A logical approach to the study of real objects and shapes: i.e. parallel lines, triangles, circles, solids, etc. Emphasis is placed on algebraic applications.	
Academic Standards:	Wisconsin State Standards	
Units:	Unit Length:	Unit Outcomes:
Shapes and Transformations	17 days	M.G.CO.A.2M.G.CO.A.3M.G.CO.A.4M.G.CO.A.5M.G.CO.B.6M.G.CO.C.10M.G.GMD.C.4 (F2Y)M.G.GPE.B.5 (F2Y)
Angles and Measurement	15 days	M.G.CO.C.10M.G.CO.C.9 (F2Y)M.G.SRT.C.8 (F2Y)
Justification and Similarity	14 days	M.G.C.A.1 (F2Y)M.G.CO.A.2 (F2Y)M.G.CO.A.3 (F2Y)M.G.CO.D.12 (F2Y)M.G.SRT.A.1a (F2Y)M.G.SRT.A.1b (F2Y)M.G.SRT.A.2 (F2Y)M.G.SRT.A.3 (F2Y)M.G.SRT.B.5 (F2Y)
Trigonometry and Probability	15 days	M.G.SRT.C.6M.G.SRT.C.8M.SP.CPA.1M.SP.CP.B.7M.SP.MD.B.6
Completing the Triangle Toolkit	16 days	M.G.SRT.B.4 (F2Y),M.G.SRT.C.7 (F2Y),M.G.CO.C.10 (F2Y),M.G.SRT.C.6 (F2Y)M.G.SRT.C.8M.G.SRT.D.10+M.G.SRT.D.9+
Congruent Triangles	14 days	M.G.CO.A.5 (F2Y)M.G.CO.B.6 (F2Y)M.G.CO.B.7 (F2Y)M.G.CO.B.8 (F2Y)M.G.CO.C.10 (F2Y)M.G.CO.C.9 (F2Y)M.G.GMD.C.4 (F2Y)M.G.GMD.C.6 (F2Y)M.G.GMD.C.A (F2Y)M.G.GPE.B.7 (F2Y)M.G.SRT.A.2 (F2Y)M.G.SRT.B.5 (F2Y)M.SP.MD.B.7
Proof and Quadrilaterals	18 days	M.G.CO.A.1 (F2Y)M.G.CO.C.10 (F2Y),M.G.GMD.C.6 (F2Y)M.G.GPE.B.4 (F2Y)M.G.GPE.B.5M.G.GPE.B.6M.G.GPE.B.7M.G.SRT.B.4M.G.SRT.B.5
Polygons and Circles	16 days	M.G.C.B.2 (F2Y)M.G.GMD.A.1M.G.GMD.C.4M.G.GMD.C.6 (F2Y)M.G.SRT.B.5
Solids and Constructions	13 days	M.G.C.A.1 (F2Y)M.G.CO.C.10 (F2Y)M.G.CO.C.9 (F2Y)M.G.CO.D.12 (F2Y)M.G.CO.D.13 (F2Y)M.G.GMD.A.1 (F2Y)M.G.GMD.A.2 (F2Y)M.G.GMD.C.4 (F2Y)
Circles and Conditional Probability	20 days	M.G.C.A.1 (F2Y)M.G.C.B.2 (F2Y)M.G.GMD.C.4 (F2Y)M.SP.CPA.2 (F2Y)M.SP.CPA.3 (F2Y)M.SP.CPA.4 (F2Y)M.SP.CPA.5 (F2Y)
Solids and Circles	16 days	M.G.C.A.1 (F2Y)M.G.C.B.2 (F2Y)M.G.GMD.A.1 (F2Y)M.G.GMD.B.3M.G.GMD.C.4M.G.MGD.A.2 (F2Y)

Conics and Closure	14 days	M.G.GMD.B.3 (FZ)M.G.GMD.C.6 (FZ)M.G.GPE. A.1M.G.GPE.A.2+M.G.GPE.B.4 (FZ)M.SP.MD.B. 7	Students will extend their geometric understanding of circles to write algebraic equations.
--------------------	---------	--	---

Unit Name: Shapes and Transformations	Length: 17 days
Standards: M.G.CO.A.2M.G.CO.A.3M.G.CO.A.4M.G.CO.A.5M.G.CO.B.6M.G.CO.C.10M.G.GMD.C.4 (F2Y)M.G.GPE.B.5 (F2Y)	Outcomes: In this unit students will become familiar with basic geometric shapes and learn how to describe each one using its attributes.
Essential Questions: How can I communicate my ideas precisely to others?	Learning Targets: Students will investigate three basic rigid transformations: flip, turn, and slide.
Topic 1: Creating a quilt using symmetry	Length: 1 day
Lesson Frame:	We will build a symmetrical shape using basic shapes.
	I will model mathematics as I construct a symmetrical design.
Performance Tasks: Students will be able to work together to build symmetrical designs using the same basic shapes.	Notes:
Topic 2: Making predictions investigating results	Length: 1 day
Lesson Frame:	We will use mobious strips to represent situations.
	I will investigate and make predictions to solve constructions.
Performance Tasks: Students will generate questions to investigate, make predictions, and test their predictions.	Notes:
Topic 3 Perimeters and areas of enlarging tile patterns	Length: 1 day
Lesson Frame:	We will build an understanding of area and perimeter.
	I will investigate how the perimeter and area of a shape changed with dilations.
Performance Tasks: Students will build an understanding of area and perimeter.	Notes:
Topic 4 Logical arguments	Length: 1 day
Lesson Frame:	We will develop convincing arguments.
	I will critique the reasoning of others.
Performance Tasks: Students will be introduced to how to develop a convincing argument.	Notes:
Topic 5 Building a kaleidoscope	Length: 1 day
Lesson Frame:	We will build understanding of what an angle is and how it is measured.
	I will investigate complicated shapes composed of triangles.

Unit Name: Shapes and Transformations	Length: 17 days
Standards: M.G.CO.A.2, M.G.CO.A.3, M.G.CO.A.4, M.G.CO.A.5, M.G.CO.B.6, M.G.CO.C.10, M.G.GMD.C.4 (F2Y), M.G.GPE.B.5 (F2Y)	Outcomes: In this unit, students will become familiar with basic geometric shapes and learn how to describe each one using its attributes.
Essential Questions: How can I communicate my ideas precisely to others?	Learning Targets: Students will investigate three basic rigid transformations: flip, turn, and slide.
Performance Tasks: Students will build understanding of what an angle is and how it is measured.	Notes:
Topic 6 Spatial visualization and reflections	Length: 1 day
Lesson Frame:	We will use spatial visualization to investigate reflections. I will look for and use structure in reflections.
Performance Tasks: Students will use their spatial visualization skills to investigate reflection.	Notes:
Topic 7 Rigid transformations	Length: 1 day
Lesson Frame:	We will discover properties of translations, reflections, and rotations. I will investigate the relationship between corresponding parts.
Performance Tasks: Students will understand the three rigid transformations and will learn some connections between them.	Notes:
Topic 8 Slopes of parallel and perpendicular lines	Length: 1 day
Lesson Frame:	We will discover that objects and their images are equidistant from lines of reflection. I will recognize that the slopes of perpendicular lines are opposite reciprocals.
Performance Tasks: Students will discover that objects and their images are equidistant from the line of reflection.	Notes:
Topic 9 Defining transformations	Length: 1 day
Lesson Frame:	We will analyze shapes to look for reflectional symmetry. I will learn how to translate a geometric figure on a coordinate grid.
Performance Tasks: Students will begin to develop an understanding of reflection symmetry. Students will learn how to translate geometric figures in a coordinate grid.	Notes:
Topic 10 Using transformations to create shapes	Length: 1 day

Unit Name: Shapes and Transformations	Length: 17 days
Standards: M.G.CO.A.2, M.G.CO.A.3, M.G.CO.A.4, M.G.CO.A.5, M.G.CO.B.6, M.G.CO.C.10, M.G.GMD.C.4 (F2Y), M.G.GPE.B.5 (F2Y)	Outcomes: In this unit students will become familiar with basic geometric shapes and learn how to describe each one using its attributes.
Essential Questions: How can I communicate my ideas precisely to others?	Learning Targets: Students will investigate three basic rigid transformations: flip, turn, and slide.
Lesson Frame:	We will use what they know about transformations to make other shapes. I will model mathematics and use appropriate tools.
Performance Tasks:	Notes:
Students will use their knowledge of transformations to make other shapes.	
Topic 11 Symmetry	Length: 1 day
Lesson Frame:	We will identify common shapes that have types of symmetry. I will learn about reflection, rotation, and translation symmetry.
Performance Tasks:	Notes:
Students will learn about reflection, rotation and translations symmetry.	
Topic 12 Attributes and characteristics of shapes	Length: 1 day
Lesson Frame:	We will review geometric vocabulary and concepts. I will classify shapes by their attributes.
Performance Tasks:	Notes:
Students will classify shapes by their attributes.	
Topic 13 More characteristics of shapes	Length: 1 day
Lesson Frame:	We will use formal geometric terms to attend to precision. I will become familiar with how to mark diagrams to help communicate attributes such as equal length and right angles.
Performance Tasks:	Notes:
Students will formalize their vocabulary of shapes and their attributes of the shapes.	

Unit Name:Angles and Measurement	Length:15 days
Standards:M.G.CO.C.10M.G.CO.C.9 (F2Y)M.G.SRT.C.8 (F2Y)	Outcomes:Students will deepen their understanding between pairs of angles formed by transversals and the angles in a triangle.
Essential Questions:How can I justify my conclusions?	Learning Targets:Students will investigate the relationship among the sides and angles of a right triangle.
Topic 1:Complementary, supplementary and vertical angles.	Length:1 day
Lesson Frame:	We will work with mirrors to look at angle relationships. I will discover that vertical angles are congruent.
Performance Tasks: Students will learn how to name angles and the three main relationships for angle measures.	Notes:
Topic 2:Angles formed by transversals	Length:1 day
Lesson Frame:	We will use parallel lines and transversals to identify angle relationships. I will identify that corresponding angles are congruent.
Performance Tasks: Students will determine that corresponding angles are congruent.	Notes:
Topic 3 More angles formed by transversals	Length:1 day
Lesson Frame:	We will apply our knowledge of corresponding angles to develop theorems. I will use mirrors to create corresponding angles.
Performance Tasks: Students will develop theorems about alternate interior and same side interior angles.	Notes:
Topic 4 Angles in a triangle	Length:1 day
Lesson Frame:	We will analyze triangles to look for patterns in angles. I will discover that the angles of a triangle will always add up to 180 degrees.
Performance Tasks: Students will discover that the angles of a triangle add up to 180 degrees.	Notes:
Topic 5 Applying angle relationships	Length:1 day
Lesson Frame:	We will make sense of hinged mirrors to reason abstractly to solve problems. I will learn converses of angle theorems.
Performance Tasks: Students will learn the converses of their angle theorems.	Notes:

Unit Name:Angles and Measurement	Length:15 days
Standards:M.G.CO.C.10M.G.CO.C.9 (F2Y)M.G.SRT.C.8 (F2Y)	Outcomes:Students will deepen their understanding between pairs of angles formed by transversals and the angles in a triangle.
Essential Questions:How can I justify my conclusions?	Learning Targets:Students will investigate the relationship among the sides and angles of a right triangle.
Topic 6 Units of measure	Length:1 day
Lesson Frame:	We will use appropriate tools as we look at way to measure. I will learn that measurement of an object depends on the units being used.
Performance Tasks: Students will gain geometric sense of length and area.	Notes:
Topic 7 Areas of triangles and composite shapes	Length:1 day
Lesson Frame:	We will use tools strategically to find areas of different shapes. I will develop multiple methods to find area of composite shapes formed by rectangles.
Performance Tasks: Students will develop multiple ways to find the area of triangles.	Notes:
Topic 8 Areas of parallelograms and trapezoids	Length:1 day
Lesson Frame:	We will make use of structure to find areas of trapezoids and parallelograms. I will develop algorithms to find areas of trapezoids.
Performance Tasks: Students will use rectangles and triangles to develop algorithms to find the area of new shapes.	Notes:
Topic 9 Heights and areas	Length:1 day
Lesson Frame:	We will use models to explore heights of triangles. I will find areas of composite shapes using what I know of triangles, parallelograms, and trapezoids.
Performance Tasks: Students will explore how to find height of a triangle given that one side has been specified as the base.	Notes:
Topic 10 Triangle inequality	Length:1 day
Lesson Frame:	We will analyze the lengths of sides that can and can't make triangles. I will use appropriate tools to determine what lengths are necessary to make a triangle.

Unit Name:Angles and Measurement	Length:15 days
Standards:M.G.CO.C.10M.G.CO.C.9 (F2Y)M.G.SRT.C.8 (F2Y)	Outcomes:Students will deepen their understanding between pairs of angles formed by transversals and the angles in a triangle.
Essential Questions:How can I justify my conclusions?	Learning Targets:Students will investigate the relationship among the sides and angles of a right triangle.
Performance Tasks: Students will develop a strategy to find the length of the hypotenuse of a right triangle with the lengths of the legs.	Notes:
Topic 11 The pythagorean theorem	Length:1 day
Lesson Frame:	We will prove the pythagorean theorem. I will use structure to manipulate triangles within a square to find the pythagorean theorem.
Performance Tasks: Students will develop and prove the Pythagorean Theorem.	Notes:

Unit Name: Justification and Similarity	Length: 14 days
Standards: M.G.C.A.1 (F2Y)M.G.CO.A.2 (F2Y)M.G.CO.A.3 (F2Y)M.G.CO.D.12 (F2Y)M.G.SRT.A.1a (F2Y)M.G.SRT.A.1b (F2Y)M.G.SRT.A.2 (F2Y)M.G.SRT.A.3 (F2Y)M.G.SRT.B.5 (F2Y)	Outcomes: Students will learn how to support a mathematical statement using a flowchart and conditional statements.
Essential Questions: Can I apply the mathematics that I know to problems in everyday life?	Learning Targets: Students will determine if triangles are similar or congruent.
Topic 1: Dilations	Length: 1 day
Lesson Frame:	We will use tools to dilate shapes and make use of structure to find patterns. I will determine that dilations have equal angles and proportional side lengths.
Performance Tasks: Students will learn about the concept of dilation and its characteristics.	Notes:
Topic 2: Similarity	Length: 1 day
Lesson Frame:	We will use equivalent ratios to find missing lengths of sides in similar figures. I will use precision and zoom factor to differentiate between original and enlarged figures.
Performance Tasks: Students will discover that figures are related through a sequence of transformations.	Notes:
Topic 3 Using ratios of similarity	Length: 1 day
Lesson Frame:	We will make use of structure to look for connections between side lengths, perimeters, and areas of dilated shapes. I will solve equations to proportional problems.
Performance Tasks: Students will examine the ratio of the perimeters of similar figures.	Notes:
Topic 4 Applications and notations	Length: 1 day
Lesson Frame:	We will apply proportional reasoning to write similarity statements. I will make sense of problems and model mathematics to solve problems.
Performance Tasks: Students will apply proportional reasoning and will learn how to write similarity statements.	Notes:
Topic 5 Conditions of triangle similarity	Length: 1 day
Lesson Frame:	We will use appropriate tools to test for similarity. I will discover the SAS and AA triangle similarity theorem.

<p>Unit Name: Justification and Similarity</p> <p>Standards: M.G.C.A.1 (F2Y)M.G.CO.A.2 (F2Y)M.G.CO.A.3 (F2Y)M.G.CO.D.12 (F2Y)M.G.SRT.A.1a (F2Y)M.G.SRT.A.1b (F2Y)M.G.SRT.A.2 (F2Y)M.G.SRT.A.3 (F2Y)M.G.SRT.B.5 (F2Y)</p> <p>Essential Questions: Can I apply the mathematics that I know to problems in everyday life?</p>	<p>Length: 14 days</p> <p>Outcomes: Students will learn how to support a mathematical statement using a flowchart and conditional statements.</p> <p>Learning Targets: Students will determine if triangles are similar or congruent.</p>
<p>Performance Tasks: Students will learn the SAS and AA conditions for determining triangle similarity.</p>	<p>Notes:</p>
<p>Topic 6 Creating a flowchart</p> <p>Lesson Frame:</p>	<p>Length: 1 day</p> <p>We will use flowcharts to organize our arguments to prove SAS and AA similarity.</p> <p>I will communicate mathematically using flowchart proofs.</p>
<p>Performance Tasks: Students will learn how to use flowcharts to organize their arguments for triangle similarity.</p>	<p>Notes:</p>
<p>Topic 7 Triangle similarity and congruence</p> <p>Lesson Frame:</p>	<p>Length: 1 day</p> <p>We will construct viable arguments as we work on flowchart proofs.</p> <p>I will investigate the fact that if two triangles are similar and a side is equal, then the triangles are congruent.</p>
<p>Performance Tasks: Students will further investigate the fact that if two triangles are similar and the common ratio between the lengths of their sides is 1, then the triangles must be congruent.</p>	<p>Notes:</p>
<p>Topic 8 More conditions for triangle similarity</p> <p>Lesson Frame:</p>	<p>Length: 1 day</p> <p>We will attend to precision to communicate the conditions of triangle similarity.</p> <p>I will investigate the SSS triangle similarity theorem.</p>
<p>Performance Tasks: Students will complete their list of triangle similarity conditions by learning SSS.</p>	<p>Notes:</p>
<p>Topic 9 Determining similarity</p> <p>Lesson Frame:</p>	<p>Length: 1 day</p> <p>We will use a flowchart to diagram a multi-step argument.</p> <p>I will construct viable arguments within a proof.</p>

<p>Unit Name: Justification and Similarity</p> <p>Standards: M.G.C.A.1 (F2Y)M.G.CO.A.2 (F2Y)M.G.CO.A.3 (F2Y)M.G.CO.D.12 (F2Y)M.G.SRT.A.1a (F2Y)M.G.SRT.A.1b (F2Y)M.G.SRT.A.2 (F2Y)M.G.SRT.A.3 (F2Y)M.G.SRT.B.5 (F2Y)</p>	<p>Length: 14 days</p> <p>Outcomes: Students will learn how to support a mathematical statement using a flowchart and conditional statements.</p>
<p>Essential Questions: Can I apply the mathematics that I know to problems in everyday life?</p> <p>Performance Tasks: Students will organize their reasoning into a multi-step flowchart.</p>	<p>Learning Targets: Students will determine if triangles are similar or congruent.</p> <p>Notes:</p>
<p>Topic 10 Applying similarity</p> <p>Lesson Frame:</p>	<p>Length: 1 day</p> <p>We will apply my knowledge of similar triangles to multiple contexts.</p> <p>I will make sense of problems and persevere in solving them.</p>
<p>Performance Tasks: Students will apply their knowledge to similar triangles to multiple contexts.</p>	<p>Notes:</p>

Unit Name: Trigonometry and Probability	Length: 15 days
Standards: M.G.SRT.C.6M, G.SRT.C.8M, SP.CP.A.1M, SP.CP.B.7M, SP.MD.B.6	Outcomes: Students will learn the trigonometric ratios.
Essential Questions: Can I use the available tools to solve problems and decide which tool might be the most helpful?	Learning Targets: Students will apply the trigonometric ratios to find missing measurements of triangles in a real world setting.
Topic 1: Constant ratios in right triangles	Length: 1 day
Lesson Frame:	We will begin to connect specific slope to a specific angle measurement and ratio. I will use structure to look for patterns in slope.
Performance Tasks: Students will recognize that all the slope triangles on a line are similar to each other.	Notes:
Topic 2: Connecting slope ratios to specific angles	Length: 1 day
Lesson Frame:	We will look and make sense of structure as we find patterns in ratios. I will analyze slope ratios of 11, 22, 18, and 45 degree angles.
Performance Tasks: Students will connect specific slope ratios to find missing sides and angles of triangles.	Notes:
Topic 3 Expanding the trig table	Length: 1 day
Lesson Frame:	We will use technology to generate slope ratios. I will use appropriate tools strategically.
Performance Tasks: Students will use technology to generate slope ratios for new angles.	Notes:
Topic 4 The tangent ratio	Length: 1 day
Lesson Frame:	We will reason abstractly to create representations connected to trig ratios. I will observe how slope ratios impact side length,
Performance Tasks: Students will use slope ratios to find the length of a leg of a right triangle.	Notes:
Topic 5 Applying the tangent ratio	Length: 1 day
Lesson Frame:	We will apply our knowledge of tangent to find missing triangle measurements. I will model with mathematics as I draw diagrams and use trig to solve everyday problems.
Performance Tasks: Students will apply their knowledge of tangent ratios to find measurements.	Notes:

Unit Name: Trigonometry and Probability	Length: 15 days
Standards: M.G.SRT.C.6M.G.SRT.C.8M.SP.CP.A.1M.SP.CP.B.7M.SP.MD.B.6	Outcomes: Students will learn the trigonometric ratios.
Essential Questions: Can I use the available tools to solve problems and decide which tool might be the most helpful?	Learning Targets: Students will apply the trigonometric ratios to find missing measurements of triangles in a real world setting.
Topic 6 Using an area model	Length: 1 day
Lesson Frame:	We will use a probability area model to represent a situation of chance. I will model with mathematics as I look at real life problems and predict outcomes.
Performance Tasks: Students will learn how to use a probability area model to represent a situation of chance.	Notes:
Topic 7 Using a tree diagram	Length: 1 day
Lesson Frame:	We will develop complex tree diagrams to model probabilities of events. I will reason abstractly as I create representations of problems involving probability.
Performance Tasks: Students will develop more complex tree diagrams to model probabilities.	Notes:
Topic 8 Probability models	Length: 1 day
Lesson Frame:	We will use tree diagrams and area models to represent and solve probability problems. I will use appropriate tools strategically as I decide which tool is better for modeling certain situations.
Performance Tasks: Students will combine area models and tree diagrams to discover probabilities.	Notes:
Topic 9 Unions, intersections, and complements	Length: 1 day
Lesson Frame:	We will learn mathematical language for calculating probabilities of unions, intersections and complements of events. I will make sense of a problem and persevere in solving probability problems.
Performance Tasks: Students will use mathematical language for calculating probabilities of unions, intersections, and complements.	Notes:
Topic 10 Expected value	Length: 1 day
Lesson Frame:	We will learn how to find the expected value of a game of chance. I will make sense of problems involving chance and analyze and make conjectures of outcomes.

<p>Unit Name: Trigonometry and Probability</p>	<p>Length: 15 days</p>
<p>Standards: M.G.SRT.C.6M, G.SRT.C.8M, SP.CP.A.1M, SP.CP.B.7M, SP.MD.B.6</p>	<p>Outcomes: Students will learn the trigonometric ratios.</p>
<p>Essential Questions: Can I use the available tools to solve problems and decide which tool might be the most helpful?</p>	<p>Learning Targets: Students will apply the trigonometric ratios to find missing measurements of triangles in a real world setting.</p>
<p>Performance Tasks: Students will learn how to find the expected value of a game of chance.</p>	<p>Notes:</p>

Unit Name: Completing the Triangle Toolkit	Length: 16 days
Standards: M.G.SRT.B.4 (F2Y), M.G.SRT.C.7 (F2Y), M.G.CO.C.10 (F2Y), M.G.SRT.C.6 (F2Y), M.G.SRT.C.8, M.G.SRT.D.10 + M.G.SRT.D.9+	Outcomes: Students will learn to recognize and use special right triangles.
Essential Questions: Which tool should I use to find missing parts of triangles?	Learning Targets: Students will apply trigonometric ratios to find missing measurement of right triangles including the Law of Sines and Law of Cosines.
Topic 1: Sine and Cosine Ratios	Length: 1 day
Lesson Frame:	We will discover sine and cosine ratios. I will apply mathematics to everyday life with models.
Performance Tasks: Students will learn sine and cosine ratios.	Notes:
Topic 2: Selecting a trig tool	Length: 1 day
Lesson Frame:	We will develop strategies to recognize which trig ratio to use. I will use tools appropriately to find shortcuts to solve trig ratio problems.
Performance Tasks: Students will develop strategies to recognize which trig ratio to use.	Notes:
Topic 3 Inverse trigonometry	Length: 1 day
Lesson Frame:	We will understand how to use trig ratios to find unknown angle measurements. I will reason abstractly as I work backwards to solve problems.
Performance Tasks: Students will understand how to use trig ratios and will be introduced to the concept of inverse.	Notes:
Topic 4 Trigonometric applications	Length: 1 day
Lesson Frame:	We will use sine, cosine, and tangent ratios to solve application problems. I will model with mathematics as I apply me trig tools to everyday problem situations.
Performance Tasks: Students will use trig functions to solve application problems.	Notes:
Topic 5 Special right triangles	Length: 1 day
Lesson Frame:	We will recognize the similarity ratios in 30, 60, 90 and 45, 45, 90 triangles. I will make use of structure as I find patterns to find relationships in special right triangles.

Unit Name: Completing the Triangle Toolkit	Length: 16 days
Standards: M.G.SRT.B.4 (F2Y), M.G.SRT.C.7 (F2Y), M.G.CO.C.10 (F2Y), M.G.SRT.C.6 (F2Y), M.G.SRT.C.8, M.G.SRT.D.10 + M.G.SRT.D.9+	Outcomes: Students will learn to recognize and use special right triangles.
Essential Questions: Which tool should I use to find missing parts of triangles?	Learning Targets: Students will apply trigonometric ratios to find missing measurement of right triangles including the Law of Sines and Law of Cosines.
Performance Tasks: Students will recognize similar ratios in 30, 60, 90 and 45, 45, 90 triangles.	Notes:
Topic 6 Pythagorean triples	Length: 1 day
Lesson Frame:	We will recognize 3, 4, 5 and 5, 12, 13 triangles and find other examples of Pythagorean triples. I will make use of structure as I look for patterns in Pythagorean triples.
Performance Tasks: Students will recognize 3, 4, 5 and 5, 12, 13 right triangles.	Notes:
Topic 7 Finding missing parts of triangles	Length: 1 day
Lesson Frame:	We will develop methods to solve for missing sides and angles of non-right triangles. I will make sense of problems and persevere in solving for missing parts of triangles.
Performance Tasks: Students will apply their tools to finding missing sides and angles of right triangles in preparation for the Law of Sines.	Notes:
Topic 8 Law of Sines	Length: 1 day
Lesson Frame:	We will recognize the relationship between a side and the angle opposite the side. I will look for and express regularity in repeated reasoning as I develop the ratios for the Law of Sines.
Performance Tasks: Students will develop the Law of Sines and use it to find missing side and angle measurements.	Notes:
Topic 9 Law of Cosines	Length: 1 day
Lesson Frame:	We will develop the law of cosines. I will make sense of problems and persevere in solving them using the law of cosines.
Performance Tasks: Students will complete their Triangle Toolkit by developing the Law of Cosines.	Notes:
Topic 10 Ambiguous triangles	Length: 1 day

<p>Unit Name: Completing the Triangle Toolkit</p> <p>Standards: M.G.SRT.B.4 (F2Y), M.G.SRT.C.7 (F2Y), M.G.CO.C.10 (F2Y), M.G.SRT.C.6 (F2Y), M.G.SRT.C.8, M.G.SRT.D.10 + M.G.SRT.D.9+</p> <p>Essential Questions: Which tool should I use to find missing parts of triangles?</p> <p>Lesson Frame:</p>	<p>Length: 16 days</p> <p>Outcomes: Students will learn to recognize and use special right triangles.</p> <p>Learning Targets: Students will apply trigonometric ratios to find missing measurement of right triangles including the Law of Sines and Law of Cosines.</p> <p>We will learn that multiple triangles are sometimes possible when two side lengths and an angle not between them is given.</p> <p>I will make sense of ambiguous triangles and I look for repeated reasoning of how many triangles can be constructed.</p>
<p>Performance Tasks: Students will discover that sometimes multiple triangles are possible when given SSA.</p>	<p>Notes:</p>
<p>Topic 11 Choosing a tool</p> <p>Lesson Frame:</p>	<p>Length: 2 days</p> <p>We will solve multiple problems and applications use various trig ratios.</p> <p>I will strategically use tools I have learned to make sense of problems and persevere in solving them.</p>
<p>Performance Tasks: Students will apply their knowledge of triangles to solve application problems.</p>	<p>Notes:</p>

Unit Name: Congruent Triangles	Length: 14 days
Standards: M.G.CO.A.5 (F2Y)M.G.CO.B.6 (F2Y)M.G.CO.B.7 (F2Y)M.G.CO.B.8 (F2Y)M.G.CO.C.10 (F2Y)M.G.CO.C.9 (F2Y)M.G.GMD.C.4 (F2Y)M.G.GMD.C.6 (F2Y)M.G.GMD.C.A (F2Y)M.G.GPE.B.7 (F2Y)M.G.SRT.A.2 (F2Y)M.G.SRT.B.5 (F2Y)M.SP.MD.B.7	Outcomes: Students will identify the information that is needed in order to conclude that two triangles are congruent.
Essential Questions: How can I use information to construct arguments, justify my conclusions and respond to the argument presented by others?	Learning Targets: Students will organize a flowchart that concludes two triangles are congruent.
Topic 1: Congruent triangles	Length: 1 day
Lesson Frame:	We will identify congruent triangles using AAS. I will construct viable arguments as I make statements to prove triangle similarity.
Performance Tasks: Students will identify congruent triangles by first identifying similarity.	Notes:
Topic 2: Conditions for triangle congruence	Length: 1 day
Lesson Frame:	We will develop conditions that guarantee triangles are congruent. I will look for and make use of structure as I investigate all conditions that prove triangles congruent.
Performance Tasks: Students will develop congruence conditions for ASA, AAS, HL, and SAS.	Notes:
Topic 3: Congruence of triangles through rigid transformations	Length: 1 day
Lesson Frame:	We will show triangle congruence conditions are done using rigid transformations. I will attend to precision as I identify corresponding parts of triangles.
Performance Tasks: Students will show that triangle congruence conditions are true using rigid transformations.	Notes:
Topic 4: Flowcharts for congruence	Length: 1 day
Lesson Frame:	We will extend our use of flowcharts to document triangle congruence facts. I will make use of structure as I see complicated figures being composed of many parts.
Performance Tasks: Students will use flowcharts to prove triangle congruence.	Notes:
Topic 5: Converses	Length: 1 day
Lesson Frame:	We will recognize the converse relationship between conditional statements. I will use counterexamples as I construct viable arguments.

Unit Name: Congruent Triangles	Length: 14 days
Standards: M.G.CO.A.5 (F2Y)M.G.CO.B.6 (F2Y)M.G.CO.B.7 (F2Y)M.G.CO.B.8 (F2Y)M.G.CO.C.10 (F2Y)M.G.CO.C.9 (F2Y)M.G.GMD.C.4 (F2Y)M.G.GMD.C.6 (F2Y)M.G.GMD.C.A (F2Y)M.G.GPE.B.7 (F2Y)M.G.SRT.A.2 (F2Y)M.G.SRT.B.5 (F2Y)M.SP.MD.B.7	Outcomes: Students will identify the information that is needed in order to conclude that two triangles are congruent.
Essential Questions: How can I use information to construct arguments, justify my conclusions and respond to the argument presented by others?	Learning Targets: Students will organize a flowchart that concludes two triangles are congruent.
Performance Tasks: Students will recognize the converse relationships between conditional statements.	Notes:
Topic 6 Angles on a pool table	Length: 1 day
Lesson Frame:	We will review angle relationships, trig, and similar triangles. I will model with mathematics as I apply what I have learned about triangles to everyday situations.
Performance Tasks: Students will review angle relationships, trigonometry and similar triangles.	Notes:
Topic 7 Investigating a triangle	Length: 1 day
Lesson Frame:	We will review area and perimeter of a triangle, tri, the pythagorean theorem, and triangle angle sum theorem. I will attend to precision and use tools appropriately as I investigate a triangle.
Performance Tasks: Students will apply the Pythagorean Theorem and the Triangle Angle Sum Theorem to application problems.	Notes:
Topic 8 Creating a mathematical model	Length: 1 day
Lesson Frame:	We will review building models, similarity, and inverse trig ratios. I will model with mathematics as I apply similarity and inverse trig ratios.
Performance Tasks: Students will continue to work with building models, similarity, and inverse trig ratios.	Notes:
Topic 9 Analyzing a game	Length: 1 day
Lesson Frame:	We will analyze the probability of winning and losing a game from a television show. I will make sense of and persevere in solve the monty hall problem.

<p>Unit Name: Congruent Triangles</p> <p>Standards: M.G.CO.A.5 (F2Y)M.G.CO.B.6 (F2Y)M.G.CO.B.7 (F2Y)M.G.CO.B.8 (F2Y)M.G.CO.C.10 (F2Y)M.G.CO.C.9 (F2Y)M.G.GMD.C.4 (F2Y)M.G.GMD.C.6 (F2Y)M.G.GMD.C.A (F2Y)M.G.GPE.B.7 (F2Y)M.G.SRT.A.2 (F2Y)M.G.SRT.B.5 (F2Y)M.SP.MD.B.7</p>	<p>Length: 14 days</p> <p>Outcomes: Students will identify the information that is needed in order to conclude that two triangles are congruent.</p>
<p>Essential Questions: How can I use information to construct arguments, justify my conclusions and respond to the argument presented by others?</p> <p>Performance Tasks: Students will collect experimental data and construct a probability model to represent a game.</p>	<p>Learning Targets: Students will organize a flowchart that concludes two triangles are congruent.</p> <p>Notes:</p>
<p>Topic 10 Using transformations and symmetry to design snowflakes</p> <p>Lesson Frame:</p>	<p>Length: 1 day</p> <p>We will review transformations and symmetry</p> <p>I will use appropriate tools strategically and attend to precision as I make connections among shapes and topics I learned thus far.</p>
<p>Performance Tasks: Students will review transformations and symmetry.</p>	<p>Notes:</p>

Unit Name: Proof and Quadrilaterals	Length: 18 days
Standards: M.G.CO.A.1 (F2Y) M.G.CO.C.10 (F2Y) M.G.GMD.C.6 (F2Y) M.G.GPE.B.4 (F2Y) M.G.GPE.B.5M.G.GPE.B.6M.G.GPE.B.7M.G.SRT.B.4M.G.SRT.B.5	Outcomes: Students will understand the relationships of the sides, angles and diagonals of special quadrilaterals.
Essential Questions: How can I use the given information to construct arguments, how can I justify my conclusions, and how can I respond to the arguments of others?	Learning Targets: Students will be able to write a proof in a variety of formats such as a flowchart and a two-column proof.
Topic 1: Properties of circles	Length: 1 day
Lesson Frame:	We will specify constants like radius and diameter. I will explore Reuleaux curves and square wheels.
Performance Tasks: Students will explore properties of a circle	Notes:
Topic 2: Building a tetrahedron	Length: 1 day
Lesson Frame:	We will begin to understand how area of a shape changes as it is enlarged. I will review shapes and their properties as I fold a circle to create a tetrahedron.
Performance Tasks: Students will begin to understand how the area of a shape changes as it is enlarged.	Notes:
Topic 3 Shortest distance problems	Length: 2 days
Lesson Frame:	We will lay the foundation for understanding the surface of a three dimensional object. I will analyze and solve distance problems to understand reflection and similarity.
Performance Tasks: Students will analyze and solve several shortest distance problems to understand reflection and similarity.	Notes:
Topic 4 Using symmetry to study polygons	Length: 1 day
Lesson Frame:	We will use a hinged mirror to create regular polygons. I will learn about the diagonals of a rhombi.
Performance Tasks: Students will use their understanding of reflection to identify central angles.	Notes:
Topic 5 Special quadrilaterals and proof	Length: 1 day
Lesson Frame:	We will learn the properties of kites. I will learn and apply the properties of parallelograms.

Unit Name:Proof and Quadrilaterals	Length:18 days
Standards:M.G.CO.A.1 (F2Y)M.G.CO.C.10 (F2Y)M.G.GMD.C.6 (F2Y)M.G.GPE.B.4 (F2Y)M.G.GPE.B.5M.G.GPE.B.6M.G.GPE.B.7M.G.SRT.B.4M.G.SRT.B.5	Outcomes:Students will understand the relationships of the sides, angles and diagonals of special quadrilaterals.
Essential Questions:How can I use the given information to construct arguments, how can I justify my conclusions, and how can I respond to the arguments of others?	Learning Targets:Students will be able to write a proof in a variety of formats such as a flowchart and a two-column proof.
Performance Tasks: Students will develop proofs to learn properties of kites.	Notes:
Topic 6 Properties of rhombi	Length:1 day
Lesson Frame:	We will practice using flowcharts to organize a proof. I will prove the properties of a rhombi through congruent triangles.
Performance Tasks: Students will discover the properties of rhombi through congruent triangles.	Notes:
Topic 7 More proofs with congruent triangles	Length:1 day
Lesson Frame:	We will prove all rectangles are parallelograms. I will begin to start to develop flowchart proofs as a way to communicate.
Performance Tasks: Students will create logical arguments about rectangles and parallelograms.	Notes:
Topic 8 More properties of quadrilaterals	Length:1 day
Lesson Frame:	We will use flowcharts to demonstrate properties of quadrilaterals. I will relate quadrilaterals with characteristics of isosceles triangles.
Performance Tasks: Students will create flowcharts to discover attributes of isosceles triangles and quadrilaterals.	Notes:
Topic 9 Two-column proofs	Length:1 day
Lesson Frame:	We will continue to learn the components of a convincing argument. I will be introduced to a two column proof.
Performance Tasks: Students will be introduced to two column proofs to help create arguments.	Notes:
Topic 10 Explore conjecture prove	Length:1 day
Lesson Frame:	We will start to work with proofs based off of similar triangles.

Unit Name:Proof and Quadrilaterals	Length:18 days
Standards:M.G.CO.A.1 (F2Y)M.G.CO.C.10 (F2Y)M.G.GMD.C.6 (F2Y)M.G.GPE.B.4 (F2Y)M.G.GPE.B.5M.G.GPE.B.6M.G.GPE.B.7M.G.SRT.B.4M.G.SRT.B.5	Outcomes:Students will understand the relationships of the sides, angles and diagonals of special quadrilaterals.
Essential Questions:How can I use the given information to construct arguments, how can I justify my conclusions, and how can I respond to the arguments of others?	Learning Targets:Students will be able to write a proof in a variety of formats such as a flowchart and a two-column proof. I will prove new properties of triangles and quadrilaterals.
Performance Tasks: Students will use auxiliary lines to help write proofs of quadrilaterals.	Notes:
Topic 11 Studying quadrilaterals on a coordinate grid	Length:1 day
Lesson Frame:	We will investigate quadrilaterals for parallel lines and right angles. I will analyze shapes on a coordinate grid using my algebra skills.
Performance Tasks: Students will analyze shapes on a coordinate grid.	Notes:
Topic 12 Coordinate geometry and midpoints	Length:1 day
Lesson Frame:	We will study coordinate geometry. I will develop ways to find the midpoint of a segment.
Performance Tasks: Students will discover methods of finding midpoint.	Notes:
Topic 13 Identifying quadrilaterals on a coordinate grid	Length:1 day
Lesson Frame:	We will analyze quadrilaterals on a coordinate grid. I will identify quadrilaterals represented on a coordinate grid.
Performance Tasks: Students will identify quadrilaterals after analyzing them on a coordinate grid.	Notes:

Unit Name: Polygons and Circles	Length: 16 days
Standards: M.G.C.B.2 (F2Y)M.G.GMD.A.1M.G.GMD.C.4M.G.GMD.C.6 (F2Y)M.G.SRT.B.5	Outcomes: Students will learn about special types of polygons.
Essential Questions: Can I find the shortcuts and generalize the rules for finding perimeters and areas of polygons?	Learning Targets: Students will learn how the measures of interior and exterior angles of a regular polygon are related to the number of sides of the polygon.
Topic 1: Pinwheels and polygons	Length: 1 day
Lesson Frame:	We will learn that the central angle is always $360/n$. I will determine if a shape is convex or concave.
Performance Tasks: Students will build regular polygons from congruent isosceles triangles.	Notes:
Topic 2: Interior angles of polygons	Length: 1 day
Lesson Frame:	We will apply the formula for interior angles to solve problems in a real world context. I will investigate problems involving various polygons.
Performance Tasks: Students will learn to find the sum of the interior angles of a polygon.	Notes:
Topic 3 Angles of regular polygons	Length: 1 day
Lesson Frame:	We will decide if a polygon is regular. I will identify the connection between angles and sides that make polygons regular.
Performance Tasks: Students will discover how to find the interior and exterior angle measures of a regular polygon.	Notes:
Topic 4 Regular polygon angle connections	Length: 1 day
Lesson Frame:	We will develop strategies to find the measure of interior angles. I will apply strategies for finding interior and exterior angles to word problems.
Performance Tasks: Students will develop strategies to find the measures of different angles of regular polygons.	Notes:
Topic 5 Finding areas of regular polygons	Length: 2 days
Lesson Frame:	We will develop an algorithm for finding the area of all regular polygons. I will test my algorithm on various regular and nonregular polygons.

Unit Name: Polygons and Circles	Length: 16 days
Standards: M.G.C.B.2 (F2Y)M.G.GMD.A.1M.G.GMD.C.4M.G.GMD.C.6 (F2Y)M.G.SRT.B.5	Outcomes: Students will learn about special types of polygons.
Essential Questions: Can I find the shortcuts and generalize the rules for finding perimeters and areas of polygons?	Learning Targets: Students will learn how the measures of interior and exterior angles of a regular polygon are related to the number of sides of the polygon.
Performance Tasks: Students will develop algorithms to find the area of polygons.	Notes:
Topic 6 Area ratios of similar figures	Length: 1 day
Lesson Frame:	We will identify the zoom factor as the ratio of similarity. I will use the ratio of similarity to find the area of similar shapes.
Performance Tasks: Students will discover how to find the area of similar figures.	Notes:
Topic 7 Ratios of similarity	Length: 1 day
Lesson Frame:	We will discover how the area and perimeter of a shape are changed when a shape is dilated. I will identify the zoom factor given the perimeter of two similar shapes.
Performance Tasks: Students will identify the ratios needed to find that area of similar shapes.	Notes:
Topic 8 A special ratio	Length: 1 day
Lesson Frame:	We will look for patterns and connections between the perimeter and area of a circle. I will discover the formula for circumference through investigation.
Performance Tasks: Students will discover how to find area and circumference formulas.	Notes:
Topic 9 Area and circumference of a circle	Length: 1 day
Lesson Frame:	We will develop a method of finding area and circumference of all circles. I will investigate how to find the area of sectors.
Performance Tasks: Students will discover how to find area and circumference of shapes with different radii.	Notes:
Topic 10 Circles in context	Length: 2 days
Lesson Frame:	We will work to find the areas of circular and polygonal regions within a word problem.

Unit Name: Polygons and Circles	Length: 16 days
Standards: M.G.C.B.2 (F2Y) M.G.GMD.A.1 M.G.GMD.C.4 M.G.GMD.C.6 (F2Y) M.G.SRT.B.5	Outcomes: Students will learn about special types of polygons.
Essential Questions: Can I find the shortcuts and generalize the rules for finding perimeters and areas of polygons?	Learning Targets: Students will learn how the measures of interior and exterior angles of a regular polygon are related to the number of sides of the polygon. I will apply my knowledge of sectors to find real world answers.
Performance Tasks: Students will use problem solving strategies to find areas of circular and polygonal regions.	Notes:

Unit Name: Solids and Constructions	Length: 13 days
Standards: M.G.C.A.1 (F2Y)M.G.CO.C.10 (F2Y)M.G.CO.C.9 (F2Y)M.G.CO.D.12 (F2Y)M.G.CO.D.13 (F2Y)M.G.GMD.A.1 (F2Y)M.G.GMD.A.2 (F2Y)M.G.GMD.C.4 (F2Y)	Outcomes: Students will find the surface area and volume of three-dimensional solids.
Essential Questions: How can I represent it, what tools can I use, and how can I construct it?	Learning Targets: Students will determine the changes to volume when a three-dimensional solid is enlarged.
Topic 1: Three dimensional solids	Length: 1 day
Lesson Frame:	We will work with volume as a form of measurement. I will create mat plans to represent three dimensional objects.
Performance Tasks: Students will represent three dimensional solids using side and mat views.	Notes:
Topic 2: Volumes and surface areas of prisms	Length: 1 day
Lesson Frame:	We will learn how to find the surface area of a solid. I will represent a solid by creating a net.
Performance Tasks: Students will work with nets of prisms.	Notes:
Topic 3 Prisms and cylinders	Length: 1 day
Lesson Frame:	We will understand the volume of a cylinder remains a constant if the solid is slanted. I will learn how to sketch prisms and cylinders on paper.
Performance Tasks: Students will practice finding surface area and volume of prisms and cylinders.	Notes:
Topic 4 Volumes of similar solids	Length: 1 day
Lesson Frame:	We will use scale factor to find the volume of similar solids. I will identify how the volume changes from one solid to another.
Performance Tasks: Students will develop an understanding of ratios with volumes of similar figures.	Notes:
Topic 5 Ratios of similarity	Length: 1 day
Lesson Frame:	We will apply my knowledge to solve everyday volume problems. I will analyze how solids impact everyday life.
Performance Tasks: Students will apply their understanding of the ratios of similarity.	Notes:

Unit Name: Solids and Constructions	Length: 13 days
Standards: M.G.C.A.1 (F2Y) M.G.CO.C.10 (F2Y) M.G.CO.C.9 (F2Y) M.G.CO.D.12 (F2Y) M.G.CO.D.13 (F2Y) M.G.GMD.A.1 (F2Y) M.G.GMD.A.2 (F2Y) M.G.GMD.C.4 (F2Y)	Outcomes: Students will find the surface area and volume of three-dimensional solids.
Essential Questions: How can I represent it, what tools can I use, and how can I construct it?	Learning Targets: Students will determine the changes to volume when a three-dimensional solid is enlarged.
Topic 6 Introduction to constructions	Length: 1 day
Lesson Frame:	We will construct angle and line segments using a compass and ruler. I will construct the incenter of a triangle and a circle.
Performance Tasks: Students will become acquainted with basic construction techniques.	Notes:
Topic 7 Constructing bisectors	Length: 1 day
Lesson Frame:	We will construct perpendicular bisector and angle bisector. I will understand the properties of diagonals of a rhombus and how it helps in construction.
Performance Tasks: Students will work to construct perpendicular bisector and angle bisectors.	Notes:
Topic 8 More explorations with constructions	Length: 1 day
Lesson Frame:	We will learn how to copy triangles. I will learn how to construct a square through a given point.
Performance Tasks: Students will construct a line parallel to a given line through a given point.	Notes:
Topic 9 Other constructions	Length: 1 day
Lesson Frame:	We will identify medians and centroids of a triangle. I will construct medians and centroids when given a triangle.
Performance Tasks: Students will explore geometric constructions using a compass and a straight edge.	Notes:

Unit Name:Circles and Conditional Probability	Length:20 days
Standards:M.G.C.A.1 (F2Y)M.G.C.B.2 (F2Y)M.G.GMD.C.4 (F2Y)M.SP.CP.A.2 (F2Y)M.SP.CP.A.3 (F2Y)M.SP.CP.A.4 (F2Y)M.SP.CP.A.5 (F2Y)	Outcomes:Students will explore the relationships between angles, arcs and chords.
Essential Questions:What tools do I have available to help me solve this problem?	Learning Targets: Students will analyze probabilities.
Topic 1:Introduction to chords	Length:1 day
Lesson Frame:	We will identify the relationship between chords and perpendicular bisector in circles. I will discover the relationship between major and minor arcs.
Performance Tasks: Students will observe that the perpendicular bisector of a chord will always pass through the center of a circle.	Notes:
Topic 2: Angles and arcs	Length:1 day
Lesson Frame:	We will discover the relationship between inscribed angles and arcs that intercept. I will learn the difference between arc measure and arc length.
Performance Tasks: Students will identify the relationships between inscribed angles and their arcs.	Notes:
Topic 3 Chords and angles	Length:1 day
Lesson Frame:	We will develop different methods to find the length of a chord. I will inscribe angles in a semicircle creating 90 degree angles.
Performance Tasks: Students will observe that inscribed angles in a semi circle will be 90 degrees.	Notes:
Topic 4 Tangents and secants	Length:1 day
Lesson Frame:	We will solve problems involving tangents and secants of circles. I will construct circles with tangents through specific points.
Performance Tasks: Students will learn that a line tangent to a circle is perpendicular to the radius of a circle.	Notes:
Topic 5 Problem solving with circles	Length:1 day
Lesson Frame:	We will find a circle that circumscribes a triangle. I will apply distance to identify the radius of a circumscribed circle.

Unit Name:Circles and Conditional Probability	Length:20 days
Standards:M.G.C.A.1 (F2Y)M.G.C.B.2 (F2Y)M.G.GMD.C.4 (F2Y)M.SP.CP.A.2 (F2Y)M.SP.CP.A.3 (F2Y)M.SP.CP.A.4 (F2Y)M.SP.CP.A.5 (F2Y)	Outcomes:Students will explore the relationships between angles, arcs and chords.
Essential Questions:What tools do I have available to help me solve this problem?	Learning Targets: Students will analyze probabilities.
Performance Tasks: Students will consolidate their understanding of angles, arcs, chords and tangents of a circle to solve application problems.	Notes:
Topic 6 Conditional probability and independence	Length:1 day
Lesson Frame:	We will connect independence to association of two variables. I will connect by understanding of independence with the mathematical definition.
Performance Tasks: Students will begin to develop the concept of conditional probability.	Notes:
Topic 7 Two way tables	Length:2 days
Lesson Frame:	We will determine if two categorical variables, presented in two way tables are associated. I will identify conditional probabilities from data arranged in relative frequency and two way tables.
Performance Tasks: Students will calculate conditional probabilities from data arranged in a frequency table.	Notes:
Topic 8 Applications of probability	Length:1 day
Lesson Frame:	We will learn the multiplication rule and alternate definition of independence in probability situations. I will apply my knowledge of independence in various application problems.
Performance Tasks: Students will compare and contrast area models with two way tables.	Notes:
Topic 9 Fundamental principle of counting	Length:1 day
Lesson Frame:	We will discover the fundamental principle of counting. I will apply the fundamental principle of counting to many real world situations.
Performance Tasks: Students will apply the fundamental principle of counting to count permutations	Notes:
Topic 10 Permutations	Length:1 day
Lesson Frame:	We will develop two formulas for calculating permutations.

Unit Name: Circles and Conditional Probability	Length: 20 days
Standards: M.G.C.A.1 (F2Y)M.G.C.B.2 (F2Y)M.G.GMD.C.4 (F2Y)M.SP.CP.A.2 (F2Y)M.SP.CP.A.3 (F2Y)M.SP.CP.A.4 (F2Y)M.SP.CP.A.5 (F2Y)	Outcomes: Students will explore the relationships between angles, arcs and chords.
Essential Questions: What tools do I have available to help me solve this problem?	Learning Targets: Students will analyze probabilities. I will apply the formulas to various application problems.
Performance Tasks: Students will develop two formulas for calculating permutations.	Notes:
Topic 11 Combinations	Length: 1 day
Lesson Frame:	We will discover the relationship between permutations and combinations. I will learn counting permutations is the first step in counting combinations.
Performance Tasks: Students will describe the differences between permutations and combinations.	Notes:
Topic 12 Categorizing counting problems	Length: 1 day
Lesson Frame:	We will determine counting methods for order specific situations. I will determine counting methods for order specific situations with no repeating.
Performance Tasks: Students will determine counting methods for a variety of situations.	Notes:
Topic 13 Challenging probability problems	Length: 1 day
Lesson Frame:	We will solve challenging problems using probability tools. I will work with multifaceted probability problems in a real world setting.
Performance Tasks: Students will apply their knowledge of probability to a variety of application problems.	Notes:

Unit Name: Solids and Circles	Length: 16 days
Standards: M.G.C.A.1 (F2Y), M.G.C.B.2 (F2Y), M.G.GMD.A.1 (F2Y), M.G.GMD.B.3M.G.GMD.C.4M.G.MGD.A.2 (F2Y)	Outcomes: Students will find the volume and surface area of pyramids, cones and spheres.
Essential Questions: What information do I need, what do I already know, and how can I use this information to solve the problem?	Learning Targets: Students will discover the properties of special polyhedra.
Topic 1: Platonic solids	Length: 2-3 days
Lesson Frame:	We will create 5 Platonic Solids I will describe polyhedra using the number of faces.
Performance Tasks: Students will identify which solids have congruent faces.	Notes:
Topic 2: Pyramids	Length: 1 day
Lesson Frame:	We will find the total surface area using the slant height. I will define how to name a pyramid.
Performance Tasks: Students will discover the definition of a pyramid.	Notes:
Topic 3 Volume of a pyramid	Length: 2 days
Lesson Frame:	We will create the formula for finding the volume of a pyramid. I will discover the relationship between the volume of a pyramid and prism.
Performance Tasks: Students will observe the relationship of the volume of a prism and a pyramid.	Notes:
Topic 4 Surface area and volume of a cone	Length: 1 day
Lesson Frame:	We will practice calculating the volume of pyramids and cones. I will solve application problems using cones.
Performance Tasks: Students will learn how to find the volume and surface area of a cone.	Notes:
Topic 5 Surface area and volume of a sphere	Length: 1 day
Lesson Frame:	We will express regularity in repeated reasoning. I will investigate the relationships of cones, spheres and cylinders and their volumes.
Performance Tasks: Students will learn how to find the volume and surface area of a sphere.	Notes:

Unit Name: Solids and Circles	Length: 16 days
Standards: M.G.C.A.1 (F2Y), M.G.C.B.2 (F2Y), M.G.GMD.A.1 (F2Y), M.G.GMD.B.3, M.G.GMD.C.4, M.G.MGD.A.2 (F2Y),	Outcomes: Students will find the volume and surface area of pyramids, cones and spheres.
Essential Questions: What information do I need, what do I already know, and how can I use this information to solve the problem?	Learning Targets: Students will discover the properties of special polyhedra.
Topic 6 Coordinates on a sphere	Length: 1 day
Lesson Frame:	We will explore the characteristics of a great circle. I will learn how to calculate the distance between two locations on earth.
Performance Tasks: Students will work with spheres within a spherical coordinate system.	Notes:
Topic 7 Tangents and arcs	Length: 1 day
Lesson Frame:	We will learn the relationship between the measures of arcs and angles. I will create constructs of arcs formed when two lines are tangent to the circle.
Performance Tasks: Students will study the relationship between the measures of the arcs and angles formed when two tangent lines intersect.	Notes:
Topic 8 Secant and tangent relationships	Length: 2 days
Lesson Frame:	We will investigate the relationship between arcs and secants. I will study circles and the angles that are formed with secants and tangents.
Performance Tasks: Students will discover the relationship between two intersecting secants.	Notes:

Unit Name:Conics and Closure	Length:14 days
Standards:M.G.GMD.B.3 (F2Y)M.G.GMD.C.6 (F2Y)M.G.GPE.A.1M.G.GPE.A.2+M.I.G.GPE.B.4 (F2Y)M.SP.MD.B.7	Outcomes:Students will extend their geometric understanding of circles to write algebraic equations.
Essential Questions:How can I connect these ideas to previous topics, and can I make it simpler or make a generalization?	Learning Targets:Students will investigate the cross-sections of cones to understand parabolas.
Topic 1: The equation of a circle	Length:1 day
Lesson Frame:	We will discover the equation for a circles. I will relate the points on a graph with the equation that corresponds to a circle.
Performance Tasks: Students will learn how to write the equation of a circle.	Notes:
Topic 2: Completing the square for equations of a circle	Length:1 day
Lesson Frame:	We will rewrite the equation of a circle in equation form. I will write the equation of a circle by completing the square.
Performance Tasks: Students will complete the square to write the equations of a circle.	Notes:
Topic 3 Introduction to conic sections	Length:1 day
Lesson Frame:	We will investigate how the position of the focus and directrix affect the shape and direction of a parabola. I will learn the geometric definition of a parabola.
Performance Tasks: Students will identify and name the cross sections of a cone.	Notes:
Topic 4 Graphing a parabola using the focus and directrix	Length:1 day
Lesson Frame:	We will graph various parabolas on focus directrix paper. I will begin to work with ellipses.
Performance Tasks: Students will graph parabolas using the focus and the directrix.	Notes:
Topic 5 Using coordinate geometry and constructions to explore shapes	Length:1 day
Lesson Frame:	We will prove conjectures based on quadrilaterals. I will construct midpoints with a compass and a ruler.

<p>Unit Name: Conics and Closure</p> <p>Standards: M.G.GMD.B.3 (F2Y) M.G.GMD.C.6 (F2Y) M.G.GPE.A.1 M.G.GPE.A.2 + M.G.GPE.B.4 (F2Y) M.SP.MD.B.7</p>	<p>Length: 14 days</p> <p>Outcomes: Students will extend their geometric understanding of circles to write algebraic equations.</p>
<p>Essential Questions: How can I connect these ideas to previous topics, and can I make it simpler or make a generalization?</p> <p>Performance Tasks: Students will learn that a quadrilateral formed by joining consecutive midpoints of any quadrilateral is a parallelogram.</p>	<p>Learning Targets: Students will investigate the cross-sections of cones to understand parabolas.</p> <p>Notes:</p>
<p>Topic 6 Euler's formula of polyhedra</p> <p>Lesson Frame:</p>	<p>Length: 1 day</p> <p>We will investigate the attributes of polyhedra.</p> <p>I will compare faces, vertices, and edges of various polyhedra.</p>
<p>Performance Tasks: Students will review their understanding of polyhedra.</p>	<p>Notes:</p>
<p>Topic 7 The golden ratio</p> <p>Lesson Frame:</p>	<p>Length: 1 day</p> <p>We will study several different contexts where phi arises.</p> <p>I will write and solve quadratic equations in an infinite series.</p>
<p>Performance Tasks: Students will be introduced to phi and the golden ratio and will apply it to application problems.</p>	<p>Notes:</p>
<p>Topic 8 Using geometry to find probabilities</p> <p>Lesson Frame:</p>	<p>Length: 1 day</p> <p>We will find areas of complex regions on a coordinate plane.</p> <p>I will use probability to solve challenging real world problems.</p>
<p>Performance Tasks: Students will find the areas of complex regions using probability.</p>	<p>Notes:</p>

September	October	November	December	January	February	March	April	May	June
Unit 1	Finish Unit 2	Unit 4	Unit 5	Unit 6	Finish Unit 7	Unit 9	Finish Unit 10	Unit 12	
Start of Unit 2	Unit 3			Start Unit 7	Unit 8	Start Unit 10	Unit 11		

Course Name: Advanced Algebra (Algebra 2)		Credits: 1
Prerequisites:	Geometry	
Description:	In this course, students will work in cooperative groups to solve problems, explain their thinking, and listen to others explanations on their thinking. M.F.IF.B.4M.F.IF.B.5M.F.IF.C.7M.F.IF.C.9 M.A.CED.A.2 (F2Y)M.A.SSE.A.1aM.F.BF.B.3 M.A.APR.A.1M.A.APR.C.4M.A.APR.D.7M.A.SSE.A.1aM.A.SSE.A.2 M.A.CED.A.2 M.A.CED.A.3 (F2Y)M.A.CED.A.3 (F2Y)M.A.REI.A.2M.A.REI.D.11 M.A.CED.A.4 (F2Y)M.F.BF.A.1bM.F.BF.B.3M.F.BF.B.4M.F.IF.B.4 (F2Y)M.F.IF.B.5M.F.IF.B.8 (F2Y)M.F.IF.C.7eM.F.IF.C.9M.F.IE.A.4	
Academic Standards:		
Units:	Unit Length:	Unit Outcomes:
Investigations and functions	16 days	Outcomes:Students will work with graphing calculators to help discover qualities of functions.
Transformations of parent graphs	20 days	Outcomes:Students will change an equation of a parabola to make it fit a set of nonlinear data.
Equivalent forms	14 days	Outcomes:Students will rewrite expressions and equations to create simpler versions.
Solving and intersections	14 days	Outcomes:Students will write and solve equations and systems of equations.
Inverses and logarithms	14 days	Outcomes:Students will examine inverse functions and create composite functions
3-D graphing and logarithms	14 days	Outcomes:Students will graph points, equations, and systems of equations in three dimensions.
Trigonometric functions	17 days	Outcomes:Students will use their understanding of trigonometric ratios to build their understanding of new functions.
Polynomials	16 days	Outcomes:Students will investigate the relationships between equations and graphs.
Randomization and normal distributions	12 days	Outcomes:Students will learn the basic techniques of performing opinion surveys along with their limitations and pitfalls.
Series	14 days	Outcomes:Students will write series and find their sums.
Simulating sampling variability	13 days	Outcomes:Students will use computer simulations to model complex probabilities.
Analytic trigonometry	16 days	Outcomes:Students will learn the characteristics of trigonometric ratios secant, cosecant, and cotangent.

Unit Name: Investigations and functions	Length: 16 days
Standards: M.F.IF.B.4M.F.IF.B.5M.F.IF.C.7bM.F.IF.C.9	Outcomes: Students will work with graphing calculators to help discover qualities of functions.
Essential Questions: Am I analyzing the function thoroughly and clearly communicating my reasoning to others?	Learning Targets: Students will be able to find multiple ways to represent a geometric relationship and compare them to other relationships.
Topic 1: Solving puzzles in teams	Length: 1 day
Lesson Frame:	We will represent a series of connected functions to create the desired output.
Performance Tasks: Students will be able to represent geometric objects.	I will model geometric objects with mathematics using functions.
	Notes:
Topic 2: Using a graphing calculator to explore a function	Length: 2 days
Lesson Frame:	We will identify possible inputs, outputs and key points for describing graphs.
Performance Tasks: Students will be able to draw complete graphs of functions.	I will make sense of problems and persevere in solving them while graphing functions.
	Notes:
Topic 3: Domain and range	Length: 1 day
Lesson Frame:	We will work on graphing skills while identifying the domain and range.
Performance Tasks: Students will be able to identify the domain and range of a function.	I will construct viable arguments to defend what the domain and range is of a function.
	Notes:
Topic 4: Points of intersection in multiple representations	Length: 1 day
Lesson Frame:	We will use multiple representations to find the point of intersection.
Performance Tasks: Students will be able to find point of intersection of functions.	I will look for structure while identifying the intersection point from a graph, table, or equation.
	Notes:
Topic 5: Modeling a geometric relationship	Length: 3 days
Lesson Frame:	We will investigate a function defined by a geometric relationship.
Performance Tasks: Students will be able to generate multiple algebraic representations of a function.	I will model with mathematics while creating multiple representations.
	Notes:
Topic 6: Function investigation	Length: 2 days
Lesson Frame:	We will develop our understanding of functions as we look at hyperbolas.
Performance Tasks: Students will be able to investigate functions.	I will look for and make use of the structure of hyperbolas.
	Notes:

Unit Name: Investigations and functions	Length: 16 days
Standards: M.F.IF.B.4M.F.IF.B.5M.F.IF.C.7bM.F.IF.C.9	Outcomes: Students will work with graphing calculators to help discover qualities of functions.
Essential Questions: Am I analyzing the function thoroughly and clearly communicating my reasoning to others?	Learning Targets: Students will be able to find multiple ways to represent a geometric relationship and compare them to other relationships.
Topic 7: The family of linear functions	Length: 1 day
Lesson Frame:	We will determine whether relationships in tables and situations are linear. I will attend to precision while investigating linear relationships.
Performance Tasks: Students will be able to identify commonalities in a family of linear functions.	Notes:
Topic 8: Function investigation challenge	Length: 1 day
Lesson Frame:	We will investigate functions that are non-linear. I will construct viable arguments about what makes functions linear and non-linear.
Performance Tasks: Students will be able to identify non-linear functions.	Notes:

Unit Name: Transformations of parent graphs	Length: 20 days
Standards: M.A.CED.A.2 (F2Y) M.A.SSE.A.1a M.F.BF.B.3	Outcomes: Students will change an equation of a parabola to make it fit a set of nonlinear data.
Essential Questions: How can I model this everyday situation with mathematics?	Learning Targets: Students will be able to apply the concepts of transformation to other parent functions.
Topic 1: Modeling non-linear data	Length: 1 day
Lesson Frame:	We will make predictions from an equation.
Performance Tasks:	I will reason abstractly and quantitatively in order to make predictions.
Students will be able to collect non-linear data and fit an equation to the data.	Notes:
Topic 2: Parabola investigation	Length: 2 days
Lesson Frame:	We will identify comparisons of graphs and equations after transformations.
Performance Tasks:	I will look for and make use of structure while identifying the characteristics of transformations.
Students will be able to connect transformations of parabolas with equations.	Notes:
Topic 3: Graphing a parabola without a table	Length: 1 day
Lesson Frame:	We will rewrite quadratic equations in graphing form in order to graph.
Performance Tasks:	I will make use of structure to identify equations written in graphing form.
Students will be able to graph quadratic equations.	Notes:
Topic 4: Rewriting in graphing form	Length: 2 days
Lesson Frame:	We will compare graphing using intercepts and completing the square.
Performance Tasks:	I will make viable arguments when determining which method of graphing should be used.
Students will be able to use intercepts to graph quadratic equations.	Notes:
Topic 5: Mathematical modeling with parabolas	Length: 1 day
Lesson Frame:	We will develop an algebraic strategy for finding the value of the stretch factor.
Performance Tasks:	I will look for structure while writing equations in graphing form.
Students will be able to write equations in graphing form.	Notes:
Topic 6: Transforming other parent graphs	Length: 3 days
Lesson Frame:	We will transform exponential, square root, and absolute value functions.
Performance Tasks:	I will make use of structure to identify how transformations impact functions.
Students will be able to transform graphs.	Notes:

Unit Name: Transformations of parent graphs	Length: 20 days
Standards: M.A.CED.A.2 (F2Y) M.A.SSE.A.1a M.F.BF.B.3	Outcomes: Students will change an equation of a parabola to make it fit a set of nonlinear data.
Essential Questions: How can I model this everyday situation with mathematics?	Learning Targets: Students will be able to apply the concepts of transformation to other parent functions.
Topic 7: Describing (h,k) for each family of functions	Length: 2 days
Lesson Frame:	We will make connections between functions and point slope form. I will reason abstractly and quantitatively while identifying similarities of different types of functions.
Performance Tasks: Students will be able to identify the main points of hyperbolic, cubic, absolute value, exponential, and square root functions.	Notes:
Topic 8: Transforming of functions	Length: 1 day
Lesson Frame:	We will compare functions with parent functions. I will make use of structure to identify how functions relate to their parent functions.
Performance Tasks: Students will be able to reflect functions across the y axis.	Notes:
Topic 9: Transforming of non-functions	Length: 2 days
Lesson Frame:	We will transform circles. I will look for and express regularity while transforming functions and circles.
Performance Tasks: Students will be able to transform non-functions.	Notes:
Topic 10: Transforming piecewise-defined functions	Length: 2 days
Lesson Frame:	We will use what we know about transformations to relocate and reorient a piecewise function. I will make sense of a persevere in solve piecewise functions.
Performance Tasks: Students will be able to graph piecewise functions.	Notes:

Unit Name:Equivalent forms	Length: 14 days
Standards:M.A.APR.A.1M.A.APR.C.4M.A.APR.D.7M.A.SSE.A.1aM.A.SSE.A.2	Outcomes:Students will rewrite expressions and equations to create simpler versions.
Essential Questions:How can I show that these forms are equivalent?	Learning Targets:Students will be able to use properties to rewrite and simplify rational expressions.
Topic 1:Equivalent expressions	Length:1 day
Lesson Frame:	We will develop algebraic strategies for demonstrating equivalence.
Performance Tasks: Students will be able to identify equivalent expressions.	I will look for and make use of structure to help identify equal expressions.
Notes:	
Topic 2:Rewriting expressions and determining equivalence	Length:2 days
Lesson Frame:	We will make the structure of expressions apparent by multiplying and factoring expressions.
Performance Tasks: Students will be able to rewrite expressions using substitution.	I will look for and make use of structure in order to rewrite expressions in the form wanted.
Notes:	
Topic 3:Solving by rewriting	Length:2 days
Lesson Frame:	We will rewrite equations in order to be able to solve the system.
Performance Tasks: Students will be able to solve systems of equations.	I will look for and make use of structure in order to solve systems of equations.
Notes:	
Topic 4:Investigating rational functions	Length:1 day
Lesson Frame:	We will explore graphs of several rational functions.
Performance Tasks: Students will be able to visualize the effects of dividing polynomials.	I will make sense of problems and persevere in solving rational functions.
Notes:	
Topic 5:Simplifying rational expressions	Length:1 day
Lesson Frame:	We will compare and analyze rational expressions.
Performance Tasks: Students will be able to analyze rational expressions.	I will look for and make use of the structure of rational expressions.
Notes:	
Topic 6:Multiplying and dividing rational expressions	Length:1 day
Lesson Frame:	We will simplify rational expressions by multiplying and dividing.
Performance Tasks: Students will be able to multiply and divide rational expressions.	I will look for and make use of structure to identify how to simplify an expression.
Notes:	

Unit Name:Equivalent forms	Length:14 days
Standards:M.A.APR.A.1M.A.APR.C.4M.A.APR.D.7M.A.SSE.A.1aM.A.SSE.A.2	Outcomes:Students will rewrite expressions and equations to create simpler versions.
Essential Questions:How can I show that these forms are equivalent?	Learning Targets:Students will be able to use properties to rewrite and simplify rational expressions.
Topic 7:Adding and subtracting rational expressions	Length:1 day
Lesson Frame:	We will simplify rational expressions by combining like terms with adding and subtracting. I will look for and make use of structure when identifying like terms.
Performance Tasks: Students will be able to add and subtract rational expressions.	Notes:
Topic 8:Creating new functions	Length:2 days
Lesson Frame:	We will simplify expressions and check our work. I will make sense of rational expressions and persevere in simplifying them.
Performance Tasks: Students will be able to simplify expressions with all four operations.	Notes:

Unit Name:Solving and intersections	Length:14 days
Standards:M.A.CED.A.2 (F2Y)M.A.CED.A.3 (F2Y)M.A.REI.A.2M.A.REI.D.11 (F2Y)M.A.SSE.A.1bM.A.SSE.A.2M.F.IF.B.5	Outcomes:Students will write and solve equations and systems of equations.
Essential Questions:Which tools can I use to solve the problems and verify my solutions?	Learning Targets:Students will be able to solve systems of equations and systems of inequalities.
Topic 1:Strategies for solving equations	Length:1 day
Lesson Frame:	We will discuss different methods of solving equations. I will justify my strategies strategically of solving an equation.
Performance Tasks: Students will be able to solve equations.	Notes:
Topic 2:Solving equations and systems graphically	Length:2 days
Lesson Frame:	We will use two methods of solving one variable equations graphically. I will look for an make use of the structure of the equation to solve.
Performance Tasks: Students will be able to use graphs to validate algebraic solutions.	Notes:
Topic 3:Finding multiple solutions to systems of equations	Length:1 day
Lesson Frame:	We will determine the number of solutions for a system and what that means graphically. I will reason abstractly and quantitatively while determining the number of solutions a system has.
Performance Tasks: Students will be able to solve systems of linear and non-linear equations.	Notes:
Topic 4:Using systems of equations to solve problems	Length:1 day
Lesson Frame:	We will write and solve equations for real life applications. I will make sense of and persevere in solving real life problems.
Performance Tasks: Students will be able to write equations for real life problems.	Notes:
Topic 5:Solving inequalities with one or two variables	Length:2 days
Lesson Frame:	We will identify similar characteristics in solving inequalities and standard equations. I will attend to precision while solving inequalities.
Performance Tasks: Students will be able to solve systems of inequalities.	Notes:
Topic 6:Using systems to solve a problem	Length:1 day
Lesson Frame:	We will solve inequalities derived from real world problems. I will make sense of word problems and persevere in solving them.

Unit Name: Solving and intersections	Length: 14 days
Standards: M.A.CED.A.2 (F2Y) M.A.CED.A.3 (F2Y) M.A.REI.A.2 M.A.REI.D.11 (F2Y) M.A.SSE.A.1b M.A.SSE.A.2 M.F.IF.B.5	Outcomes: Students will write and solve equations and systems of equations.
Essential Questions: Which tools can I use to solve the problems and verify my solutions?	Learning Targets: Students will be able to solve systems of equations and systems of inequalities.
Performance Tasks: Students will be able to solve word problems involving inequalities.	Notes:
Topic 7: Application of systems of linear inequalities	Length: 1 day
Lesson Frame:	We will solve inequalities derived from real world problems. I will make sense of word problems and persevere in solving them.
Performance Tasks: Students will be able to solve more complex systems of linear inequalities.	Notes:
Topic 8: Using graphs to find solutions	Length: 1 day
Lesson Frame:	We will identify the function family that a function comes from and how different functions relate. I will look for and make use of the structure of a function in order to identify its family.
Performance Tasks: Students will be able to identify the relationships between the functions.	Notes:

Unit Name: Inverses and logarithms	Length: 14 days
Standards: M.A.CED.A.4 (F2Y)M.F.BF.A.1bM.F.BF.B.3M.F.BF.B.4M.F.IF.B.4 (F2Y)M.F.IF.B.5M.F.IF.B.8 (F2Y)M.F.IF.C.7eM.F.IF.C.9M.F.LE.A.4	Outcomes: Students will examine inverse functions and create composite functions
Essential Questions: How can I use the reflective nature of inverse graphs to find the equations for inverse?	Learning Targets: Students will be able to identify key components of inverse and logarithmic functions.
Topic 1: Undo equations	Length: 1 day
Lesson Frame:	We will develop strategies to justify why equations undo functions.
Performance Tasks: Students will be able to find equations that undo functions.	I will reason abstractly and quantitatively while identifying equations.
	Notes:
Topic 2: Using a graph to find an inverse	Length: 2 days
Lesson Frame:	We will reflect across $y=x$ and write equations of the inverses.
Performance Tasks: Students will be able to graph inverse functions.	I will use appropriate tools strategically while reflecting equations.
	Notes:
Topic 3: Finding inverses and justifying algebraically	Length: 1 day
Lesson Frame:	We will learn how to switch x and y in a function in order to find the inverse.
Performance Tasks: Students will be able to find an inverse algebraically.	I will make use of structure while writing inverse functions.
	Notes:
Topic 4: Finding the inverse of an exponential function	Length: 1 day
Lesson Frame:	We will look for the inverse of exponential equations.
Performance Tasks: Students will be able to find the inverse of parent equations.	I will look for and make use of structures while exploring exponential inverses.
	Notes:
Topic 5: Defining the inverse of an exponential function	Length: 1 day
Lesson Frame:	We will make the connection between logarithms and inverses.
Performance Tasks: Students will be able to define the term logarithm.	I will look for and make use of structure to identify the connection between logarithms and exponential functions.
	Notes:
Topic 6: Investigating the family of logarithmic functions	Length: 1 day
Lesson Frame:	We will identify the characteristics of logarithmic functions.
	I will construct viable arguments while identifying key components of logarithmic functions.

Unit Name: Inverses and logarithms	Length: 14 days
Standards: M.A.CED.A.4 (F2Y)M.F.BF.A.1bM.F.BF.B.3M.F.BF.B.4M.F.IF.B.4 (F2Y)M.F.IF.B.5M.F.IF.B.8 (F2Y)M.F.IF.C.7eM.F.IF.C.9M.F.LE.A.4	Outcomes: Students will examine inverse functions and create composite functions
Essential Questions: How can I use the reflective nature of inverse graphs to find the equations for inverse?	Learning Targets: Students will be able to identify key components of inverse and logarithmic functions.
Performance Tasks: Students will be able to graph logarithmic functions.	Notes:
Topic 7: Transformations of logarithmic functions	Length: 1 day
Lesson Frame:	We will transform logarithmic equations.
Performance Tasks: Students will be able to use their calculator to find the base of a log.	I will use appropriate tools strategically as I solve logs on a calculator.
Topic 8: Investigating compositions of functions	Notes:
Lesson Frame:	Length: 2 days
Performance Tasks: Students will be able to write functions made of two functions.	We will make predictions about how a second function will look like the first on a graph.
	I will look for and make use of structure while comparing graphs of two functions.
	Notes:

Unit 3-D graphing and logarithms	Length: 14 days
Standards: M.A.CED.A.2, M.F.BF.A.1b, M.F.IF.C.7e, M.F.LE.A.4, M.F.LE.B.5	Outcomes: Students will graph points, equations, and systems of equations in three dimensions.
Essential Questions: How can I apply what I learned about graphs and equations in two dimensions to three dimensional solutions?	Learning Targets: Students will be able to solve equations involving logarithms.
Topic 1: Creating a three dimensional model	Length: 1 day
Lesson Frame:	We will use isometric paper to plot and identify points in a three dimensional plane. I will model with mathematics as I am plotting points in a three dimensional plane.
Performance Tasks: Students will be able to locate points in a three dimensional plane.	Notes:
Topic 2: Graphing equations in three dimensions	Length: 1 day
Lesson Frame:	We will graph planes on a three dimensional axes. I will use appropriate tools strategically while plotting planes.
Performance Tasks: Students will be able to graph planes in three dimensions.	Notes:
Topic 3: Systems of three-variable equations	Length: 1 day
Lesson Frame:	We will find the points of intersection of two of the systems. I will model with mathematics as I identify solutions to the systems with three variables.
Performance Tasks: Students will be able to graph systems with three variables.	Notes:
Topic 4: Solving systems of three equations with three unknowns	Length: 1 day
Lesson Frame:	We will determine the different ways three planes can intersect. I will look for and make use of structure to identify the types of solutions to systems.
Performance Tasks: Students will be able to solve systems with three variables algebraically.	Notes:
Topic 5: Using systems of three equations for curve fitting	Length: 2 days
Lesson Frame:	We will identify the parabola that connects three points. I will reason abstractly and quantitatively while writing quadratic equations.
Performance Tasks: Students will be able to write the quadratic function that passes through three points.	Notes:
Topic 6: Using logarithms to solve exponential equations	Length: 1 day
Lesson Frame:	We will develop the power property of logarithms to solve equations. I will make sense of problems and persevere in solving exponential equations.
Performance Tasks: Students will be able to solve exponential equations.	Notes:

Unit 3-D graphing and logarithms	Length: 14 days
Standards: M.A.CED.A.2M.F.BF.A.1bM.F.IF.C.7e,M.F.LE.A.4M.F.LE.B.5	Outcomes: Students will graph points, equations, and systems of equations in three dimensions.
Essential Questions: How can I apply what I learned about graphs and equations in two dimensions to three dimensional solutions?	Learning Targets: Students will be able to solve equations involving logarithms.
Topic 7: Investigating the properties of logarithms	Length: 1 day
Lesson Frame:	We will use the product and quotient properties of logarithms to rewrite equations. I will look for and make use of structure when changing the bases in a log.
Performance Tasks: Students will be able to rewrite equations with different bases.	Notes:
Topic 8: Writing equations of exponential functions	Length: 1 day
Lesson Frame:	We will develop strategies for finding the exponential equation given certain data. I will look for and express regularity in writing exponential equations.
Performance Tasks: Students will be able to write an equation given two points and an asymptote.	Notes:
Topic 9: An application of logarithms	Length: 1 day
Lesson Frame:	We will solve a murder mystery using exponential functions. I will make sense of problems and persevere in solving exponential functions.
Performance Tasks: Students will be able to solve exponential functions.	Notes:

Unit Trigonometric functions	Length: 17 days
Standards: M.F.BF.B.3M.F.IF.C.7eM.F.IF.C.9M.F.TF.A.1M.F.TF.A.2M.F.TF.B.5	Outcomes: Students will use their understanding of trigonometric ratios to build their understanding of new functions.
Essential Questions: How can I use what I know about right triangle trigonometry to describe functions determined by rotations about a circle?	Learning Targets: Students will be able to develop general equations for periodic and trigonometric functions.
Topic 1: Introduction to cyclic models	Length: 1 day
Lesson Frame:	We will investigate a pendulum to create a sine curve.
Performance Tasks: Students will be able to identify the sine curve.	I will make predictions on how to change the shape of the curve.
	Notes:
Topic 2: Graphing the sine function	Length: 2 days
Lesson Frame:	We will use experimental data to generate heights to create a sine graph.
Performance Tasks: Students will be able to graph the sine function.	I will look for and make use of structure while making the sine graph.
	Notes:
Topic 3: Unit circle to graph	Length: 1 day
Lesson Frame:	We will explore the connection between the sine graph and the unit circle.
Performance Tasks: Students will be able to understand reference angles.	I will look for and make use of structure to make connections between the sine graph and the unit circle.
	Notes:
Topic 4: Graphing and interpreting the cosine function	Length: 2 days
Lesson Frame:	We will draw conclusions about the relationships between sine and cosine.
Performance Tasks: Students will be able to use the cosine function to calculate horizontal distance.	I will use appropriate tools strategically when comparing sine and cosine.
	Notes:
Topic 5: Defining a radian	Length: 1 day
Lesson Frame:	We will determine the number of radians in a full circle.
Performance Tasks: Students will be able to construct an angle with the measure of one radian.	I will look for and make use of structure when defining a radian.
	Notes:
Topic 6: Building a unit circle	Length: 1 day
Lesson Frame:	We will use special triangles and reference angles to label exact coordinates of a unit circle.
	I will look for and make use of structure to label the unit circle.

Unit Trigonometric functions	Length: 17 days
Standards: M.F.B.F.3M.F.I.F.C.7eM.F.I.F.C.9M.F.TF.A.1M.F.TF.A.2M.F.TF.B.5	Outcomes: Students will use their understanding of trigonometric ratios to build their understanding of new functions.
Essential Questions: How can I use what I know about right triangle trigonometry to describe functions determined by rotations about a circle?	Learning Targets: Students will be able to develop general equations for periodic and trigonometric functions.
Performance Tasks: Students will be able to give the coordinates of a unit circle.	Notes:
Topic 7: The tangent function	Length: 1 day
Lesson Frame:	We will use the unit circle to create the graph of tangent.
Performance Tasks: Students will be able to recognize the connection between tangent and the unit circle.	I will attend to precision while graphing tangent.
	Notes:
Topic 8: Transformations of $y = \sin x$	Length: 1 day
Lesson Frame:	We will generate general equations for sine and cosine functions.
Performance Tasks: Students will be able to transform sine and cosine functions.	I will construct viable arguments while writing equations of transformed functions.
	Notes:
Topic 9: One more parameter for a cyclic function	Length: 1 day
Lesson Frame:	We will determine the placement of the parameter b in the general equation for sine and cosine.
Performance Tasks: Students will be able to identify the period of cyclic situations.	I will make sense of sine and cosine equations and persevere in solving them.
	Notes:
Topic 10: Period of cyclic function	Length: 1 day
Lesson Frame:	We will transform sine curves and graph them.
Performance Tasks: Students will be able to write equations and graph transformed sine curves.	I will look for and make use of structure while graphing transformed sine curves.
	Notes:
Topic 11: Graph to equation	Length: 1 day
Lesson Frame:	We will identify the sine and cosine functions as just transformations of each other.
Performance Tasks: Students will be able to consolidate their knowledge of cyclic graphs and their equations.	I will look for and express regularity between sine and cosine functions.
	Notes:

Unit Polynomials	Length: 16 days
Standards: M.A.APR.B.2M.A.APR.B.3M.A.APR.D.6M.A.SSE.A.2M.F.IF.B.4 (F2Y)M.F.IF.B.5M.F.IF.C.7c	Outcomes: Students will investigate the relationships between equations and graphs.
Essential Questions: How can the degree of a polynomial help me determine the nature of its graph or a possible equation?	Learning Targets: Students will be able to understand how imaginary and complex numbers are connected with systems of equations.
Topic 1: Sketching graphs of polynomial functions	Length: 2 days
Lesson Frame:	We will describe the graph of a polynomial given its equation in factored form.
Performance Tasks: Students will be able to graph a polynomial.	I will look for and make sense of structure when describing graphs.
	Notes:
Topic 2: More graphs of polynomials	Length: 1 day
Lesson Frame:	We will describe the graph of a polynomial given its equation in factored form.
Performance Tasks: Students will be able to describe the graphs of polynomial functions.	I will look for and make sense of structure when describing graphs.
	Notes:
Topic 3: Sketch factors for polynomial functions	Length: 1 day
Lesson Frame:	We will write equations given a point and an intercept.
Performance Tasks: Students will be able to write exact equations for polynomial graphs.	I will make sense of graphing problems and persevere in writing the equations.
	Notes:
Topic 4: Introducing imaginary numbers	Length: 1 day
Lesson Frame:	We will solve equations involving imaginary numbers and complex numbers.
Performance Tasks: Students will be able to solve equations using imaginary numbers.	I will reason abstractly and quantitatively while solving polynomial equations.
	Notes:
Topic 5: Complex roots	Length: 1 day
Lesson Frame:	We will write equations of quadratic functions given its roots.
Performance Tasks: Students will be able to solve quadratic equations that give them complex conjugates.	I will look for and express regularity while writing quadratic functions given their roots.
	Notes:
Topic 6: More complex numbers and equations	Length: 1 day
Lesson Frame:	We will work with the complex plane in order to visualize complex numbers and complex roots for quadratic functions.
	I will investigate the number of linear or quadratic factors a polynomial can have.

Unit Polynomials	Length: 16 days
Standards: M.A.APR.B.2M.A.APR.B.3M.A.APR.D.6M.A.SSE.A.2M.F.IF.B.4 (F2Y)M.F.IF.B.5M.F.IF.C.7c	Outcomes: Students will investigate the relationships between equations and graphs.
Essential Questions: How can the degree of a polynomial help me determine the nature of its graph or a possible equation?	Learning Targets: Students will be able to understand how imaginary and complex numbers are connected with systems of equations.
Performance Tasks: Students will be able to calculate the absolute value of a complex number.	Notes:
Topic 7: Polynomial division	Length: 1 day
Lesson Frame:	We will use polynomial division to find the factors of polynomials. I will reason abstractly and quantitatively to divide polynomials.
Performance Tasks: Students will be able to find factors of polynomials.	Notes:
Topic 8: Factors and integral roots	Length: 3 days
Lesson Frame:	We will use the integral zero theorem to find the roots of a polynomial with a degree greater than two. I will attend to precision while finding the roots of polynomials.
Performance Tasks: Students will be able to find integral roots of a polynomial.	Notes:
Topic 9: An application of polynomials	Length: 1 day
Lesson Frame:	We will apply our knowledge of polynomials to find the maximum volume of a tank. I will make sense of polynomial problems and persevere in solving them.
Performance Tasks: Students will be able to maximize the volume of a tank.	Notes:

Unit Randomization and normal distributions	Length: 12 days
Standards: M.SP.IC.A.1M.SP.IC.A.2M.SP.IC.B.3M.SP.IC.B.4M.SP.IC.B.6M.SP.ID.A.4	Outcomes: Students will learn the basic techniques of performing opinion surveys along with their limitations and pitfalls.
Essential Questions: How can I use the appropriate degree of precision for this problem- in my mathematics, in my vocabulary and in how I ask survey questions?	Learning Targets: Students will be able to create histograms with percentages called a relative frequency histogram.
Topic 1: Survey design	Length: 1 day
Lesson Frame:	We will consider issues of bias when we write survey items.
Performance Tasks: Students will be able to write research questions.	I will model with mathematics while I write research questions.
Notes:	
Topic 2: Samples and the role of randomness	Length: 1 day
Lesson Frame:	We will compare samples selected using intentional choice with those selected randomly.
Performance Tasks: Students will be able to compare the representative nature of samples.	I will model with mathematics samples of choice.
Notes:	
Topic 3: Bias in convenience samples	Length: 1 day
Lesson Frame:	We will consider populations represented by particular convenience samples.
Performance Tasks: Students will be able to incorporate random selection into to sampling.	I will make sense of random selection problems and persevere in solving them.
Notes:	
Topic 4: Testing cause and effect with experiments	Length: 1 day
Lesson Frame:	We will identify the importance of randomization in an experiment.
Performance Tasks: Students will be able to understand the importance of randomization.	I will attend to precision while working with experiments.
Notes:	
Topic 5: Conclusions from studies	Length: 1 day
Lesson Frame:	We will practice the main concepts of the chapter as we think about and analyze studies.
Performance Tasks: Students will be able to think critically about fictitious studies.	I will make sense of studies and persevere in solving them.
Notes:	
Topic 6: Relative frequency histograms	Length: 1 day
Lesson Frame:	We will create relative frequency histograms that display percentages.
Performance Tasks: Students will be able to create relative frequency histograms.	I will attend to precision while making histograms.
Notes:	

<p>Unit Randomization and normal distributions</p> <p>Standards: M.SP.IC.A.1M.SP.IC.A.2M.SP.IC.B.3M.SP.IC.B.4M.SP.IC.B.6M.SP.ID.A.4</p> <p>Essential Questions: How can I use the appropriate degree of precision for this problem in my mathematics, in my vocabulary and in how I ask survey questions?</p>	<p>Length: 12 days</p> <p>Outcomes: Students will learn the basic techniques of performing opinion surveys along with their limitations and pitfalls.</p> <p>Learning Targets: Students will be able to create histograms with percentages called a relative frequency histogram.</p>
<p>Topic 7: The normal probability density function</p> <p>Lesson Frame:</p> <p>Performance Tasks: Students will be able to model bell shaped data on a histogram.</p>	<p>Length: 1 day</p> <p>We will calculate proportions from a histogram.</p> <p>I will attend to precision while solving proportions.</p> <p>Notes:</p>
<p>Topic 8: Percentiles</p> <p>Lesson Frame:</p> <p>Performance Tasks: Students will be able to use normal distribution to model single peaked symmetrical data.</p>	<p>Length: 1 day</p> <p>We will predict into which percentiles various subjects would fall.</p> <p>I will make sense of percentile problems and persevere in solving them.</p> <p>Notes:</p>

Unit Series	Length: 14 days
Standards: M.A.APR.C.4M.A.APR.C.5+M.A.SSE.A.1bM.A.SSE.A.2M.A.SSE.B.4M.F.IF.C.8M.F.LE.A.4	Outcomes: Students will write series and find their sums.
Essential Questions: How can I extend the pattern from smaller sums to larger sums?	Learning Targets: Students will be able to simplify some algebraic manipulations as well as solving some probability problems.
Topic 1: Introduction to arithmetic series	Length: 2 days
Lesson Frame:	We will develop strategies to find sums of arithmetic series.
Performance Tasks: Students will be able to distinguish series from sequences.	I will make sense of series and persevere in solving them.
	Notes:
Topic 2: More arithmetic series	Length: 1 day
Lesson Frame:	We will generalize a graphical method to add an arithmetic series and then apply it.
Performance Tasks: Students will be able to find the sum of an arithmetic series.	I will reason abstractly and quantitatively while adding arithmetic series.
	Notes:
Topic 3: General arithmetic series	Length: 1 day
Lesson Frame:	We will learn how known series can be combined to form new series.
Performance Tasks: Students will be able to find the sums of series that have a unspecified number of terms.	I will make use of the structure of a series in order to form a new series.
	Notes:
Topic 4: Summation notation and combinations of series	Length: 1 day
Lesson Frame:	We will use summation notation for an arithmetic series.
Performance Tasks: Students will be able to see an algebraic method to find the sum of an arithmetic series.	I will look for and express regularity while using summation notation.
	Notes:
Topic 5: Geometric series	Length: 2 days
Lesson Frame:	We will find sums of geometric series.
Performance Tasks: Students will be able to find sums of geometric series.	I will attend to precision as I find the sum of a geometric series.
	Notes:
Topic 6: Infinite series	Length: 2 days
Lesson Frame:	We will find the sum of infinite series.
	I will attend to precision as I find the sum of an infinite series.

Unit Series	Length: 14 days
Standards: M.A.APR.C.4M.A.APR.C.5+M.A.SSE.A.1bM.A.SSE.A.2M.A.SSE.B.4M.F.IF.C.8M.F.LE.A.4	Outcomes: Students will write series and find their sums.
Essential Questions: How can I extend the pattern from smaller sums to larger sums?	Learning Targets: Students will be able to simplify some algebraic manipulations as well as solving some probability problems.
Performance Tasks: Students will be able to find the sum of infinite series.	Notes:
Topic 7: Pascal's triangle and the binomial theorem	Length: 2 days
Lesson Frame:	We will create a table and connect the numbers in rows to form Pascal's Triangle. I will look for and make use of structure to identify Pascal's Triangle.
Performance Tasks: Students will be able to create Pascal's Triangle.	Notes:
Topic 8: The number e	Length: 1 day
Lesson Frame:	We will explore the origins of the transcendental number e . I will make sense of structure and identify the number e .
Performance Tasks: Students will be able to identify the number e .	Notes:

Unit Simulating sampling variability	Length: 13 days
Standards: M.SP.IC.A.1M.SP.IC.A.2M.SP.IC.B.4M.SP.IC.B.5M.SP.IC.B.6M.SP.MD.B.6M.SP.MD.B.7	Outcomes: Students will use computer simulations to model complex probabilities.
Essential Questions: How can I model this situation with a simulation in order to understand it better and to solve the problem?	Learning Targets: Students will be able to place a margin of error on their prediction about certain characteristics of populations.
Topic 1: Simulations of probability	Length: 1 day
Lesson Frame:	We will simulate probability of real life problems.
Performance Tasks: Students will be able to simulate probability.	I will identify theoretic probability of real life problems.
	Notes:
Topic 2: More simulations of probability	Length: 1 day
Lesson Frame:	We will compute simulations to show random processes.
Performance Tasks: Students will be able to identify random processes.	I will use appropriate tools strategically to compute random processes.
	Notes:
Topic 3: Simulating sampling variability	Length: 1 day
Lesson Frame:	We will determine the margin of error on a sample proportion.
Performance Tasks: Students will be able to determine the natural sample to sample variability.	I will model with mathematics as I compute the proportion to identify the margin of error.
	Notes:
Topic 4: Statistical test using sampling variability	Length: 1 day
Lesson Frame:	We will determine whether a claim about a population is supported by a survey using two different sample sizes.
Performance Tasks: Students will be able to do a hypothesis test to see the variability of a survey.	I will attend to precision while determining the fairness of a survey.
	Notes:
Topic 5: Variability in experimental results	Length: 1 day
Lesson Frame:	We will identify if two surveys are truly different.
Performance Tasks: Students will be able to analyze various sample to sample surveys.	I will model with mathematics when identifying good and bad surveys.
	Notes:
Topic 6: Quality control	Length: 1 day
Lesson Frame:	We will use simulations to decide whether or not a manufactured part is within typical quality specifications.

Unit Simulating sampling variability	Length:13 days
Standards:M.SP.IC.A.1M.SP.IC.A.2M.SP.IC.B.4M.SP.IC.B.5M.SP.IC.B.6M.SP.MD.B.6M.SP.MD.B.7	Outcomes:Students will use computer simulations to model complex probabilities.
Essential Questions:How can I model this situation with a simulation in order to understand it better and to solve the problem?	Learning Targets:Students will be able to place a margin of error on their prediction about certain characteristics of populations. I will attend to precision while solving real life problems.
Performance Tasks: Students will be able to identify if a sample falls within a mean.	Notes:
Topic 7:Statistical process control	Length:1 day
Lesson Frame:	We will identify good and bad quality control processes. I will model with mathematics multiple quality control situations.
Performance Tasks: Students will be able to simulate a quality control process.	Notes:
Topic 8:Analyzing decisions and strategies	Length:2 days
Lesson Frame:	We will determine if a conditional probability is representative of the whole. I will attend to precision when identifying if a probability is a good representation.
Performance Tasks: Students will be able to apply probabilities to analyze decisions.	Notes:

Unit Analytic trigonometry	Length:16 days	Outcomes:Students will learn the characteristics of trigonometric ratios secant, cosecant, and cotangent.
Standards:M.F.TF.B.6+M.F.IF.C.7eM.F.IF.C.8 (F2Y)M.F.TF.B.5M.F.TF.C.9+		
Essential Questions:How can I rewrite this in another useful form?		Learning Targets:Students will be able to solve trigonometric equations and make statements based on the unit circle.
Topic 1:Analyzing trigonometric equations	Length:2 days	
Lesson Frame:		We will deepen our understanding of the meaning of a solution.
Performance Tasks: Students will be able to determine if a trig equation is always true.		I will reason abstractly and quantitatively when determining what a solution means.
		Notes:
Topic 2:Solutions to trigonometric equations	Length:1 day	
Lesson Frame:		We will represent solutions graphically, algebraically and on a unit circle.
Performance Tasks: Students will be able to solve trig equations.		I will determine the number of solutions to a given equation.
		Notes:
Topic 3:Inverses of trigonometric equations	Length:2 days	
Lesson Frame:		We will recognize the restricted domains that allow inverses to also be functions.
Performance Tasks: Students will be able to graph the inverses of trig functions.		I will reason abstractly and quantitatively when identifying how domains restrict solutions.
		Notes:
Topic 4: Reciprocal trigonometric equations	Length:2 days	
Lesson Frame:		We will solve equations with reciprocal trig functions.
Performance Tasks: Students will be able to graph the reciprocal of a trig function.		I will model with mathematics reciprocal trig functions.
		Notes:
Topic 5:trigonometric identities	Length:2 days	
Lesson Frame:		We will use trig identities to rewrite and solve equations.
Performance Tasks: Students will be able to identify trig identities graphically.		I will reason abstractly and quantitatively while solving trig identities.
		Notes:
Topic 6:Proving trigonometric identities	Length:2 days	
Lesson Frame:		We will write proofs for trig identities.
Performance Tasks: Students will be able to write algebraic proofs for trig identities.		I will attend to precision while write algebraic proofs for trig identities.
		Notes:

Unit Analytic trigonometry	Length: 16 days
Standards: M.F. TF.B.6+M.F. IF.C.7eM.F. IF.C.8 (F2Y)M.F. TF.B.5M.F. TF.C.9+	Outcomes: Students will learn the characteristics of trigonometric ratios secant, cosecant, and cotangent.
Essential Questions: How can I rewrite this in another useful form?	Learning Targets: Students will be able to solve trigonometric equations and make statements based on the unit circle.
Topic 7: Angle sum and difference identities	Length: 1 day
Lesson Frame:	We will use the relationships of a unit circle to develop the angle sum and difference identities. I will construct viable arguments and critique the reasoning of others while looking for the relationship between the identities and the unit circle.
Performance Tasks: Students will be able to develop the angle sum and difference identities.	Notes:

September	October	November	December	January	February	March	April	May	June
Unit 1	Finish Unit 2	Unit 4	Unit 5	Unit 6	Finish Unit 7	Unit 9	Finish Unit 10	Unit 12	
Start of Unit 2	Unit 3			Start Unit 7	Unit 8	Start Unit 10	Unit 11		

Course Name:	Pre-Calculus	
Credits:	1	
Prerequisites:	Advanced Algebra	
Description:	Students will work cooperatively in order to investigate the applications of functions, curves, polynomials, triangles, vectors, limits, rates and matrices.	
Academic Standards:	M.A.APR.B.3M.A.APR.C.5M.A.APR.D.6M.A.APR.D.7M.A.CED.A.1 (F2Y)M.A.CED.A.2 (F2Y)M.A.REI.C.7 (F2Y)M.A.REI.C.8M.A.REI.C.9M.A.REI.D.10 (F2Y)M.A.REI.D.11 (F2Y)M.A.SSE.A.2M.A.SSE.B.4M.F.BF.A.1M.F.BF.A.1cM.F.BF.B.3M.F.BF.B.4	
Units:	Unit Length:	Unit Outcomes:
Preparing for your journey	16 days	M.A.APR.D.6M.A.CED.A.1 (F2Y)M.A.CED.A.2 (F2Y)M.A.SSE.A.2M.F.BF.A.1M.F.BF.A.1cM.F.BF.B.4M.F.BF.B.4 (F2Y)M.F.BF.B.5M.F.BF.C.7b
Functions and Trigonometry	16 days	M.A.REI.D.10 (F2Y)M.F.BF.B.3M.F.BF.B.4 (F2Y)M.F.BF.C.7M.F.BF.C.7eM.F.TF.A.2M.F.TF.A.3M.F.TF.A.4M.F.TF.B.6
Algebra and area under a curve	16 days	M.A.APR.D.6M.A.APR.D.7M.A.CED.A.1 (F2Y)M.A.REI.C.7 (F2Y)M.A.REI.D.11 (F2Y)M.A.SSE.A.2M.F.BF.A.1
Polynomial and rational functions	15 days	M.A.APR.B.3M.A.APR.D.6M.A.CED.A.1 (F2Y)M.A.CED.A.2 (F2Y)M.F.BF.B.4 (F2Y)M.F.BF.C.7cM.F.BF.C.7dM.N.CN.C.8M.N.CN.C.9
Exponentials and logarithms	15 days	M.A.CED.A.2 (F2Y)M.F.BF.B.5M.F.BF.C.7eM.F.BF.C.7fM.F.BF.C.7g
Triangles and vectors	16 days	M.G.SRT.D.10M.G.SRT.D.11M.G.SRT.D.9M.N.VM.A.1M.N.VM.A.2M.N.VM.A.3M.N.VM.B.4M.N.VM.B.5
Limits and rates	15 days	M.G.SRT.D.10M.G.SRT.D.11M.G.SRT.D.9M.N.VM.A.1M.N.VM.A.2M.N.VM.A.3M.N.VM.B.4M.N.VM.B.5
Extending periodic functions	16 days	M.F.TF.9M.A.CED.A.2 (F2Y)M.F.BF.B.3M.F.TF.10M.F.TF.10M.F.TF.9M.F.TF.B.7
Matrices	14 days	M.A.REI.C.8M.A.REI.C.9M.N.VM.C.10M.N.VM.C.12M.N.VM.C.6M.N.VM.C.7M.N.VM.C.8M.N.VM.C.9
		Outcomes: Students will write equations of inverse functions.
		Outcomes: Students will transform functions and write equations for transformed functions.
		Outcomes: Students will use algebra to solve word problems.
		Outcomes: Students will write equations of polynomial functions from the roots.
		Outcomes: Students will investigate some equivalent transformations.
		Outcomes: Students will prove and apply the law of sines and the law of cosines.
		Outcomes: Students will evaluate limits at a point and at infinity.
		Outcomes: Students will model situations with sinusoidal functions.
		Outcomes: Students will use matrices to organize data and solve problems.

Conics and parametric Functions	16 days	M.F.I.C.10M.G.GPE.A.3	Outcomes: Students will use formal definitions and properties of conic sections to determine their equations.
Polar functions and complex numbers	16 days	M.N.CN.B.6,M.N.CN.A.3,M.N.CN.B.4M.N.CN.B.5	Outcomes: Students will plot points and graph equations using polar coordinates.
Series and statistics	16 days	M.A.APR.C.5M.A.SSE.A.2M.A.SSE.B.4M.SP.MD.A.1,M.SP.MD.A.2,M.SP.MD.A.3,M.SP.MD.A.4,M.SP.MD.B.5	Outcomes: Students will evaluate sums of a series.
Precalculus finale	16 days	M.A.APR.C.5M.A.SSE.A.2M.A.SSE.B.4M.SP.MD.A.1,M.SP.MD.A.2,M.SP.MD.A.3,M.SP.MD.A.4,M.SP.MD.B.5	Outcomes: Students will evaluate limit at infinity and at points using algebraic techniques.

Unit Name:Preparing for your journey	Length:16 days
Standards:M.A.APR.D.6M.A.CED.A.1 (F2Y)M.A.CED.A.2 (F2Y)M.A.SSE.A.2M.F.BF.A.1M.F.BF.A.1M.F.BF.B.4M.F.IF.B.4 (F2Y)M.F.IF.B.5M.F.IF.C.7b	Outcomes:Students will write equations of inverse functions.
Essential Questions:How do I know thour our team's graph is a function?	Learning Targets:Students will be able to investigate piecewise-defined functions.
Performance Tasks: Students will be able to identify equivalent expressions.	Notes:
Topic 7: Composition of functions	Length:1 day
Lesson Frame:	We will simplify expressions involving the composition of functions.
Performance Tasks: Students will be able to evaluate expressions.	I will make sense of expressions and persevere in solving them.
Notes:	
Topic 8:inverse functions	Length:1 day
Lesson Frame:	We will write unverse functions by undoing and verify they are inverses.
Performance Tasks: Students will be able to write inverse functions.	I will look for and make use of structure in functions in order to write their inverse.
Notes:	
Topic 9:Piecewise-defined functions and continuity	Length:1 day
Lesson Frame:	We will develop an informal definition of continuity.
Performance Tasks: Students will be able to recognize piecewise defined functions.	I will reason abstractly and quantitatively while recognizing piecewise functions.
Notes:	
Topic 10:Radians as a unit of measure	Length:1 day
Lesson Frame:	We will convert angle measurements from degrees to radians and vice versa.
Performance Tasks: Students will be able to define radains.	I will use appropriate tools strategically while converting angle measures.
Notes:	
Topic 11:Radian measure in the unit circle	Length:1 day
Lesson Frame:	We will locate coterminal negative and positive angles in the unit circle.
Performance Tasks: Students will be able to locate and lable commonly used angle measures.	I will look for and express regularity in repeated reasoning to identify angles within the unit circle.
Notes:	
Topic 12:Applications of radian measure	Length:1 day
Lesson Frame:	We will convert units for angular and linear motion.

Unit Name:Preparing for your journey	Length:16 days
Standards:M.A.APR.D.6M.A.CED.A.1 (F2Y)M.A.CED.A.2 (F2Y)M.A.SSE.A.2M.F.BF.A.1M.F.BF.A.1cM.F.BF.B.4M.F.IF.B.4 (F2Y)M.F.IF.B.5M.F.IF.C.7b	Outcomes:Students will write equations of inverse functions.
Essential Questions:How do I know thour our team's graph is a function?	Learning Targets:Students will be able to investigate piecewise-defined functions.
Topic 1:Interpreting graphs	Length:1 day
Lesson Frame:	We will interpet graphs made from function families
	I will construct viable arugment and critique the reasoning of others while comparing function families.
Performance Tasks:	Notes:
Students will be able to understand function families.	
Topic 2:The spring problem	Length:1 day
Lesson Frame:	We will gather data the models motion of a spring.
	I will model motion and analyze periodic functions.
Performance Tasks:	Notes:
Students will be able to interpret periodic functions.	
Topic 3:Modeling with functions	Length:1 day
Lesson Frame:	We will model activities that optimally analyze the area under a curve.
	I will make sense of graphs and persevere in solving them.
Performance Tasks:	Notes:
Students will be able to informally investigate area under a curve.	
Topic 4:Rates of change	Length:1 day
Lesson Frame:	We will gain an intuitive understanding of rates of change.
	I will model with mathematics rates of change.
Performance Tasks:	Notes:
Students will be able to understand the rate of change.	
Topic 5:Setting up word problems	Length:1 day
Lesson Frame:	We will learn to eliminate variables so that the desired output is expressed in a single variable.
	I will make sense of word problems and persevere in solving them.
Performance Tasks:	Notes:
Students will be able to learn a process to solve word problems found often in calculus.	
Topic 6:Equivalent expressions	Length:1 day
Lesson Frame:	We will identify equivalent expressions.
	I will look for and make use of the structure of expressions to see if they are equivalent.

<p>Unit Name: Preparing for your journey</p>	<p>Length: 16 days</p>
<p>Standards: M.A.APR.D.6M.A.CED.A.1 (F2Y)M.A.CED.A.2 (F2Y)M.A.SSE.A.2M.F.BF.A.1M.F.BF.A.1cM.F.BF.B.4M.F.IF.B.4 (F2Y)M.F.IF.B.5M.F.IF.C.7b</p>	<p>Outcomes: Students will write equations of inverse functions.</p>
<p>Essential Questions: How do I know that our team's graph is a function?</p>	<p>Learning Targets: Students will be able to investigate piecewise-defined functions. I will look for and express regularity in converted units of measure.</p>
<p>Performance Tasks: Students will be able to use dimensional analysis to convert between angular and linear motion.</p>	<p>Notes:</p>

Unit Name: Functions and Trigonometry	Length: 16 days
Standards: M.A.REI.D.10 (F2Y)M.F.BF.B.3M.F.IF.B.4 (F2Y)M.F.IF.C.7M.F.IF.C.7eM.F.TF.A.2M.F.TF.A.3M.F.TF.A.4M.F.TF.B.6	Outcomes: Students will transform functions and write equations for transformed functions.
Essential Questions: What are all the ways we currently have to describe functions?	Learning Targets: Students will be able to use the unit circle to calculate exact values of trigonometric functions.
Topic 1: Characteristics of functions	Length: 1 day
Lesson Frame:	We will understand the words decreasing, increasing, maxima, minima, concave and convex when describing functions.
Performance Tasks: Students will be able to understand the terminology and notation for describing functions.	I will look for and make use of structure when describing functions.
	Notes:
Topic 2: Even and odd functions	Length: 1 day
Lesson Frame:	We will analyze graphs and identify if they are odd or even.
Performance Tasks: Students will be able to recognize odd and even functions.	I will make use of structure and reason abstractly to identify odd and even functions.
	Notes:
Topic 3: Transformations of functions	Length: 1 day
Lesson Frame:	We will identify the effect of replacing $f(x)$ with $f(x) + k$.
Performance Tasks: Students will be able to transform functions.	I will look for and make use of the structure of a function when applying transformation.
	Notes:
Topic 4: Special angles in the unit circle	Length: 1 day
Lesson Frame:	We will determine the coordinates of the intersection of the terminal side of special angles within the unit circle.
Performance Tasks: Students will be able to recall special angles of a unit circle.	I will use appropriate tools strategically when identifying the coordinates of intersection.
	Notes:
Topic 5: Trigonometric ratios in the unit circle	Length: 1 day
Lesson Frame:	We will use the unit circle to evaluate trigonometric expressions.
Performance Tasks: Students will be able to develop trigonometric ratios using the unit circle.	I will look for and express regularity in repeated reasoning when solving trigonometric expressions.
	Notes:
Topic 6: Graphs of sine and cosine	Length: 2 days

Unit Name: Functions and Trigonometry	Length: 16 days
Standards: M.A.REI.D.10 (F2Y)M.F.BF.B.3M.F.IF.C.7M.F.IF.C.7eM.F.TF.A.2M.F.TF.A.3M.F.TF.A.4M.F.TF.B.6	Outcomes: Students will transform functions and write equations for transformed functions.
Essential Questions: What are all the ways we currently have to describe functions?	Learning Targets: Students will be able to use the unit circle to calculate exact values of trigonometric functions.
Lesson Frame:	We will use the unit circle to generate the graphs of sine and cosine. I will attend to precision while making graphs of sine and cosine.
Performance Tasks: Students will be able to generate the graphs of sine and cosine.	Notes:
Topic 7: Transformations of sine and cosine	Length: 1 day
Lesson Frame:	We will vertically stretch and translate sinusoidal functions and analyze them. I will use appropriate tools strategically while transforming sinusoidal functions.
Performance Tasks: Students will be able to translate sinusoidal functions.	Notes:
Topic 8: Horizontal stretches of sine and cosine graphs	Length: 1 day
Lesson Frame:	We will investigate the relationship of B and period. I will make sense of cosine problems and persevere in solving them.
Performance Tasks: Students will be able to stretch sine and cosine functions.	Notes:
Topic 9: Solving trigonometric equations	Length: 1 day
Lesson Frame:	We will express solutions of trigonometric equations by adding $2\pi N$ to the solutions. I will use appropriate tools strategically when solving trigonometric equations.
Performance Tasks: Students will be able to solve basic trigonometric equations.	Notes:
Topic 10: Inverse sine and cosine	Length: 1 day
Lesson Frame:	We will restrict the domains of functions to make inverse functions. I will look for and make use of structure when graphing inverse functions.
Performance Tasks: Students will be able to graph inverse sine and cosine.	Notes:
Topic 11: Graphs of tangent and inverse tangent	Length: 1 day
Lesson Frame:	We will write equations for transformations of tangent. I will use appropriate tools strategically when graphing tangent and its inverse.
Performance Tasks: Students will be able to graph inverse tangent.	Notes:

<p>Unit Name: Functions and Trigonometry</p>	<p>Length: 16 days</p>
<p>Standards: M.A.REI.D.10 (F2Y)M.F.BF.B.3M.F.IF.B.4 (F2Y)M.F.IF.C.7M.F.IF.C.7eM.F.TF.A.2M.F.TF.A.3M.F.TF.A.4M.F.TF.B.6</p>	<p>Outcomes: Students will transform functions and write equations for transformed functions.</p>
<p>Essential Questions: What are all the ways we currently have to describe functions?</p>	<p>Learning Targets: Students will be able to use the unit circle to calculate exact values of trigonometric functions.</p>

Unit Name:Algebra and area under a curve	Length: 16 days
Standards:M.A.APR.D.6M.A.APR.D.7M.A.CED.A.1 (F2Y)M.A.REI.C.7 (F2Y)M.A.REI.D.11 (F2Y)M.A.SSE.A.2M.F.BF.A.1	Outcomes:Students will use algebra to solve word problems.
Essential Questions:How can we rewrite the expression without negative exponents so it resembles something we know?	Learning Targets:Students will be able to estimate area under a curve using rectangles.
Topic 1:Operations with rational expressions	Length:2 days
Lesson Frame:	We will add, subtract, multiply and divide rational expressions.
Performance Tasks: Students will be able to work with rational expressions.	I will make sense of rational expressions and persevere in solving them.
	Notes:
Topic 2:Rewriting expressions and equations	Length:2 days
Lesson Frame:	We will use substitution to simplify and factor algebraic expressions.
Performance Tasks: Students will be able to simplify complex fractions.	I will make sense of complex fractions and persevere in simplifying them.
	Notes:
Topic 3:Solving nonlinear systems of equations	Length:1 day
Lesson Frame:	We will solve systems of equations in nonlinear form.
Performance Tasks: Students will be able to solve nonlinear equations.	I will look for and make use of structure when solving systems of equations.
	Notes:
Topic 4:Polynomial division	Length:1 day
Lesson Frame:	We will divide polynomials.
Performance Tasks: Students will be able to divide polynomials.	I will look for and make use of structure when dividing polynomials.
	Notes:
Topic 5:Solving classic word problems	Length:2 days
Lesson Frame:	We will solve classic types of word problems.
Performance Tasks: Students will be able to solve classic types of word problems.	I will make sense of word problems and persevere in solving them.
	Notes:
Topic 6:Using sigma notation	Length:1 day
Lesson Frame:	We will calculate sums by expanding sigma notation.
	I will reason abstractly and quantitativelywhile calculating with sigma notation.

Unit Name:Algebra and area under a curve	Length:16 days
Standards:M.A.APR.D.6M.A.APR.D.7M.A.CED.A.1 (F2Y)M.A.REI.C.7 (F2Y)M.A.REI.D.11 (F2Y)M.A.SSE.A.2M.F.BF.A.1	Outcomes:Students will use algebra to solve word problems.
Essential Questions:How can we rewrite the expression without negative exponents so it resembles something we know?	Learning Targets:Students will be able to estimate area under a curve using rectangles.
Performance Tasks: Students will be able to recognize sigma notation.	Notes:
Topic 7:Area under a curve: Part one	Length:2 days
Lesson Frame:	We will understand that area under a velocity curve represents distance.
Performance Tasks: Students will be able to estimate the area under a curve.	I will use appropriate tools strategically while estimating area under a curve.
Notes:	Notes:
Topic 8:Area under a curve: part 2	Length:1 day
Lesson Frame:	We will use sigma notation to express the approximations for area under a curve.
Performance Tasks: Students will be able to approximate area under a curve using left and right endpoints.	I will look for and make use of structure while finding area under a curve.
Notes:	Notes:
Topic 9:Area under a curve:part 3	Length:1 day
Lesson Frame:	We will explore methods for calculating the area under a curve and define what it means.
Performance Tasks: Students will be able to identify the area under the x axis is negative.	I will make sense of area problems and persevere in solving them.
Notes:	Notes:

Unit Name:Polynomial and rational functions	Length: 15 days
Standards:M.A.APR.B.3M.A.APR.D.6M.A.CED.A.1 (F2Y)M.A.CED.A.2 (F2Y)M.F.IF.B.4 (F2Y)M.F.IF.C.7cM.F.IF.C.7dM.N.CN.C.8M.N.CN.C.9	Outcomes:Students will write equations of polynomial functions from the roots.
Essential Questions:How can you tell how accurate your equation is?	Learning Targets:Students will be able to graph transformations of rational functions.
Topic 1:Graphing of polynomial functions in factored form	Length:2 days
Lesson Frame:	We will graph functions given to us in factored form. I will look for and make use of the structure of factored functions in order to graph.
Performance Tasks: Students will be able to graph polynomial functions.	Notes:
Topic 2:Writing equations of polynomial functions	Length:1 day
Lesson Frame:	We will write equations given the x intercept and a point. I will make sense of problems involving equations and persevere in solving them.
Performance Tasks: Students will be able to write equations for the graphs of polynomial functions.	Notes:
Topic 3:Identifying and using roots of polynomials	Length:1 day
Lesson Frame:	We will identify the number of real and complex roots of polynomial functions by its graph. I will look for the structure of a graph and identify the number of solutions.
Performance Tasks: Students will be able to identify complex roots of polynomials.	Notes:
Topic 4:Graphing transformations of $y=1/x$	Length:1 day
Lesson Frame:	We will transform functions into slope intercept form. I will look for and make use of the structure of rational expressions to rewrite them.
Performance Tasks: Students will be able to rewrite rational expressions.	Notes:
Topic 5:Graphing rational functions	Length:2 days
Lesson Frame:	We will graph rational functions with point discontinuities and slant asymptotes. I will look for and make use of the structure of rational expressions in order to graph them.
Performance Tasks: Students will be able to graph rational functions.	Notes:
Topic 6:Graphing reciprocal functions	Length:1 day
Lesson Frame:	We will graph reciprocal function. I will look for and make use of the structure of a function in order to graph its reciprocal.
Performance Tasks: Students will be able to graph the reciprocal of a function.	Notes:

Unit Name:Polynomial and rational functions	Length:15 days
Standards:M.A.APR.B.3M.A.APR.D.6M.A.CED.A.1 (F2Y)M.A.CED.A.2 (F2Y)M.F.IF.B.4 (F2Y)M.F.IF.C.7cM.F.IF.C.7dM.N.CN.C.8M.N.CN.C.9	Outcomes:Students will write equations of polynomial functions from the roots.
Essential Questions:How can you tell how accurate your equation is?	Learning Targets:Students will be able to graph transformations of rational functions.
Topic 7:Polynomial and rational inequalities	Length:1 day
Lesson Frame:	We will solve polynomial and rational inequalities.
Performance Tasks: Students will be able to solve polynomial inequalities.	I will look for and make use of the structure of inequalities in order to solve them.
	Notes:
Topic 8:Applications of polynomial and rational functions	Length:2 days
Lesson Frame:	We will analyze everyday situations using our knowledge of polynomial and rational functions.
Performance Tasks: Students will be able to solve problems involving polynomial and rational functions.	I will model with mathematics everyday situations in order to solve them.
	Notes:

Unit Name: Exponentials and logarithms	Length: 15 days
Standards: M.A.CED.A.2 (F2Y) M.F.BF.B.5M.F.IF.7eM.F.LE.A.2M.F.LE.A.4	Outcomes: Students will investigate some equivalent transformations.
Essential Questions: Where is the locator point for the parent exponential function?	Learning Targets: Students will be able to use properties of logarithms to solve problems.
Topic 1: Applications of exponential functions	Length: 2 days
Lesson Frame:	We will model everyday situations with exponential functions.
Performance Tasks: Students will be able to use exponential functions.	I will make sense of problems and persevere in solving them using exponents.
Notes:	
Topic 2: Stretching exponential functions	Length: 1 day
Lesson Frame:	We will transform exponential functions to compare vertical stretches and horizontal shifts.
Performance Tasks: Students will be able to transform exponential functions.	I will look for and make use of structure to transform exponential functions.
Notes:	
Topic 3: The number e	Length: 1 day
Lesson Frame:	We will solve problems involving continuous growth.
Performance Tasks: Students will be able to solve problems involving e .	I will reason abstractly and quantitatively while solve continuous growth problems.
Notes:	
Topic 4: Logarithms	Length: 1 day
Lesson Frame:	We will investigate basic properties of logarithms.
Performance Tasks: Students will be able to convert between exponential and logarithmic equations.	I will look for and make use of the structure of logarithms when converting them.
Notes:	
Topic 5: Properties of logarithms	Length: 2 days
Lesson Frame:	We will investigate the properties of logarithms and exponents.
Performance Tasks: Students will be able to make connections between the properties of logarithms and exponents.	I will make sense of problems and persevere in solving logarithm and exponent problems.
Notes:	
Topic 6: Solving exponential and logarithmic equations	Length: 1 day
Lesson Frame:	We will solve equations with variables as exponents using logarithms.
Performance Tasks: Students will be able to solve equations with variables as exponents.	I will look for and make use of the structure of an equation to solve it.
Notes:	

Unit Name: Exponentials and logarithms	Length: 15 days
Standards: M.A.CED.A.2 (F2Y)M.F.BF.B.5M.F.IF.7eM.F.LE.A.2M.F.LE.A.4	Outcomes: Students will investigate some equivalent transformations.
Essential Questions: Where is the locator point for the parent exponential function?	Learning Targets: Students will be able to use properties of logarithms to solve problems.
Topic 7: Graphing logarithmic functions	Length: 1 day
Lesson Frame:	We will graph logarithmic functions with different bases.
Performance Tasks: Students will be able to graph logarithmic functions.	I will look for and make use of the structure of the logarithmic function to graph it.
	Notes:
Topic 8: Applications of exponentials and logarithms	Length: 2 days
Lesson Frame:	We will model everyday situations with exponential and logarithmic equations.
Performance Tasks: Students will be able to solve logarithmic equations.	I will model with mathematics everyday situations.
	Notes:

Unit Triangles and vectors	Length:16 days
Standards:M.G.SRT.D.10M.G.SRT.D.11M.G.SRT.D.9M.N.VM.A.1M.N.VM.A.2M.N.VM.A.3M.N.VM.B.4M.N.VM.B.5	Outcomes:Students will prove and apply the law of sines and the law of cosines.
Essential Questions:Why would solving a generic triangle be helpful?	Learning Targets:Students will be able to use geometry and algebra to perform operations with vectors.
Topic 1:The law of sines and area	Length:2 days
Lesson Frame:	We will prove, understand, and apply the law of sines.
Performance Tasks: Students will be able to apply the law of sines.	I will look for and make use of structure in order to apply the law of sines.
	Notes:
Topic 2:The law of cosines	Length:1 day
Lesson Frame:	We will derive, understand and apply the law of cosines.
Performance Tasks: Students will be able to apply the law of cosines.	I will look for and make use of structure in order to apply the law of cosines.
	Notes:
Topic 3:The ambiguous case of the law of sines	Length:2 days
Lesson Frame:	We will investigate the ambiguous case of the law of sines.
Performance Tasks: Students will be able to understand the ambiguous case of the law of sines.	I will make sense of the law of sines and persevere in understanding it.
	Notes:
Topic 4:An introduction to vectors	Length:1 day
Lesson Frame:	We will determine the magnitude, direction, and components of vectors.
Performance Tasks: Students will be able to understand vectors and vector notation.	I will look for and make use of the structure of a vector to understand them.
	Notes:
Topic 5:Operations with vectors	Length:2 days
Lesson Frame:	We will add, subtract, and scale vectors.
Performance Tasks: Students will be able to add, subtract, and scale vectors.	I will look for and make use of the structure of vectors to add and subtract them.
	Notes:
Topic 6:Applications of vectors	Length:2 days
Lesson Frame:	We will apply vectors to real world situations.
	I will make sense of a real world problem and persevere in solving it using vectors.

Unit Triangles and vectors	Length: 16 days
Standards: M.G.SRT.D.10M.G.SRT.D.11M.G.SRT.D.9M.N.VM.A.1M.N.VM.A.2M.N.VM.A.3M.N.VM.B.4M.N.VM.B.5	Outcomes: Students will prove and apply the law of sines and the law of cosines.
Essential Questions: Why would solving a generic triangle be helpful?	Learning Targets: Students will be able to use geometry and algebra to perform operations with vectors.
Performance Tasks: Students will be able to use vectors in real world applications.	Notes:
Topic 7: The dot product	Length: 2 days
Lesson Frame:	We will calculate the angle between two vectors.
Performance Tasks: Students will be able to use the dot product.	I will reason abstractly and quantitatively while computing the angle between two vectors.
Notes:	Notes:

Unit Limits and rates	Length: 15 days
Standards: M.G.SRT.D.10M.G.SRT.D.11M.G.SRT.D.9M.N.VM.A.1M.N.VM.A.2M.N.VM.A.3M.N.VM.B.4M.N.VM.B.5	Outcomes: Students will evaluate limits at a point and at infinity.
Essential Questions: What does it mean for a limit to exist at a point?	Learning Targets: Students will be able to calculate rates of change for a variety of different situations.
Topic 1: An introduction to limits	Length: 1 day
Lesson Frame:	We will investigate limits.
Performance Tasks: Students will be able to start to understand the concept of a limit.	I will look for and make use of structure while investigating limits.
	Notes:
Topic 2: Working with one sided limits	Length: 1 day
Lesson Frame:	We will work with one sided limits at infinity.
Performance Tasks: Students will be able to interpret limit statements.	I will use appropriate tools strategically while looking at one sided limits.
	Notes:
Topic 3: The definition of a limit	Length: 1 day
Lesson Frame:	We will evaluate limits using graphs and tables.
Performance Tasks: Students will be able to evaluate a limit.	I will use appropriate tools strategically as I use graphs to evaluate a limit.
	Notes:
Topic 4: Limits and continuity	Length: 1 day
Lesson Frame:	We will apply the formal definition of continuity to identify a limit.
Performance Tasks: Students will be able to apply the formal definition of continuity.	I will construct viable arguments and critique the reasoning of others while defining continuity.
	Notes:
Topic 5: Special limits	Length: 1 day
Lesson Frame:	We will analyze limits with trigonometric functions.
Performance Tasks: Students will be able to examine limits of indeterminate forms.	I will make sense of limit problems and persevere in solving them.
	Notes:
Topic 6: Rates of change from data	Length: 1 day
Lesson Frame:	We will calculate the average rate of change using secant lines.
	I will look for and make use of the structure of secant lines in order to find slope.

Unit Limits and rates	Length: 15 days
Standards: M.G.SRT.D.10M.G.SRT.D.11M.G.SRT.D.9M.N.VM.A.1M.N.VM.A.2M.N.VM.A.3M.N.VM.B.4M.N.VM.B.5	Outcomes: Students will evaluate limits at a point and at infinity.
Essential Questions: What does it mean for a limit to exist at a point?	Learning Targets: Students will be able to calculate rates of change for a variety of different situations.
Performance Tasks: Students will be able to calculate average rate of change.	Notes:
Topic 7: Slope and rates of change	Length: 1 day
Lesson Frame:	We will use functions to find the average rate of change.
Performance Tasks: Students will be able to calculate average rate of change from equations.	I will reason abstractly and quantitatively in order to calculate the rate of change.
Topic 8: Average velocity and rates of change	Length: 1 day
Lesson Frame:	We will calculate the average rate of change as intervals get smaller and smaller.
Performance Tasks: Students will be able to calculate the average rate of change on small intervals.	I will look for and express regularity in repeated reasoning while calculating average rate of change.
Topic 9: Moving from \arccos to \arcsin	Length: 2 days
Lesson Frame:	We will calculate instantaneous rate of change using limits and averages.
Performance Tasks: Students will be able to make connections between limits and rates of change.	I will look for and express regularity in repeated reasoning while calculating instantaneous rates of change.
Topic 10: Rates of change application	Length: 1 day
Lesson Frame:	We will recognize rates of change in everyday situations.
Performance Tasks: Students will be able to see how rates of change will be used in calculus.	I will make sense of problems and persevere in solving them.
	Notes:

Unit Extending periodic functions	Length: 16 days
Standards: M.F.TF.9M.A.CED.A.2 (F2Y)M.F.BF.B.3M.F.TF.10M.F.TF.10M.F.TF.9M.F.TF.B.7	Outcomes: Students will model situations with sinusoidal functions.
Essential Questions: How would you solve the equation?	Learning Targets: Students will be able to solve more complex trigonometric equations.
Topic 1: Graphing $y = a \sin(b(x-h)) + k$	Length: 1 day
Lesson Frame:	We will model transformations within trigonometric problems.
Performance Tasks:	I will look for and make use of structure while graphing transformations of trigonometric problems.
Students will be able to combine horizontal stretch and vertical shifts to a function.	Notes:
Topic 2: Modeling with periodic functions	Length: 2 days
Lesson Frame:	We will model real world problems using trigonometric functions.
Performance Tasks:	I will model real world problems with mathematics.
Students will be able to generate trigonometric models for real world applications.	Notes:
Topic 3: Improving the spring problem	Length: 1 day
Lesson Frame:	We will model a spring problem by incorporating exponents with a periodic function.
Performance Tasks:	I will model the spring problem with mathematics.
Students will be able to incorporate exponential with a periodic function.	Notes:
Topic 4: Graphing reciprocal trigonometric functions	Length: 2 days
Lesson Frame:	We will graph reciprocal trigonometric functions.
Performance Tasks:	I will look for and make use of structure to graph trigonometric functions.
Students will be able to graph csc, sec, and cot.	Notes:
Topic 5: Trigonometric functions, geometrically	Length: 1 day
Lesson Frame:	We will use geometry to visualize the trigonometric functions.
Performance Tasks:	I will use appropriate tools strategically to visualize trigonometric functions.
Students will be able to visualize geometric functions.	Notes:
Topic 6: Simplifying trigonometric expressions	Length: 1 day
Lesson Frame:	We will determine special angles for trigonometric ratios from the unit circle.
Performance Tasks:	I will use appropriate tools strategically while determining angle measurement.
Students will be able to simplify trigonometric functions in terms of sine and cosine.	Notes:

Unit Extending periodic functions	Length: 16 days
Standards: M.F.TF.9M.A.CED.A.2 (F2Y)M.F.BF.B.3M.F.TF.10M.F.TF.10M.F.TF.9M.F.TF.B.7	Outcomes: Students will model situations with sinusoidal functions.
Essential Questions: How would you solve the equation?	Learning Targets: Students will be able to solve more complex trigonometric equations.
Topic 7: Proving trigonometric identities	Length: 1 day
Lesson Frame:	We will prove trigonometric identities.
Performance Tasks:	I will use appropriate tools strategically while proving trigonometric identities.
Students will be able to prove trigonometric identities.	Notes:
Topic 8: Angle sum and difference identities	Length: 2 days
Lesson Frame:	We will discover the angle sum and difference identities for sine, cosine, and tangent.
Performance Tasks:	I will attend to precisions while discovering the angle sum and difference identities.
Students will be able to derive the angle sum and difference identities.	Notes:
Topic 9: Double angle and half angle identities	Length: 1 day
Lesson Frame:	We will use angle sum and difference identities to develop double angle and half angle identities.
Performance Tasks:	I will use appropriate tools strategically in order to develop double and half angle identities.
Students will be able to develop double angle and half angle identities.	Notes:
Topic 10: Solving complex trigonometric equations	Length: 1 day
Lesson Frame:	We will solve trigonometric equations using identities.
Performance Tasks:	I will look for and make use of structure while solving trigonometric equations.
Students will be able to solve trigonometric equations.	Notes:

Unit Matrices	Length: 14 days
Standards: M.A.REI.C.8M.A.REI.C.9M.N.VM.C.10M.N.VM.C.12M.N.VM.C.6M.N.VM.C.7M.N.VM.C.8M.N.VM.C.9	Outcomes: Students will use matrices to organize data and solve problems.
Essential Questions: Does the order of the matrices matter when adding and subtracting?	Learning Targets: Students will be able to solve systems of equations using matrices.
Topic 1: Introduction to matrices	Length: 1 day
Lesson Frame:	We will add, subtract, and begin to multiply matrices.
Performance Tasks: Students will be able to add, subtract, and multiply matrices.	I will look for and make use of structure while working with matrices.
	Notes:
Topic 2: Matrix multiplication	Length: 2 days
Lesson Frame:	We will use matrix multiplication to solve problems.
Performance Tasks: Students will be able to multiply a vector by a matrix.	I will look for and make use of structure in order to multiply matrices.
	Notes:
Topic 3: Determinants and inverse matrices	Length: 2 days
Lesson Frame:	We will calculate the determinant and inverse of a matrix by hand and with a graphing calculator.
Performance Tasks: Students will be able to calculate the determinant.	I will make sense of problems and persevere in solving them using a graphing calculator.
	Notes:
Topic 4: Solving systems using matrix equations	Length: 2 days
Lesson Frame:	We will consider whether or not the inverse of a matrix exists.
Performance Tasks: Students will be able to write systems of equations as matrix equations.	I will look for and make use of structure to see if an inverse of a matrix exists.
	Notes:
Topic 5: Linear transformations	Length: 1 day
Lesson Frame:	We will use matrices to perform linear transformations.
Performance Tasks: Students will be able to perform linear transformations.	I will look for and make use of structure to transform things linearly.
	Notes:
Topic 6: Compositions of transformations	Length: 1 day
Lesson Frame:	We will use matrices to combine linear transformations.
	I will look for and express regularity in repeated reasoning when combining linear transformations.

Unit Matrices	Length: 14 days
Standards: M.A.REI.C.8M.A.REI.C.9M.N.VM.C.10M.N.VM.C.12M.N.VM.C.6M.N.VM.C.7M.N.VM.C.8M.N.VM.C.9	Outcomes: Students will use matrices to organize data and solve problems.
Essential Questions: Does the order of the matrices matter when adding and subtracting?	Learning Targets: Students will be able to solve systems of equations using matrices.
Performance Tasks: Students will be able to combine linear transformations.	Notes:
Topic 7: Properties of linear transformations	Length: 1 day
Lesson Frame:	We will investigate properties of linear transformations.
Performance Tasks: Students will be able to identify properties of linear transformations.	I will look for and make use of the structure of linear transformations.
	Notes:

Unit Conics and parametric functions	Length: 16 days
Standards: M.F.C. 10M, G.GPE.A.3	Outcomes: Students will use formal definitions and properties of conic sections to determine their equations.
Essential Questions: How does an ellipse connect to your everyday life?	Learning Targets: Students will be able to identify conic sections from their equations.
Topic 1: Circles and completing the square	Length: 1 day
Lesson Frame:	We will practice completing the square by writing the equation of a circle.
	I will look for and make use of structure while writing the equation of a circle.
Performance Tasks: Students will be able to derive the equation of a circle.	Notes:
Topic 2: Ellipses	Length: 2 days
Lesson Frame:	We will write the equation of an ellipse given the foci.
	I will attend to precision while writing equations of an ellipse.
Performance Tasks: Students will be able to derive the equation of an ellipse.	Notes:
Topic 3: Hyperbolas	Length: 2 days
Lesson Frame:	We will use the foci and the difference in distances to write the equation of a hyperbola.
	I will reason abstractly and quantitatively in order to write the equation of a hyperbola.
Performance Tasks: Students will be able to derive the equation of a hyperbola.	Notes:
Topic 4: Parabolas	Length: 2 days
Lesson Frame:	We will write the equation of a parabola given the focus and directrix.
	I will look for and make use of the structure of a parabola in order to write its equation.
Performance Tasks: Students will be able to derive the equation of a parabola.	Notes:
Topic 5: Identifying and graphing conic sections	Length: 1 day
Lesson Frame:	We will identify where a graph of an equation is a circle, ellipse, parabola, or hyperbola using its equation.
	I will look for and make use of structure to identify the type of graph given the equation.
Performance Tasks: Students will be able to complete the square in order to write an equation in standard form.	Notes:
Topic 6: Parametrically defined functions	Length: 1 day
Lesson Frame:	We will be introduced to parametric equations.
	I will look for and make use of structure to identify parametric equations.

Unit Conics and parametric functions	Length: 16 days
Standards: M.F.C. 10M.G.GPE.A.3	Outcomes: Students will use formal definitions and properties of conic sections to determine their equations.
Essential Questions: How does an ellipse connect to your everyday life?	Learning Targets: Students will be able to identify conic sections from their equations.
Performance Tasks: Students will be able to use parametric equations.	Notes:
Topic 7: Applications of parametrically defined functions	Length: 2 days
Lesson Frame:	We will solve real world problems involving parametric equations.
Performance Tasks: Students will be able to solve problems involving parametric equations.	I will reason abstractly and quantitatively while solving real world parametric equations.
	Notes:
Topic 8: Conic sections in parametric form	Length: 1 day
Lesson Frame:	We will use rectangular form in order to rewrite parametric equations.
Performance Tasks: Students will be able to rewrite parametric equations representing conic sections.	I will look for and make use of structure in order to rewrite parametric equations.
	Notes:

Unit Polar functions and complex numbers	Length: 16 days
Standards: M.N.CN.B.6, M.N.CN.A.3, M.N.CN.B.4M, N.CN.B.5	Outcomes: Students will plot points and graph equations using polar coordinates.
Essential Questions: Which operations are more or less efficient when working with complex numbers?	Learning Targets: Students will be able to work with complex numbers in both standard and polar form.
Topic 1: Plotting polar coordinates	Length: 1 day
Lesson Frame:	We will plot points using polar coordinates.
Performance Tasks: Students will be able to plot polar coordinates.	I will look for and make use of structure in order to plot points using polar coordinates.
Notes:	
Topic 2: Graphs of polar functions	Length: 2 days
Lesson Frame:	We will graph polar functions.
Performance Tasks: Students will be able to graph polar functions.	I will look for and express regularity in repeated reasoning while graphing polar functions.
Notes:	
Topic 3: Families of polar functions	Length: 2 days
Lesson Frame:	We will group a variety of polar functions into families.
Performance Tasks: Students will be able to identify a variety of polar functions.	I will make use of structure while grouping polar functions.
Notes:	
Topic 4: Converting between polar and rectangular forms	Length: 2 days
Lesson Frame:	We will convert between polar and rectangular forms.
Performance Tasks: Students will be able to convert between polar and rectangular forms.	I will look for and make use of structure while converting between forms.
Notes:	
Topic 5: Using the complex plane	Length: 1 day
Lesson Frame:	We will be introduced to the basics of graphing simple complex numbers.
Performance Tasks: Students will be able to graph basic complex numbers.	I will use appropriate tools strategically while graphing complex numbers.
Notes:	
Topic 6: Operations with complex numbers geometrically	Length: 1 day
Lesson Frame:	We will use conjugates to determine moduli and quotients of complex numbers.
Performance Tasks: Students will be able to represent operations with complex number geometrically.	I will look for and make use of structure while representing operations with complex numbers.
Notes:	

Topic 7: Polar form of complex numbers	Length: 1 day
Lesson Frame:	We will represent complex numbers in a variety of ways. I will look for and make use of structure in order to show complex numbers in a variety of forms.
Performance Tasks: Students will be able to represent complex numbers in polar and rectangular forms.	Notes:
Topic 8: Operations with complex numbers in polar form	Length: 1 day
Lesson Frame:	We will be given complex numbers in polar form and we will multiply them. I will reason abstractly and quantitatively as I multiply complex numbers.
Performance Tasks: Students will be able to multiply and divide complex numbers.	Notes:
Topic 9: Powers and roots of complex numbers	Length: 2 days
Lesson Frame:	We will compute powers and roots of complex numbers. I will attend to precision as I compute powers and roots of complex numbers.
Performance Tasks: Students will be able to compute powers and roots.	Notes:

Unit Series and statistics	Length: 16 days
Standards: M.A.APR.C.5M.A.SSE.A.2M.A.SSE.B.4M.SP.MD.A.1,M.SP.MD.A.2,M.SP.MD.A.3,M.SP.MD.A.4,M.SP.MD.B.5	Outcomes: Students will evaluate sums of a series.
Essential Questions: Will this work for an arithmetic/geometric series?	Learning Targets: Students will be able to calculate the mean and expected value of a discrete random variable.
Topic 1: Arithmetic series	Length: 1 day
Lesson Frame:	We will develop a formula for the sum of an arithmetic sequence.
Performance Tasks: Students will be able to find the sum of an arithmetic sequence.	I will look for and make use of structure while finding the sum of an arithmetic sequence. Notes:
Topic 2: Geometric series	Length: 1 day
Lesson Frame:	We will develop a formula for the sum of a geometric sequence.
Performance Tasks: Students will be able to find the sum of a geometric sequence.	I will look for and make use of structure while finding the sum of a geometric sequence. Notes:
Topic 3: Infinite geometric series	Length: 1 day
Lesson Frame:	We will develop a formula for the sum of an infinite geometric sequence.
Performance Tasks: Students will be able to find the sum of an infinite geometric sequence.	I will look for and make use of structure while finding the sum of an infinite geometric sequence. Notes:
Topic 4: Applications of geometric series	Length: 2 days
Lesson Frame:	We will solve every day problems involving geometric series.
Performance Tasks: Students will be able to solve problems involving geometric series.	I will make sense of geometric series problems and persevere in solving them. Notes:
Topic 5: The sum of harmonic series	Length: 1 day
Lesson Frame:	We will show that the harmonic series has an infinite sum.
Performance Tasks: Students will be able to identify the sum of a harmonic series.	I will reason abstractly and quantitatively to show the sum of a harmonic series. Notes:
Topic 6: The binomial theorem	Length: 2 days
Lesson Frame:	We will apply Pascal's triangle and the binomial theorem in order to expand binomials.
	I will look for and make use of structure in order to expand binomials.

Unit Series and statistics	Length:16 days
Standards:M.A.APR.C.5M.A.SSE.A.2M.A.SSE.B.4M.SP.ID.A.1,M.SP.ID.A.2,M.SP.ID.A.3,M.SP.ID.A.4,M.SP.ID.B.5	Outcomes:Students will evaluate sums of a series.
Essential Questions:Will this work for an arithmetic/geometric series?	Learning Targets:Students will be able to calculate the mean and expected value of a discrete random variable.
Performance Tasks: Students will be able to expand binomials.	Notes:
Topic 7:Binomial probabilities	Length:1 day
Lesson Frame:	We will calculate binomial probabilities. I will look for and make use of structure in order to calculate binomial probabilities.
Performance Tasks: Students will be able to calculate binomial probabilities.	Notes:
Topic 8:Expected value of a discrete random variable	Length:2 days
Lesson Frame:	We will graph probability distributions associated with random variables. I will calculate and interpret the mean and expected value of a discrete random variable.
Performance Tasks: Students will be able to develop the concept of a random variable for discrete random variables.	Notes:
Topic 9:Expected value and decision making	Length:2 days
Lesson Frame:	We will use the expected value to make decisions based on real world problems. I will make sense of problems and persevere in solving them.
Performance Tasks: Students will be able to calculate the expected value of a discrete random variable.	Notes:

Unit Precalculus finale	Length: 16 days
Standards: M.A.APR.C.5M.A.SSE.A.2M.A.SSE.B.4M.SP.MD.A.1.M.SP.MD.A.2.M.SP.MD.A.3.M.SP.MD.A.4.M.SP.MD.B.5	Outcomes: Students will evaluate limit at infinity and at points using algebraic techniques.
Essential Questions: Why does this order make sense?	Learning Targets: Students will be able to approximate area under a curve using trapezoids.
Topic 1: A race to infinity	Length: 1 day
Lesson Frame:	We will understand the formal meaning of limits.
Performance Tasks:	I will use dominant terms to evaluate limits to infinity.
Students will be able to identify what a dominant term is.	Notes:
Topic 2: Limits to infinity	Length: 1 day
Lesson Frame:	We will apply dominant terms to rational functions.
Performance Tasks:	I will look for and make use of structure while applying dominant terms.
Students will be able to apply dominant terms to rational functions.	Notes:
Topic 3: Evaluating limits at a point algebraically	Length: 1 day
Lesson Frame:	We will algebraically solve limits at a point.
Performance Tasks:	I will make sense of a limit problems and persevere in solving them.
Students will be able to evaluate limits at a points.	Notes:
Topic 4: Another look at e	Length: 1 day
Lesson Frame:	We will investigate the number e in the indeterminate form.
Performance Tasks:	I will attend to precision when evaluating with e .
Students will be able to understand the number e in a limit.	Notes:
Topic 5: Trapping area with trapezoids	Length: 1 day
Lesson Frame:	We will approximate the area of a curve using trapezoids.
Performance Tasks:	I will attend to precisions while using trapezoids to find the area under a curve.
Students will be able to find the area under a curve using trapezoids.	Notes:
Topic 6: Area as a function	Length: 1 day
Lesson Frame:	We will develop an tool to approximate the area under a curve.
Performance Tasks:	I will use appropriate tools strategically to find the area under a curve.
Students will be able to express the area under a curve as a function.	Notes:

Unit Precalculus finale	Length: 16 days
Standards: M.A.APR.C.5M.A.SSE.A.2M.A.SSE.B.4M.SP.MD.A.1,M.SP.MD.A.2,M.SP.MD.A.3,M.SP.MD.A.4,M.SP.MD.B.5	Outcomes: Students will evaluate limit at infinity and at points using algebraic techniques.
Essential Questions: Why does this order make sense?	Learning Targets: Students will be able to approximate area under a curve using trapezoids.
Topic 7: Going all to pieces: writing an area program	Length: 1 day
Lesson Frame:	We will create a calculator program to find the area under the curve.
Performance Tasks: Students will be able to write a calculator program to find the area under the curve.	I will use appropriate tools strategically to find the area under a curve.
	Notes:
Topic 8: Rocket launch	Length: 1 day
Lesson Frame:	We will solve everyday problems using function models.
Performance Tasks: Students will be able to solve everyday problems using area function models.	I will make sense of function model problems and persevere in solving them.
	Notes:
Topic 9: Velocity and position graphs	Length: 1 day
Lesson Frame:	We will develop connections between two types of graphs.
Performance Tasks: Students will be able to sketch velocity graphs.	I will make sense of problems involving graphs and persevere in solving them.
	Notes:
Topic 10: Instantaneous velocity	Length: 2 days
Lesson Frame:	We will use instantaneous velocity to develop slope graphs.
Performance Tasks: Students will be able to develop slope graphs.	I will look for and make use of structure to develop slope graphs.
	Notes:
Topic 11: Slope functions	Length: 1 day
Lesson Frame:	We will write slope functions using instantaneous rate.
Performance Tasks: Students will be able to write slope functions.	I will look for and express regularity in repeated reasoning while writing slope functions.
	Notes:
Topic 12: The definition of derivative	Length: 1 day
Lesson Frame:	We will define a derivative using the connection between functions and slope functions.
	I will look for and express regularity in repeated reasoning by making connections between functions and slope functions.

Unit Precalculus finale	Length: 16 days
Standards: M.A.APR.C.5M.A.SSE.A.2M.A.SSE.B.4M.SP.MD.A.1,M.SP.MD.A.2,M.SP.MD.A.3,M.SP.MD.A.4,M.SP.MD.B.5	Outcomes: Students will evaluate limit at infinity and at points using algebraic techniques.
Essential Questions: Why does this order make sense?	Learning Targets: Students will be able to approximate area under a curve using trapezoids.
Performance Tasks: Students will be able to connect a function and its slope function.	Notes:
Topic 13: Slope and area under a curve	Length: 1 day
Lesson Frame:	We will observe the connection between slope and area under a curve.
Performance Tasks: Students will be able to see the connection between slope and area under a curve.	I will make sense of problems in order to make the connection between slope and area under a curve.
	Notes:

September	October	November	December	January	February	March	April	May	June
Unit 1	Finish Unit 2	Unit 4	Unit 5	Unit 6	Finish Unit 7	Unit 9	Finish Unit 10	Unit 12	
Start of Unit 2	Unit 3			Start Unit 7	Unit 8	Start Unit 10	Unit 11	Unit 13	



School District of Manawa
Students Choosing to Excel, Realizing Their Strengths

To: Board of Education
From: Carmen O'Brien
cc: Dr. Melanie Oppor
Date: 10/10/2022
Re: Fundraising Procedure Proposal

Recommendation:

I recommend that all SDM approved clubs whose funds are managed by the District that wish to do fundraising will request approval prior to the event for each fundraiser through the Board of Education for the 2022-23 school year.

Rationale:

Fund raisers are a way that clubs are able to raise money to do projects or purchase equipment that enhance their program. The district has maintained a spreadsheet that included all fundraisers for the entire school year. The Board of Education then approved the spreadsheet once per year at a regular meeting. The spreadsheet has become lengthy and clubs are unwilling to eliminate any fundraiser for fear that they will not be able to do the fundraiser in the future. I believe that by allowing clubs to have their fundraisers approved monthly, it gives the BOE a better view of all of the fundraisers that are occurring during the school year. Clubs and advisors would need to plan for fundraising approximately 2 months in advance to allow time for the approval process. A Google form has been created for advisors to apply for permission to fundraise (in packet).

School District of Manawa
800 Beech Street
Manawa, WI 54949

Phone: (920) 596-2525
Fax: (920) 596-5308

**Little Wolf High School
Manawa Middle School**
515 E. Fourth St
Manawa, WI 54949

Phone: (920) 596-2524
Fax: (920) 596-2655

Manawa Elementary
800 Beech Street
Manawa, WI 54949

Phone: (920) 596-2238
Fax: (920) 596-5339

ManawaSchools.org



/ ManawaSchools



/ ManawaSchools

Fundraising Request Form

All fundraisers must be approved by the Board of Education. When requesting a fundraiser, please submit this form 2 months prior to the start of the sale to allow for adequate time for approval. Reference Policy 5830 and 9700.01 for more information.

* Required

1. What group is fundraising? *

2. What is the fundraiser? (i.e. what is being sold?) *

3. What is the purpose for the funds being raised? (be specific) *

4. Will food or beverages be sold to students for consumption on campus? [Fundraisers and Smart Snacks: Foods Not Intended for Consumption at School](#) *

Mark only one oval.

- Yes *Skip to question 5*
- No *Skip to question 8*

Food or
Beverage
Sales for
Students

If approved, fundraisers that involve the sale to students of food items or beverages to be consumed on District property shall not compete directly with the sale of reimbursable meals. No sales may occur before school until 30 minutes after breakfast AND 30 minutes before the first lunch service until 30 minutes after the last lunch service.

5. Will the food or beverages sold to students meet the current USDA Dietary Guidelines for Americans and the Smart Snack Rules? [Smart Snacks In A Nutshell](#)

Mark only one oval.

- Yes *Skip to question 6*
- No *Skip to question 7*

Yes, food meets Smart Snack Rules

6. If approved, what day do you propose the fundraiser to start and end on?

No,
food
does
not
meet
Smart
Snack
Rules

Each student organization shall be permitted two (2) fundraising exceptions per school year where foods and beverages not allowable under the Smart Snack Rules can be sold. Each exempt fund-raiser cannot be longer than two (2) consecutive weeks.

7. If approved, this fundraiser will be considered an exemption. What day do you propose the fundraiser to start and end on? (may not exceed 2 weeks)

Not a Food or Beverage Fundraiser

8. If approved, what day do you propose the fundraiser to start and end on? *

This content is neither created nor endorsed by Google.

Google Forms



School District of Manawa
Students Choosing to Excel, Realizing Their Strengths

To: Board of Education
From: Carmen O'Brien
cc: Dr. Melanie Oppor
Date: 10/10/2022
Re: Spending the Fund 50 Fund Balance

Recommendation:

I recommend that the SDM purchase up to 3 vending machines, booths, picnic tables, and conversation tables for the Commons at the Little Wolf High School/Manawa Middle School.

Rationale:

Food Service fund balance should not exceed 3 months of expenditures. Currently, average monthly expenditures are at \$30,000-\$35,000. So, the SDM may continue to have up to \$90,000-\$105,000 in fund balance in Fund 50. Purchased items must be only used for food service or prorated per other program usage. Use of the Commons is variable for programs other than food service. Breakfast service lasts approximately 30 minutes at the beginning of school and lunch service lasts from 11-12:30. These total 2 hours per day, 10 hours per week. I would estimate that the Commons is used for maybe 2 hours per week for other purposes. This calculates to 83.3% food service and 16.7% other usage.

The picnic table area is used for 1.5 hours per day for food service. All other times of the day the picnic tables could be used by anyone. This calculates to approximately 10% of a day for food service use.

	Total Cost	Fund 50	Fund 10
3-Max ST5000 vending machines (\$13,975 each)	\$41,925	\$41,925	
Booths	\$32,466	\$27,044 (83.3%)	\$5,422 (16.7%)
Conversation Tables	\$15,030	\$12,520 (83.3%)	\$2,510 (16.7%)
Picnic Tables	\$11,400	\$1,140 (10%)	\$10,260 (90%)
TOTAL	\$100,821	\$82,629	\$18,192

Fund 50 Balance = \$238,935.16
Equipment Currently Replacing = \$35,000
3-months of Expenses = \$90,000-\$105,000
Fund Balance to Spend = \$113,935
Expenses in the next 5 years = \$91,100

School District of Manawa
800 Beech Street
Manawa, WI 54949

Phone: (920) 596-2525
Fax: (920) 596-5308

**Little Wolf High School
Manawa Middle School**
515 E. Fourth St
Manawa, WI 54949

Phone: (920) 596-2524
Fax: (920) 596-2655

Manawa Elementary
800 Beech Street
Manawa, WI 54949

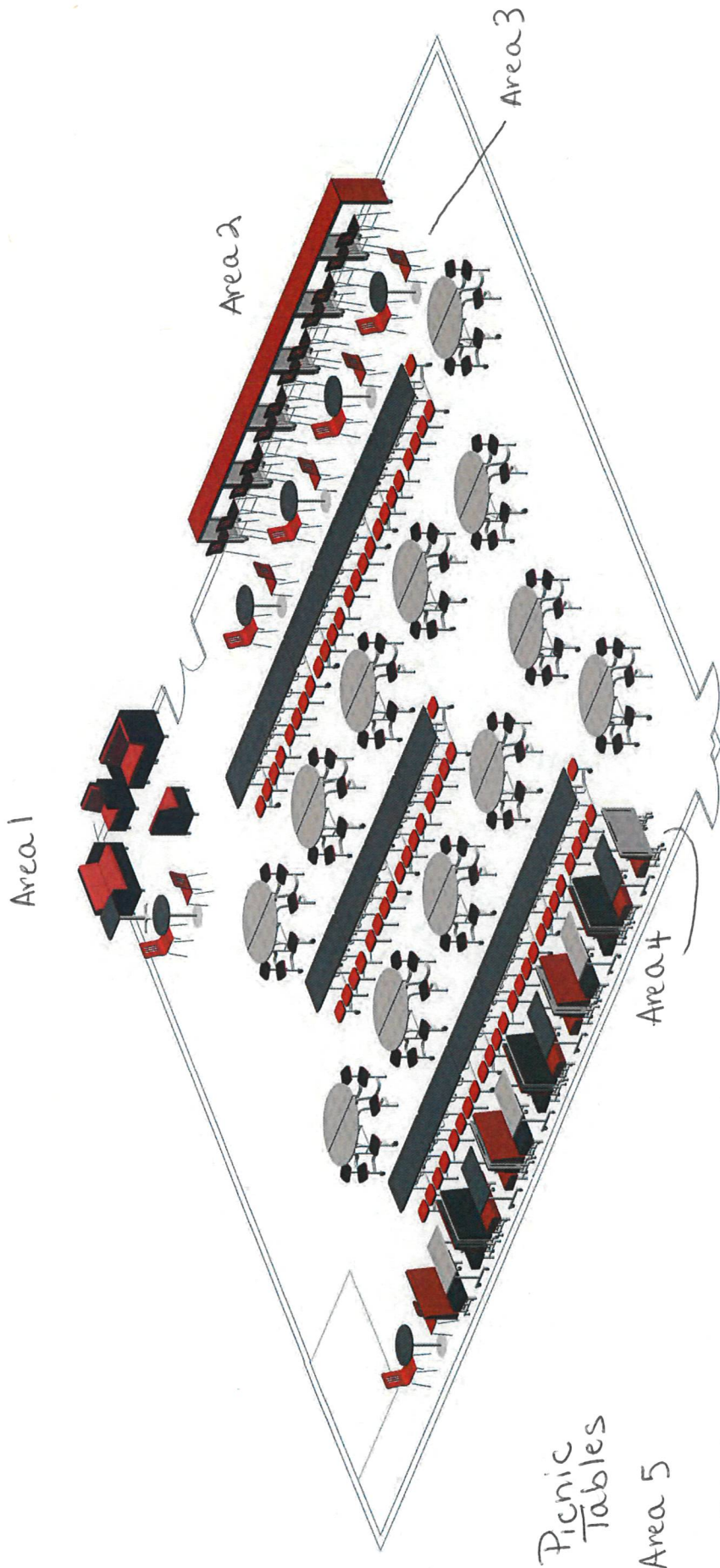
Phone: (920) 596-2238
Fax: (920) 596-5339

ManawaSchools.org



/ ManawaSchools

/ ManawaSchools



Picnic
Tables

Area 5

① 3D Overview

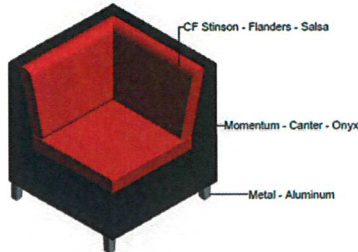
PAGE NUMBER: 4	3D Overview	SCALE:	DRAWN BY: ADC	DATE: 06-06-22	Little Wolf High School
-------------------	-------------	--------	------------------	-------------------	-------------------------

Area 1 – Soft seat furniture (Seats 6)

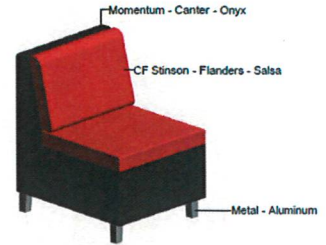
\$14,000



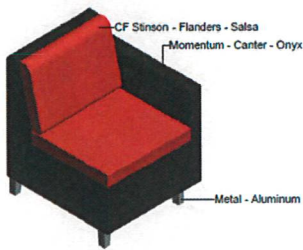
7 SoftSeating-02-D - 1 Seat Arm Right - Salsa Seat



8 SoftSeating-13-D - Corner Armless Seat - Salsa Seat



9 SoftSeating-04-D - 1 Seat Armless Chair - Salsa Seat



10 SoftSeating-03-D - 1 Seat Arm Left - Salsa Seat



11 SoftSeating-02-D - 2 Seat Settee with 2 Arms - Salsa Seat

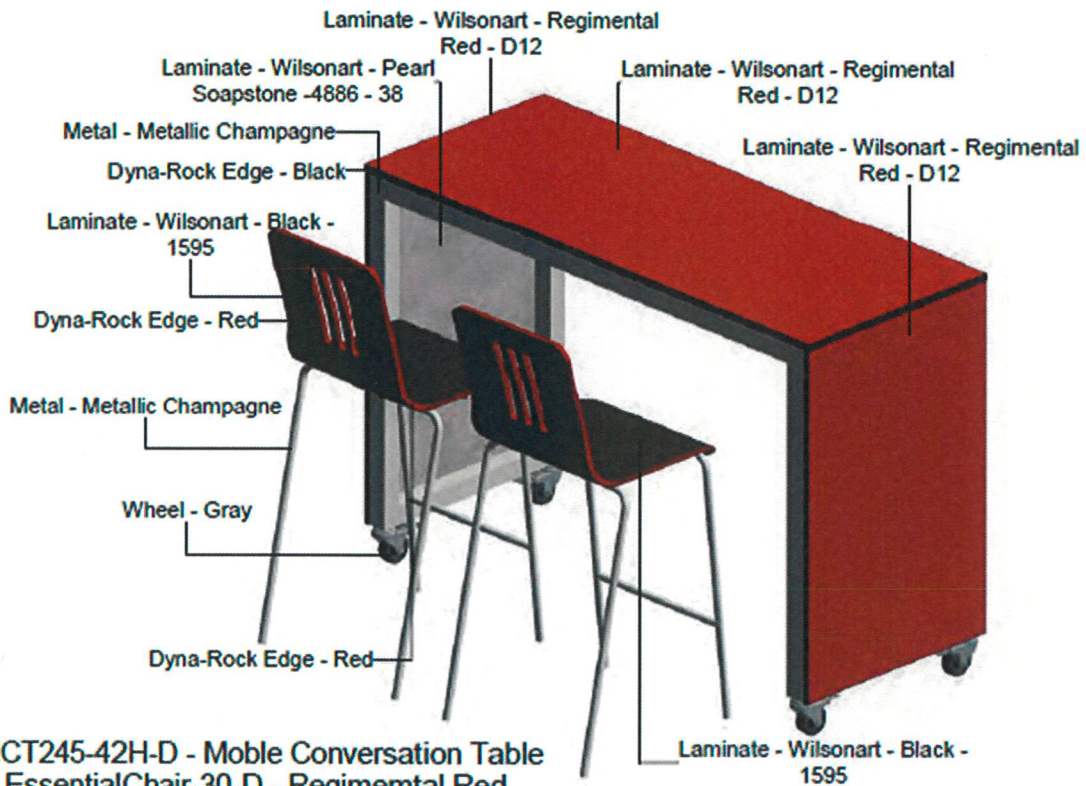


12 PT2430-D - Square Cafe Table - Oiled Soapstone Top

Area 2 – 6 mobile conversation tables, 42” high and 12 chairs (café height) (Seats 12)

Maybe add a strip of outlets in the back of the tables for charging.

\$15,030



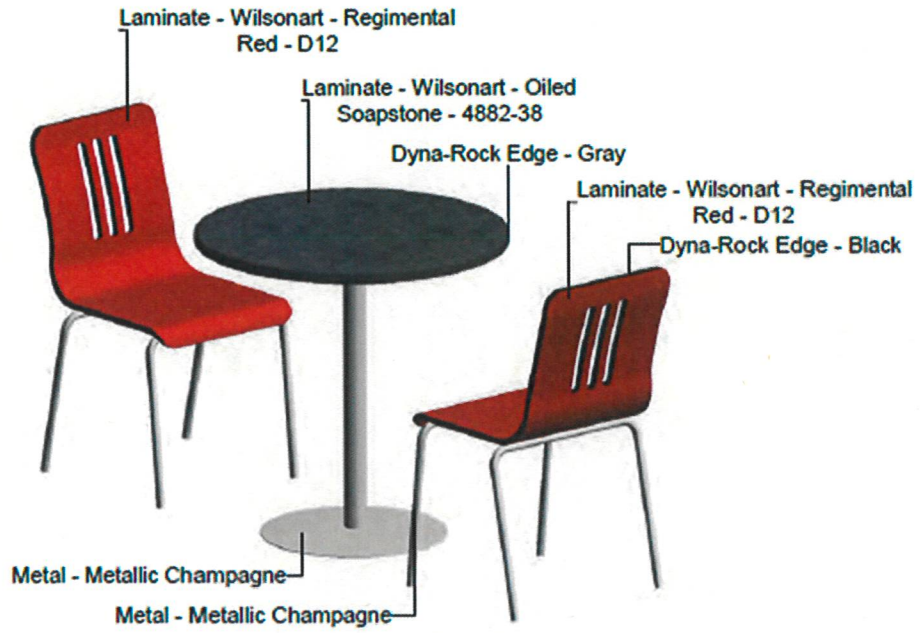
MCT245-42H-D - Mobile Conversation Table
w EssentialChair-30-D - Regimental Red

3 Top

Area 3

6 mobile tables, 30 inch round and 12 chairs (tables are adjustable height 30-42") (Seats 12)

\$10,408



**PTR3030-D - Round Cafe Table w
EssentialChair-18-D - Oil Soapstone Top**

4

-OR-

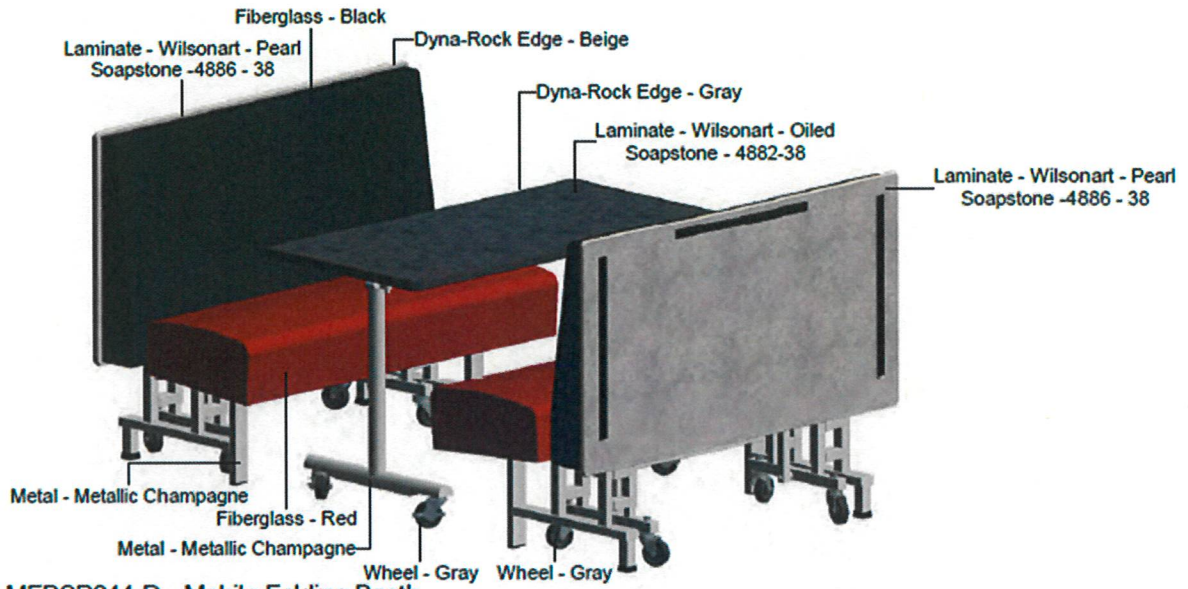
4 table 36"x36" and 42" high with 4 stools attached (pictured with 2 stools) (Seats 16)

\$10,000



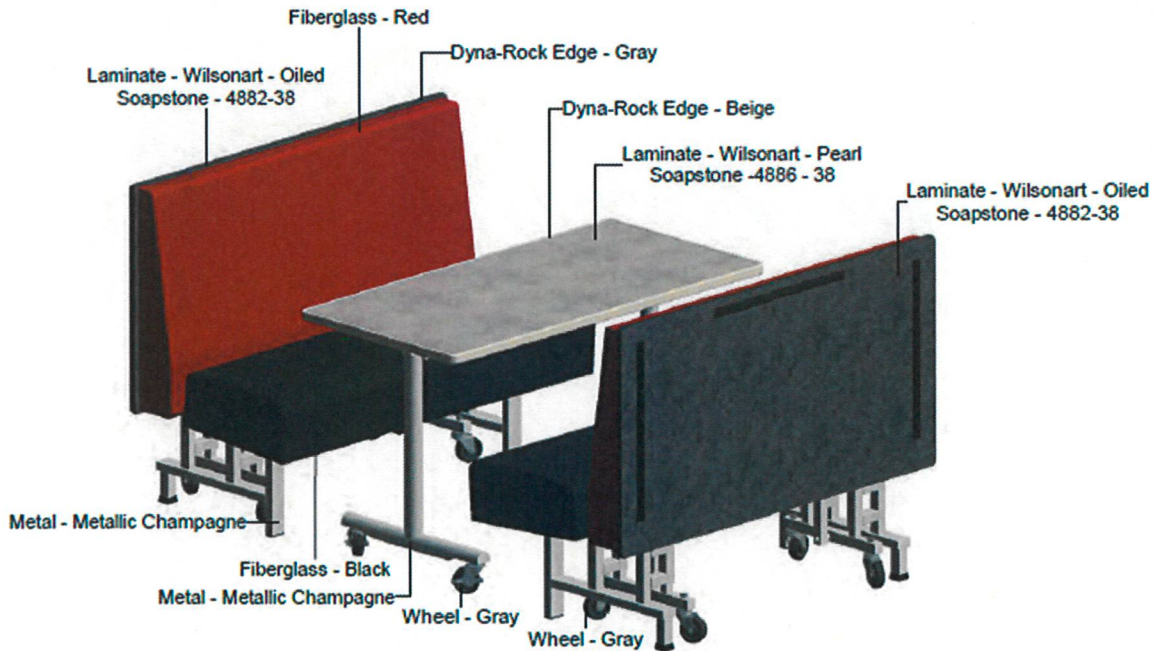
Area 4 – 6 mobile booths with benches (Seats 24)

\$32,466



①

MFBS244-D - Mobile Folding Booth Package - Oiled Soapstone Top



②

MFBS244-D - Mobile Folding Booth Package - Pearlstone Soapstone Top

Area 5 – Outdoor seating – picnic tables (\$1,000 - \$1,900 per table)

6 table could be up to \$11,400

Thermoplastic

A



C

D

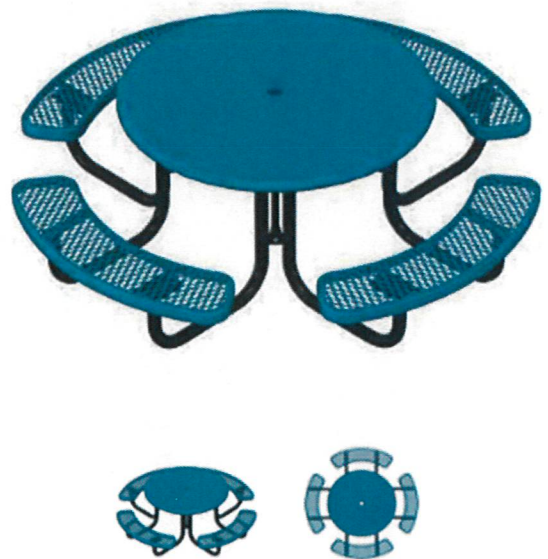


Recycled Plastic

B



E



Please prioritize Areas 1-5 for Furniture

Most wanted _____

Least wanted _____

Area 3

Which do you like better (circle)

Individual Tables

OR

Tables with attached stools

If there were individual tables, which do you prefer

Café tables (42" high)

OR

Regular height tables (30" high)

Area 5

Of the styles pictured, which do you like best (A-E)?

The tables can come in almost any shape or finish. Circle your choice in shape and finish below.

Choice in Shape

- Classic Rectangle Picnic
- Hexagon
- Square
- Round

Choice in Finish

- Thermoplastic Coated, holes in benches and table
- Recycled Plastic
 - Slats table top
 - Solid table top

Please write any comments or ideas you have about furnishing for the Commons area.

**DEPARTMENT OF PUBLIC INSTRUCTION
2021-22 REVENUE LIMIT WORKSHEET**

DISTRICT: Manawa 3276

DATA AS OF 10/13/2022 7:00 PM

Line 1 Amount May Not Exceed (Line 11 - (Line 7B+Line 10)) of Final 21-22 Revenue Limit

2021-22 General Aid Certification (21-22 Line 12A, src 621)	+	4,785,653
2021-22 Hi Pov Aid (21-22 Line 12B, Src 628)	+	0
2021-22 Computer Aid Received (21-22 Line 12C, Src 691)	+	2,940
2021-22 Aid for Exempt Personal Property (21-22 Line 12D, Src 691)	+	6,810
2021-22 Fnd 10 Levy Cert (21-22 Line 14A, Levy 10 Src 211)	+	2,372,375
2021-22 Fnd 38 Levy Cert (21-22 Line 14B, Levy 38 Src 211)	+	0
2021-22 Fnd 41 Levy Cert (21-22 Line 14C, Levy 41 Src 211)	+	0
2021-22 Aid Penalty for Over Levy (21-22 FINAL Rev Lim, June 2022)	-	0
2021-22 Total Levy for All Levied Non-Recurring Exemptions*	-	567,778
NET 2022-23 Base Revenue Built from 2021-22 Data (Line 1)	=	6,600,000

*For the Non-Recurring Exemptions Levy Amount, enter actual amount for which district levied; (7B Hold Harmless, Non-Recurring Referenda, Declining Enrollment, Energy Efficiency Exemption, Refunded/Rescinded Taxes, Prior Year Open Enrollment Pupils, Reduction for Ineligible Fund 80 Expends, Other Adjustments, Private School Voucher Aid Deduction, Private School Special Needs Voucher Aid Deduction)

September & Summer FTE Membership Averages

Count Ch. 220 Inter-District Resident Transfer Pupils @ 75%.

Line 2: Base Avg:((19+.4ss)+(20+.4ss)+(21+.4ss)) / 3 = **660**

	2019	2020	2021
Summer FTE:	15	9	13
% (40,40,40)	6	4	5
Sept FTE:	677	667	622
New ICS - Independent	0.00	0.00	0.00
Charter Schools FTE			
Total FTE	683	671	627

Line 6: Curr Avg:((20+.4ss)+(21+.4ss)+(22+.4ss)) / 3 = **645**

	2020	2021	2022
Summer FTE:	9	13	27
% (40,40,40)	4	5	11
Sept FTE:	667	622	626
New ICS - Independent	0.00	0.00	0.00
Charter Schools FTE			
Total FTE	671	627	637

The Line 6 "Current Average" shown above is used for Revenue Limits. The average used for Per Pupil Aid does not include "New ICS - Independent Charter Schools FTE." The PPA average appears below after data is entered for 2022:

645

Line 10B: Declining Enrollment Exemption = **150,000**

Average FTE Loss (Line 2 - Line 6, if > 0)	15
X 1.00	15
=	10,000.00
X (Line 5, Maximum 2022-2023 Revenue per Memb) =	150,000
Non-Recurring Exemption Amount:	

Fall 2022 Property Values

2022 TIF-Out Tax Apportionment Equalized Valuation 444,886,161

CELL COLOR KEY: Auto-Calc DPI Data District-Entered

Worksheet is available at: <http://dpi.wi.gov/sfs/limits/worksheets/revenue>

Calculation Revised: 8/5/2020. Rounding in Total FTE buckets.

**DEPARTMENT OF PUBLIC INSTRUCTION
2021-22 REVENUE LIMIT WORKSHEET**

2022-2023 Revenue Limit Worksheet		
1. 2022-23 Base Revenue (Funds 10, 38, 41)	(from left)	6,600,000
2. Base Sept Membership Avg (2019+.4ss, 2020+.4ss, 2021+.4ss)/3	(from left)	660
3. 2022-23 Base Revenue Per Member (Ln 1 / Ln2)	(with cents)	10,000.00
4. 2022-23 Per Member Change (A+B)		0.00
2022-23 Low Revenue Ceiling per s.121.905(1):	10,000.00	
A. Allowed Per-Member Change for 22-23	0.00	
B. Low Rev Incr ((Low Rev Ceiling-(3+4A))-4C) NOT<0	0.00	
C. Value of the CCDEB (22-23 DPI Computed-CCDEB Dists only)	0.00	
5. 2022-23 Maximum Revenue / Member (Ln 3 + Ln 4)		10,000.00
6. Current Membership Avg (2020+.4ss, 2021+.4ss, 2022+.4ss)/3	(from left)	645
7. 2022-23 Rev Limit, No Exemptions (Ln7A + Ln 7B)	(rounded)	6,600,000
A. Max Rev/Memb x Cur Memb Avg (Ln 5 x Ln 6)	6,450,000	
B. Hold Harmless Non-Recurring Exemption	150,000	
8. Total 2022-23 Recurring Exemptions (A+B+C+D+E)	(rounded)	0
A. Prior Year Carryover	0	
B. Transfer of Service	0	
C. Transfer of Territory/Other Reorg (if negative, include sign)	0	
D. Federal Impact Aid Loss (2020-21 to 2021-22)	0	
E. Recurring Referenda to Exceed (If 2022-23 is first year)	0	
9. 2022-23 Limit with Recurring Exemptions (Ln 7 + Ln 8)		6,600,000
10. Total 2022-23 Non-Recurring Exemptions (A+B+C+D+E+F+G+H+I)		246,610
A. Non-Recurring Referenda to Exceed 2022-23 Limit	0	
B. Declining Enrollment Exemption for 2022-23 (from left)	150,000	
C. Energy Efficiency Net Exemption for 2022-23 (see pg 4 for details)	0	
D. Adjustment for Refunded or Rescinded Taxes, 2022-23	0	
E. Prior Year Open Enrollment (uncounted pupil[s])	6,289	
F. Reduction for Ineligible Fund 80 Expenditures (enter as negative)	0	
G. Other Adjustments (Fund 39 Bal Transfer)	0	
H. WPCP and RPCP Private School Voucher Aid Deduction	90,321	
I. SNSP Private School Voucher Aid Deduction	0	
11. 2022-23 Revenue Limit With All Exemptions (Ln 9 + Ln 10)		6,846,610
12. Total Aid to be Used in Computation (12A + 12B + 12C + 12D)		4,428,815
A. 2022-23 OCT 15 CERT OF GENERAL AID	4,419,065	
B. State Aid to High Poverty Districts (not all districts)	0	
C. State Aid for Exempt Computers (Source 691)	2,940	
D. State Aid for Exempt Personal Property (Source 691)	6,810	
DISTRICTS MUST USE THE OCT 15 AID CERT WHEN SETTING THE DISTRICT LEVY.		
13. Allowable Limited Revenue: (Line 11 - Line 12) (10, 38, 41 Levies)		2,417,795
14. Total Limited Revenue To Be Used (A+B+C)	Not >line 13	2,417,795
Entries Required Below: Enter amnts needed by purpose and fund:		
A. Gen Operations: Fnd 10 Src 211	2,417,795	(Proposed Fund 10)
B. Non-Referendum Debt (inside limit) Fund 38 Src 211	0	(to Budget Rpt)
C. Capital Exp, Annual Meeting Approved: Fund 41 Src 211	0	(to Budget Rpt)
15. Total Revenue from Other Levies (A+B+C+D)		990,209
A. Referendum Apprvd Debt (Fund 39 Debt-Src 211)	910,209	
B. Community Services (Fund 80 Src 211)	80,000	(to Budget Rpt)
C. Prior Year Levy Chargeback for Uncollectible Taxes (Src 212)	0	(to Budget Rpt)
D. Other Levy Revenue - Milwaukee & Kenosha Only	0	(to Budget Rpt)
16. Total Fall, 2022 REPORTED All Fund Tax Levy (14A + 14B + 14C + 15)		3,408,004
Line 16 is the total levy to be apportioned in the PI-401.	Levy Rate =	0.00766040

Districts are responsible for the integrity of their revenue limit data & computation. Data appearing here reflects information submitted to DPI and is unaudited.

Municipality	2021-22 Equalized Values	2022-23 Equalized Values	EV Percent Change	Percent of Total SDM Levy	2022-23 Portion of SDM Tax Levy	SDM Tax Levy Percent Change from Last Year		Proposed Tax Levy
City of Manawa	\$85,581,600	\$87,299,000	2.01%	19.62%	\$649,030.38	-11.76%		\$3,308,004.00
Town of Bear Creek	\$3,435,428	\$3,658,434	6.49%	0.82%	\$27,125.63	-7.34%	FD 39	\$0.00
Town of Helvetia	\$8,824,143	\$9,558,494	8.32%	2.15%	\$71,122.09	-5.16%		
Town of Lebanon	\$22,771,986	\$24,065,946	5.68%	5.41%	\$178,963.02	-7.84%		
Town of Little Wolf	\$126,074,200	\$139,593,700	10.72%	31.38%	\$1,038,051.66	-2.94%		
Town of Mukwa	\$12,254,190	\$12,187,146	-0.55%	2.74%	\$90,639.31	-14.59%		
Town of Royalton	\$54,692,502	\$59,726,302	9.20%	13.43%	\$444,264.94	-4.34%		
Town of Saint Lawrence	\$40,061,895	\$41,978,668	4.78%	9.44%	\$312,275.58	-8.73%		
Town of Union	\$54,737,974	\$58,014,371	5.99%	13.04%	\$431,363.72	-7.55%		
Village of Ogdensburg	\$8,253,700	\$8,804,100	6.67%	1.98%	\$65,498.48	-6.80%		
Total/Average	\$416,687,618	\$444,886,161	6.77%	100%	\$3,308,334.80	-6.75%		

Municipality	2021-22 Equalized Values	2022-23 Equalized Values	EV Percent Change	Percent of Total SDM Levy	2022-23 Portion of SDM Tax Levy	SDM Tax Levy Percent Change from Last Year		Proposed Tax Levy
City of Manawa	\$85,581,600	\$87,299,000	2.01%	19.62%	\$663,745.38	-9.28%		\$3,383,004.00
Town of Bear Creek	\$3,435,428	\$3,658,434	6.49%	0.82%	\$27,740.63	-4.96%	FD 39	\$75,000.00
Town of Helvetia	\$8,824,143	\$9,558,494	8.32%	2.15%	\$72,734.59	-2.82%		
Town of Lebanon	\$22,771,986	\$24,065,946	5.68%	5.41%	\$183,020.52	-5.45%		
Town of Little Wolf	\$126,074,200	\$139,593,700	10.72%	31.38%	\$1,061,586.66	-0.65%		
Town of Mukwa	\$12,254,190	\$12,187,146	-0.55%	2.74%	\$92,694.31	-12.05%		
Town of Royalton	\$54,692,502	\$59,726,302	9.20%	13.43%	\$454,337.44	-2.03%		
Town of Saint Lawrence	\$40,061,895	\$41,978,668	4.78%	9.44%	\$319,355.58	-6.32%		
Town of Union	\$54,737,974	\$58,014,371	5.99%	13.04%	\$441,143.72	-5.16%		
Village of Ogdensburg	\$8,253,700	\$8,804,100	6.67%	1.98%	\$66,983.48	-4.43%		
Total/Average	\$416,687,618	\$444,886,161	6.77%	100%	\$3,383,342.30	-4.38%		

Municipality	2021-22 Equalized Values	2022-23 Equalized Values	EV Percent Change	Percent of Total SDM Levy	2022-23 Portion of SDM Tax Levy	SDM Tax Levy Percent Change from Last Year		Proposed Tax Levy
City of Manawa	\$85,581,600	\$87,299,000	2.01%	19.62%	\$668,650.38	-8.48%		\$3,408,004.00
Town of Bear Creek	\$3,435,428	\$3,658,434	6.49%	0.82%	\$27,945.63	-4.19%	FD 39	\$100,000.00
Town of Helvetia	\$8,824,143	\$9,558,494	8.32%	2.15%	\$73,272.09	-2.07%		
Town of Lebanon	\$22,771,986	\$24,065,946	5.68%	5.41%	\$184,373.02	-4.68%		
Town of Little Wolf	\$126,074,200	\$139,593,700	10.72%	31.38%	\$1,069,431.66	0.08%		
Town of Mukwa	\$12,254,190	\$12,187,146	-0.55%	2.74%	\$93,379.31	-11.22%		
Town of Royalton	\$54,692,502	\$59,726,302	9.20%	13.43%	\$457,694.94	-1.28%		
Town of Saint Lawrence	\$40,061,895	\$41,978,668	4.78%	9.44%	\$321,715.58	-5.54%		
Town of Union	\$54,737,974	\$58,014,371	5.99%	13.04%	\$444,403.72	-4.39%		
Village of Ogdensburg	\$8,253,700	\$8,804,100	6.67%	1.98%	\$67,478.48	-3.67%		
Total/Average	\$416,687,618	\$444,886,161	6.77%	100%	\$3,408,344.80	-3.62%		