SCHOOL DISTRICT OF MANAWA
CURRICULUM COMMITTEE MEETING
AGENDA

Date: June 4, 2019 **Time: 4:00 p.m.** Place: Board Room, MES, 800 Beech Street, Manawa

Board Committee Members: Scheller (C), Pohl, Hollman

In Attendance:

Timer: _____ Recorder: _____

1. Kindergarten Math Materials Request (Information / Action)
2. Title I School-Wide Plan (Information / Action)
3. Homecoming Handbook (Information / Action)
4. Curriculum Mapping (Information / Action)
    a. HS Biology 1
    b. HS Biology 2
    c. HS Human Biology
    d. HS Physical Science
5. Overcoming Obstacles Maps (Information / Action)
6. Curriculum Committee Planning Guide (Information / Action)
7. Next Meeting Date _____
8. Next Meeting Items:
    a.
    b.
9. Adjourn

New Materials Proposal
School District of Manawa

Date: **5/8/19**

Process:

1. The New Materials proposal is brought to the Curriculum Director before January 5th for the upcoming school year.
2. The Curriculum Director will bring the proposal to the Administration Team for vetting in January and will notify the person making the proposal of all decisions.
3. If the New Materials align with District goals, they will be added to the Board of Education (BOE) Curriculum committee agenda in January.
4. The BOE Curriculum committee will approve all new materials.
5. A requisition form will be filled out by the requesting staff and turned in to the Curriculum Director by February 15th for the coming year's budget plan.
6. The requisition will be processed as a Purchase Order by the building secretary by March 15th.
7. The order will go through the business office approval process prior to July 1st.
8. The building secretary will place the order and notify the curriculum director and requesting staff on or after July 1st.

Title of Course Materials will be used for: Kindergarten Math

Department or Grade Level: Kindergarten

Materials are: **New** ☐ **Replaces Existing** X

If it replaces existing materials, what? Replacing Math Expressions

Textbook, Materials, Resource Title: Kinder Math

Publisher: Tara West

Copyright Date:

Describe the process that led to the recommendation of these textbooks, materials, or resources.

We have used Math Expressions since it's adoption and has found that kindergarteners have struggled with acquiring many concepts. In our professional opinion, we felt that this was caused by the pace, instructional strategies, and fragmentation of the kindergarten Math Expressions lessons. This school year, we piloted parts of Kinder Math to supplement specific parts of Math Expressions where students were having difficulty mastering skills.

What other options were investigated?

We found that students mastered the material quicker and maintained mastery with these materials as compared to Math Expressions.

Why were these textbooks, materials, or resources chosen?

We have used other Tara West resources and find her materials are easy to use and thoroughly cover the standards.

How do they align with the curriculum scope and sequence and/or career pathways?

It covers all the standards required for our students to master.

Add any data that supports the need for these materials (i.e. student survey, ACT Aspire, ACT plus Writing, STAR, Wisconsin Forward Exam, PALS, labor market information, etc.).

N/A

Provide: X **Sample** **or** ☐ **Alternate Professional Review**

☐ **Requisition Form**

Title I Schoolwide Program Plan for

Manawa Elementary School

Written during the 2017-2018 School Year
Updated April 2019

School Information

School Name:	Manawa Elementary School
School Address:	800 Beech Street
Building Principal:	Mrs. Michelle Pukita
Email Address:	mpukita@manawaschools.org
Phone:	(920) 596-2559
FAX:	(920) 596-5308
Title IA Coordinator:	Melanie Oppor/Jacquelyn Sernau
Phone:	(920) 596-5300/ (920) 596-5738
Email Address:	moppor@manawaschools.org/ jsernau@manawaschools.org

Planning Year:	2017-2018 revised 2019	Local School Board approval date:	

District Information

School District Name:	School District of Manawa
Superintendent:	Dr. Melanie J. Oppor
Phone:	(920) 596-5308
Email address:	moppor@manawaschools.org

Superintendent's Signature **Date**

Schoolwide Planning Team

Date when Plan will be implemented: 2017-2018- revised 2019

Parents:	Jen Rosin, Tina Bowen, Amanda Ratchje
School Staff: (*include position*)	Valerie Pari- Math Specialist/Interventionist Judy Connelly- Reading Interventionist
Administrator(s): (*include position*)	Michelle Pukita- Elementary Principal Jacquelyn Gast- District Reading Specialist
Community Members:	Jen Rosin, Tina Bowen, Amanda Ratchje
Others (Optional):	

Planning Process

This schoolwide plan is designed around the "Ten Comprehensive Components of a Schoolwide Plan."

Schoolwide Planning Summary

The following table summarizes the steps and activities of our planning process. This includes planning team meetings, subcommittee work sessions, parent meetings, staff meetings, etc. when planning took place as well as other activities conducted that contributed toward the development of this plan (i.e. needs assessment data collection and analysis, inquiry process).

Meeting Dates	Agenda Topics/ Planning Steps	Participants at Meetings (check all that apply)		
		School/ District Staff	Parents	Community Members
10/18/17	Began digging into Data for Needs Assessment	X		
10/19/17	Discussed school data	X		
10/20/17	Drew up a plan for committee and assigned roles	X		
12/1/17	Check in on plan writing	X		
2/9/18	Check in on plan writing and sharing progress	X		
3/14/18	Check in progress and projection for finishing plan	X		
4/17/18	Review and Revision of Plan	X	X	X
5/3/19	Review and Revision	X		
5/6/19	Review and Revision	X		
5/13/19	Shared Plan with teachers/parents-- gathered input for changes	X	X	X

Communication Plan

Processes and opportunities to develop the SW plan:

The School District of Manawa will establish a Title I team to work on our schoolwide plan. It is essential that we have representation from administration, teachers, and community members. The reading specialist will coordinate the meetings that will take place to review data and discuss the plan. The reading specialist and the interventionists will attend CESA 6 Title I Schoolwide Program Writing workshops throughout the year to keep abreast of new information and receive guidance and support. This plan will be reviewed annually.

Processes and opportunities to inform, solicit and receive input from stakeholders:

Once the initial meetings have taken place, the reading specialist will contact the community members that are part of the team. We will meet to discuss the progress of the plan and review and make changes based on stakeholder input.

School Profile

Manawa Elementary School
400 Beech Street
Manawa, WI 54949
(920)596-5700

Manawa Elementary School is a 4K-6th grade school proudly serving approximately 350 young learners in central Wisconsin. The following profile is a brief summary of our school's mission statement and annual goals based on our assessment data. Our entire staff is committed to working in partnership with our families and community to make this the best school possible for our kids. We want all to feel welcomed and valued.

MES Mission Statement:

MES is a supportive and encouraging environment where students and staff can learn and grow through a collaborative and positive approach. Staff and students will respect and listen to each other while sharing the responsibility of learning.

Our Strengths:

In addition to our amazing students, our dedicated staff, families, and community are what make Manawa Elementary a great place to be. As a school that serves young learners from 4K-6th grades, we understand and value the uniqueness and talents of all learners. Through our continual work with student achievement data, we as a school work hard to meet the needs of ALL students.

Manawa Elementary School Principal:

Michelle Pukita

State Report Card:

Please use the following Department of Public Instruction site to access our school report card: https://apps2.dpi.wi.gov/reportcards/home

Fast Facts:

Grades	K4-6
School Type	Elementary
Enrollment	332

Percent Open Enrollment	3.9%
	Race/Ethnicity
American Indian/Alaska Native	0.6%
Asian	0.6%
Black or African American	0.3%
Hispanic/Latino	3.0%
White	93.4%
Students with Disabilities	11.7%
Economically Disadvantaged	34.6%
English Learners	0.6%

Ten Components of the a Schoolwide Plan

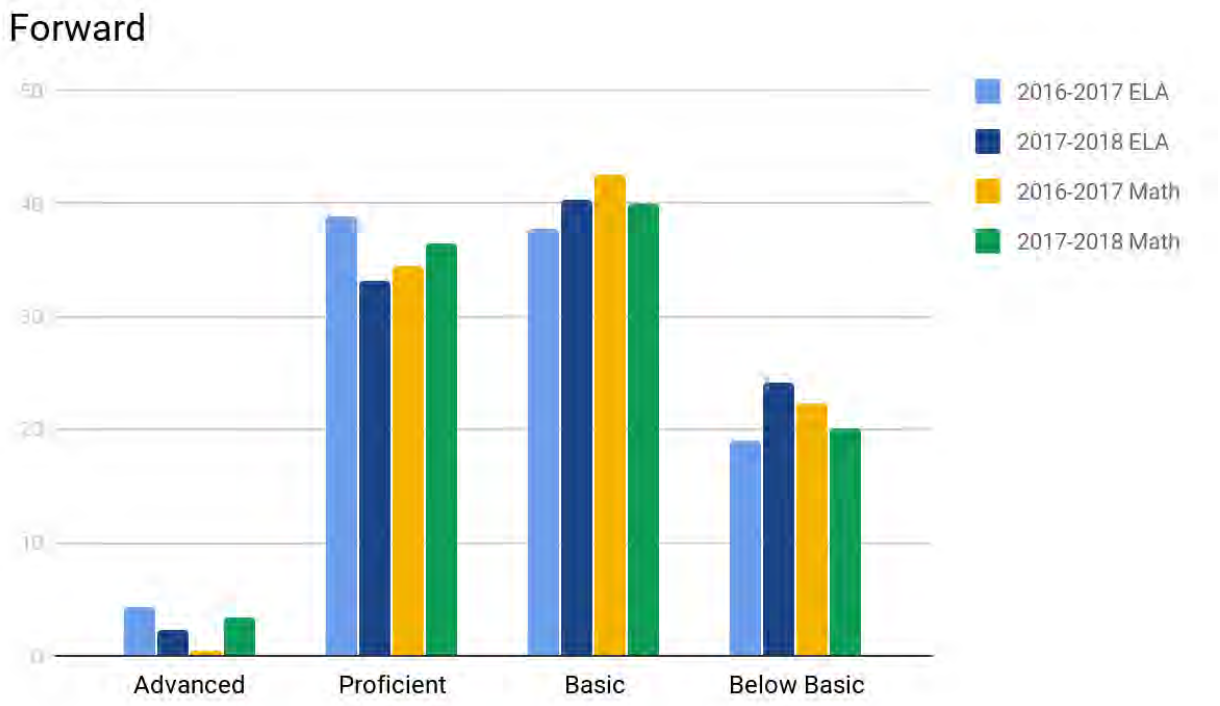
I. Data/Conclusions (Needs Assessment)

Analyzing data is a daily practice at Manawa Elementary School. Not only do the interventionists review their students' data often, but a building consultation team (BCT) sits down for an hour and a half each week to discuss our students' progress. Teachers also have an hour and a half early release time for data review and discussion each week.

This Comprehensive Needs Assessment will review our Standardized State Test data (the Forward Exam) along with STAR data (our universal screener) and our Fountas and Pinnell Running Record Assessment data. A Parent Perception Survey was also used to get a general feel for our stakeholders feelings regarding communication with the school and other valuable information that will help us to improve our building and our student achievement.

Forward Data (2018)

Overall Snapshot



Fountas and Pinnell Running Records (Fall/Winter)

Grade	Percentage of Students Below Grade Level (Fall)	Percentage of Students Below Grade Level (Winter)
Grade 1	50	45
Grade 2	28	17
Grade 3	12	16
Grade 4	20	22
Grade 5	19	21
Grade 6	29	24

STAR Reading	Fall 2018	Winter 2019
Grade Level	Percentage of Students Below Benchmark	Percentage of Students Below Benchmark
1	55	58
2	69	50
3	41	27
4	37	35
5	57	47
6	57	42

STAR Math	Fall 2018	Fall 2018	Winter 2019	Winter 2019
Grade Level	Number of Students Below Benchmark	Percentage of Students Below Benchmark	Number of Students Below Benchmark	Percentage of Students Below Benchmark
1	18	40	9	20
2	14	55	10	38
3	8	25	5	15
4	17	34	9	18
5	6	16	9	23
6	11	30	4	11

The data from our statewide assessment (The Forward) is not as positive as we were hoping for. It appears that the number of advanced students is dropping in both ELA and Math, and our percentages for basic and below basic are increasing. We want to be able to push our high achievers into the advanced category and keep all of our students growing. We need to look to close the gap and analyze this data more in depth.

The Fountas and Pinnell running records seem to show growth in some grades and not in others. Due to the expected achievement levels at each grade band, some students are making gains, but they are not quite up to the projected goal. Hopefully, with the work of small group instruction (both strategy groups and guided reading groups), these students can make the growth that is expected.

The STAR screening data is showing a different snapshot of the growth of our students in both reading and math. While both areas are still in need of improvement, it appears students are improving and that the number of students that were below grade level in reading and math are decreasing. With our added focus on math achievement, it makes sense that our data is reflecting those improvements in math. We now need to establish a way to balance our instructional initiatives and attention to all subject areas to bolster student growth.

The parent perception survey that was handed out at parent/teacher conferences indicates that overall, parents are happy with the school and the communication they receive from their child's teacher. Every survey returned showed that parents feel welcome in our school. One of the common themes was the desire to learn more about how to help their student with homework and support in both reading and math. This is an area we will be sure to address as we plan upcoming family engagement nights.

II. School-Wide Reform Strategies

There are many ways that the staff at Manawa Elementary School is working to improve the quality of instruction. The first is with our weekly early release Wednesday PLC time. Grade level teams of teachers meet to discuss student data and adjust pacing and instructional plans to meet the students' needs. Along with this, teachers develop common assessments to measure the success of students as they work through the standards of each unit.

The staff at MES has discovered that our Forward assessment data shows we are increasing in the number of students who are scoring Basic or Below Basic in the areas of math and reading. Because of this, many of our teachers have decided to make their SLO based on increasing math achievement. They have decided to spend more time allowing students to write out their thoughts when they solve a problem and analyze math errors. They plan to include more "Math talk" in class so students have an opportunity to share their thinking with their peers. They have also committed to look at sample questions from the Forward exam so that they can adjust the way in which they are asking questions of students. All of these strategies are in place to hopefully close the gaps with our math achievement data.

According to our Forward data, we are not doing as well in reading as we are in math. We are dropping with the number of students who qualify for the Advanced level and our Basic category is increasing. Part of this is that we, as a school, have spent so much focus on helping to improve our struggling students that we have neglected to provide enrichment for our advanced students. We are working to change this. This year we have written/revised and adopted a Gifted and Talented Plan that sets some guidelines for teachers and parents to refer students they feel qualify. We have identified these students in each individual class and are providing them Project Based Learning opportunities during our intervention time each day. These students also are being challenged by working on reading and math programs that are adaptable to their level of proficiency.

According to our STAR data, students are making growth in both reading and math as the year continues, but there is still a long way to go to have all students at benchmark. One of the strategies that we have implemented is to train teachers on how to look at their individual student's data and goal setting within the program. If they take the time to look at the exact skills that their students are doing poorly in, they can find resources to help fill these gaps. Taking a more active role in using the STAR data will hopefully decrease the number of students falling into the category of below benchmark.
need.

Another reform strategy we have used as a whole-school is to work to make our daily intervention time (Wolf Time) more beneficial and useful for students. Grade levels meet every 8-10 weeks to see if students are being placed where they belong. For example, if a student shows they need math intervention in the beginning of the year based on their previous data, but over the course of the first quarter they are making

large gains, they may be moved out of the intervention and receive basic math fact work time or math enrichment. The same goes for reading. Our teachers work with students on comprehension and fluency in reading if their scores indicate they need that support. If they do not, they are assigned a group for Project Based Learning opportunities. Understanding that we need to make sure the system is “fluid” and able to change according to data and student need shows that we are cognizant and vigil to making sure our students’ needs are being met.

Beginning in the 2019-2020 school year, the reading specialist and principal will meet with grade level teams to discuss pacing of instruction and student data. These meetings should allow an opportunity to look very specifically at each class’s achievement levels so that instruction can be data-driven. Hopefully this will help to increase reading and math success.

One last reform strategy to mention is the fact that our school offers a summer school remediation program for our struggling readers and math students. Programming is designed to be as individualized as possible to meet the specific needs of our struggling students. It is offered to anyone who signs up and wants to work on their skill deficits. We do not require students to attend; however, if a student is falling below benchmark, it is strongly encouraged that they participate.

III. Instruction by Highly-Qualified Teachers

All staff in the School District of Manawa are highly qualified. Not only do we ensure that we have the correct licensure each time we hire for a position, but all our support staff have either had classroom experience or have completed the Master Teacher requirements.

The School District of Manawa is working at a plan for teacher retention because we believe that retaining teachers not only helps our students, but it makes for a more unified teaching staff that can work together to carry out our vision. Most recently, the pupil services committee has worked hard at identifying the qualities for effective instruction. This will be shared with current staff for personal reflection as well as for newly hired staff to ensure they fit our expectations. Please find the complete document below that identifies these qualities.

Effective Instruction

- Instructional Delivery
    - Teaching occurs in the middle of the learners
    - 80% student talk, 20% teacher talk
    - Technology is used in a purposeful and innovative manner
    - Lesson objective is written, verbalized, and reinforced throughout the lesson
    - Real-world application and high order questioning; includes open-ended questions
    - Differentiation of materials and lesson delivery
    - Student goal setting and student reflection
- Instructional Planning
    - Backward planning - start with the end in mind
    - Intentionally planning questions, transitions, content, differentiation, and assessments linked to the standards
    - Collaborate with colleagues (interdisciplinary, specialists, guidance, etc.) to ensure all student needs are met
- Professional Knowledge
    - Demonstrates accurate knowledge of the subject matter
    - Knowledgeable of research/evidence-based practices
- Assessment for and of Learning
    - Formative assessment results are used to differentiate, inform, and guide instruction
    - Summative assessments are written before the unit/lesson is taught
    - Timely feedback of assessment results to all stakeholders
    - Common assessments are used to measure learning
- Learning Environment
    - Builds relationships with students, parents, and colleagues
    - Creates an environment that is conducive to engaging all learners
    - Effective routines and procedures
    - Promotes digital citizenship
- Professionalism
    - Collaborates with colleagues to share responsibility for all learners
    - Networks with professionals in and outside the district
    - Reflects on instructional practices
    - Demonstrates appropriate communication with students, colleagues, administration, parents, and community

- Willingness to seek out professional development opportunities to grow as a teacher

IV. High Quality and Ongoing Professional Development (may be included in implementation activities)

The administrative team has taken up the task of writing a five-year professional development plan for the school district. After looking at student achievement data along with teacher perception surveys, the following has been determined as our focus area and goals in which to measure our progress. Please use attached link to an overview of our plan: (Plan on a Page) Along with forward planning for professional development, the district also provides some current PD for our staff. The elementary teachers receive STAR data training to learn how to more specifically understand and use their student data. The staff also participates in ongoing book studies on various topics. The reading specialist also serves as an instructional coach and offers both reading and writing support for teachers.

V. Strategies to attract highly-qualified teachers

The School District of Manawa takes great pride in its staff and wants the very best instructors. The district's SAM (Salary Advancement Model) is salary program that allows us to remain competitive with surrounding school districts and provides incentives for teachers to pursue professional development opportunities.

Below is the Hiring Process and Timeline for Hiring Effective/Quality Instructors for our school district.

Hiring Process and Timeline for School District of Manawa

Posting Process

- Review position description
- Establish timeline for posting, interviews and approval of candidate
- Post internally via email by District Office Secretary simultaneously with external posting; internal candidate requests transfer to a different position
- Post externally to WECAN and District Webpage to include qualifications and job description (or local newspapers, radio, local t.v., etc.) by District Office Secretary and send to Board of Education Members via email

- Develop interview questions
- Determine interview team(s)

Searching Timeline

- Post for at least two weeks or until filled
- Develop interview questions (drafted by District Administration with Admin. Team for administrative and teaching positions; drafted by principals for support staff)
- Determine interview teams
    - 1st Round for teachers is conducted by a combination of stakeholders to include the principal, teachers, parents, and students (if age appropriate).
    - 2nd Round for teachers is conducted by the Admin. Team.
    - 1st Round for administrators is conducted by a combination of stakeholders to include the superintendent, teachers, parents, and students (if age appropriate).
    - 2nd Round for administrators is conducted by the Board of Education.

- Review applications
- Conduct initial reference checks
- Call candidates for 1st round of interviews
- 1st round interviews
- Call candidates for 2nd round of interviews
- Conduct final reference and background checks
- 2nd round of interviews
- Confirming interview with District Administrator (financial and district expectations)
- Recommend candidate to Board of Education

Transition Process

- Candidate to be introduced
- Transition plan developed and shared with candidate for a smooth entry into the position
- Transition days to occur
- Position start day

Staff and Program Change Proposals

- November - Written proposal is submitted to District Administrator by principals

and directors for the following school year
- December – District Administrator compiles list of staff and program change proposals
- December – Business Manager assigns dollar value to each change proposal
- January - Finance Committee meets with Administrative Team to balance additions and reductions based on presenting a total balanced budget to the full Board
- January/February – Full Board of Education approval of staff and program changes as part of the balanced budget; apprise personnel affected by changes prior to the Board meeting
- February/March – Create job descriptions, post new positions, and begin timeline beginning at the beginning of this procedure
- March – Issue contracts
- April 15 – Contracts due

VI. Parent Involvement Strategies

The following is our school district's policy for parent involvement:

9250 - RELATIONS WITH PARENTS

The Board of Education believes that the education of children is a joint responsibility, one it shares with the parents of the school community. To ensure that the best interests of the child are served in this process, a strong program of communication between home and school must be maintained.

The Board believes that it is the parents who have the ultimate responsibility for their children's in-school behavior, including the behavior of students who have reached the legal age of majority, but are still, for all practical purposes, under parental authority. During school hours, the Board, through its designated administrators, acts *in loco parentis* or in place of the parents.

The Board recommends that the following activities be implemented to encourage parent-school cooperation:

A. parent-teacher conferences to permit two-way communication between home and school
B. meetings of staff members and groups of parents of those students having special abilities, disabilities, needs, or problems

C. special events of a cultural, ethnic, or topical nature which are initiated by parent groups, involve the cooperative effort of students and parents, and are of general interest to the schools or community
D. open houses in District schools to provide parents with the opportunity to see the school facilities, meet the faculty, and sample the program on a first-hand basis

Each school in the District shall hold an open house at least annually.

For the benefit of children, the Board believes that parents have a responsibility to encourage their child's career in school by:

A. supporting the schools in requiring that the children observe all school rules and regulations, and by accepting their own responsibility for children's intentional in-school behavior;
B. sending children to school with proper attention to their health, personal cleanliness, and dress;
C. maintaining an active interest in the student's daily work and making it possible for the student to complete assigned homework by providing a quiet place and suitable conditions for study;
D. reading all communications from the school, signing, and returning them promptly when required;
E. cooperating with the school in attending conferences, meetings, and workshops set up for the exchange of information of the child's progress in school.

Manawa Elementary School recognizes the importance of the home and school connection. Student success is enhanced when students, parents, and teachers all work together. We strive to create a welcoming environment where families feel comfortable and are confident that we focus on their child's safety and success.

When asked on the annual parent survey, parents overall felt comfortable at our school. Our attendance at Parent/Teacher conferences averages about 90%. While this is positive, the same participation isn't always prevalent at literacy/math nights. We have offered many different opportunities for families including learning about the reading and writing workshop, math night, and other read with your child nights. We will continue to survey our parents to find out what they are interested in learning about as well as a preferable time to attend.

Below is a list of some of the Parent Involvement Opportunities from the 2018-2019 school year-

Event	Date
Open House	August 29
Fall Parent Teacher Conferences	October 4 November 8
Book Fair	November 8, May 2
Wolf Walk	October 12
4K Family Fun Night	February 28
Parent Teacher Conferences	February 28
Holiday Concert	December 19
Author Visit	March 29
Young Writers Festival	March 30
PTO meetings	9/10, 10/12, 5/13
Art Show//Kickstart to Kindergarten	May 2
PTO Fun Day	June 4

VII. Transitioning Students

Manawa Elementary School offers an Early Childhood Program as well as a 4K program. The Early Childhood teacher makes sure that her students not only receive the individual skills practice they need, but they are included in many of the 4K learning opportunities as well.

This year, in coordination with our Title I program, the 4K team invited all parents of incoming preschool students to participate in a family fun and information night. Families had the opportunity to explore many different stations with hands-on activities they could complete with their child. They also got a tour of the school, an opportunity to meet the 4K teacher and principal, and ask any questions regarding their child and their transition into school. There is also a summer school program offered for our students transitioning into kindergarten.

Manawa Elementary School continues to work hard at helping the transition of our students from sixth grade to the Jr/Sr high building which is grades 7-12. When semester rolls around, many of the sixth-grade teachers will no longer allow their students to leave their notebooks and books in their classroom desk. They are asked to learn how to become organized and rely solely on keeping their materials in their locker. This simulates the experience they will have in junior high. Students and teachers also take a day to tour the junior high and meet the teachers. This is often a time for many apprehensive students to get their questions answered and get a feel for what to expect. As a district, we also offer a Summer School Transitions class for our students where they learn how to use their locker, stay organized, test-taking skills, and other useful strategies to make their transition to junior high successful. In addition, all teachers in each grade fill out transition forms for students so that their next teacher is aware of their strengths, needs, and any additional support they will need to provide to ensure the students start the new year set up for success.

VIII. Teacher Participation in Assessment Decisions

Beginning in the 2017-2018 school year, teachers are given an hour and a half each Wednesday for PLC time. During this time, teachers can work with their grade level team on reviewing student achievement data, goal-setting, and developing common assessments. Teachers have also been given training on how to use our STAR assessments to provide skill intervention or enrichment to our students. Having a key role in analyzing and using data makes it more relevant for teachers so there is a strong

connection between data and the curriculum.

IX. Timely and Additional Assistance to Students Having Difficulty Mastering the Standards

MES prides itself on our continually-improving RtI model. A Building Consultation Team meets weekly to discuss students that are not making gains or having difficulty mastering the standards. Teachers sign up to be part of the meetings and bring useful data, so the team can decide for intervention and support. The following link will take you to the District RtI Plan.

We feel it is critical to find our students strengths and weaknesses and create ways to either help enhance their skills or improve their skills. Because of this, thirty minutes a day are set aside for Wolf Time. Wolf Time is an opportunity to work on skill deficits with a teacher that re-teaches and uses programs to close gaps, or it is an enrichment time to work on Project-Based Learning opportunities to enhance our above-benchmark students. Students that do need remediation for their skills are put into a Tier 2 intervention. They are given small group support from either a teacher or a math or reading interventionist. We monitor these students using progress monitoring tools to see if they are making improvements.

The most important part of our RtI process is that we realize that our groups of students are always changing. Grade level teams meet quarterly or sometimes sooner if there is new data, and they determine their new groupings of students. This constant monitoring and willingness to provide useful, tailored support for students makes our Wolf-Time an imperative part of the school day.

X. Coordination and Integration of Federal, State, and Local Resources

Manawa Elementary School utilizes its Title I resources to provide teachers who specialize in reading and math instruction. These staff members work with all children in the school, but they are the main resource people for students needing additional support. In addition to these federal funds, MES uses other state and local resources to best meet the needs of our students and our school's mission. Utilization of all these resources follows federal requirements.

The following is a list of programs that have been made possible through state and local resources:

- Free and Reduced meals for qualifying families
- After School Care on Early Release Days
- School Counselor, Nurse, Speech Therapist and Part-Time Psychologist
- Special Education Services
- Physical and Occupational Therapy
- Seal-A-Smile Dental Assistance
- Routine screenings for hearing, vision, or academic concerns
- Growth and Human Development Classes
- Red Ribbon Week
- Project Backpack (food for families in need)
- Project Back-to-School Backpack (school supplies for students in need)
- Clothing Drive
- Summer School Program for extended learning opportunities
- Intervention materials and support programming for both gifted and at-risk students
- PD opportunities for all staff
- PBIS incentive program
- Student Council

Dissemination, Review and Revision

This schoolwide plan will be shared at the spring PTO meeting along with an upcoming school board presentation. It will also get linked to the district's website under the Title I tab. Review and revision of this plan will take place annually. Once the initial assessment data is gathered during the next school year, the committee will begin to meet and analyze the findings and begin the Needs Assessment to determine focus areas. There will be meetings throughout the school year to reassess and add data and new programming. The plan will continue to be shared with all stakeholders on the district website.

Homecoming Handbook

Presented by Student Council Advisor

Responsibilities/Roles

The student council is responsible for the overall organization of the week. Including the dress up days, Bonfire, Wednesday Night Games, the pep rallies, parade, and other activities as determined by the council.

The Dance will be overseen by the senior class each year. They can decide on the venue, DJ, decorations, start and end time of the dance, time of the grand march, specialty dances, obtaining chaperones, etc. Each of these is determined by that year's senior class. The senior class also chooses the Grand Marshall for the Homecoming parade, that topic is specifically addressed in the Parade section.

Homecoming Court Eligibility

Students who are athletes in good standing in the fall sports (volleyball, football, cross country, and cheer team) are eligible. To be in good standing, a student must not have been suspended or served a suspension during any part of the fall season. If a student has had a suspension in the spring, and is serving it in the fall season, he or she is not eligible. Each student-athlete must maintain no failing grades. Grades will be checked prior to the creation of the ballot. Any ineligible students will be contacted by the student council advisor to inform them of their ineligibility. Furthermore, if a student has been selected to be on the homecoming court as a freshman or sophomore, he or she is not eligible again until his or her senior year.

Once a student is chosen to represent his or her class on the court, the expectation is that he or she maintains as an athlete/student in good standing. If their behavior warrants it, they may be removed from court for the week of homecoming. The removal of a student from homecoming court will be determined by the principal, the athletic director, and the student council advisor with the coordination of the high school staff as needed.

Responsibilities of those on court

The members of the court must remember that they are representing their respective classes as well as the school as a whole, so their behavior must be above reproach.

It is expected that those chosen for court provide a convertible for the parade on that Friday. If they cannot find one, the student council advisor can help in the process. The members of Homecoming Court must also be available for the pep rally on that Friday where the queen and king will be crowned. The members of the court are also expected to be at Friday's football game and the dance so that they can be announced as a group.

Number of Couples on Court

Each class will have one couple representing the class (Freshmen through Juniors). The Senior Class will have three couples, including the King and Queen.

Process for Voting

A google form will be distributed to each class, and each student will be able to vote for one girl representative and one boy representative.

The representatives for each class will be the girl and boy who receive the most votes. The King and Queen will be the ones who receive the most votes in the senior class and then the other two representatives of the senior class will be students who earn the next highest number of votes.

Activities during the week

During the week, each of the activities will be supervised by either the assigned advisors or contracted chaperones. Any unsupervised students or their work may be disqualified from the competition.

Spirit Cup Competition

Each class (freshmen, sophomores, juniors, and seniors) will be judged on the following activities: Dress Up Day participation, Bonfire representation, Wednesday Night Games, Video Scavenger Hunt, Banner (at WNG), Cheer (at WNG), Hallway, Window, Tug of War, Skit, and Float. Each class gets a ranking and points are awarded (first place= 100 points, second place= 80, third = 60, and fourth = 40). Student Council may add or subtract activities from this list when planning for Homecoming during their summer planning meeting.

Sunday Preparation

The Sunday before Homecoming Week, the advisors will arrange for students to complete the window and hallway decorating. The preparation can be done at a time agreed upon by all the parties.

Dress Up Days

Dress up Days will be determined by the Student Council during their summer planning meeting and approved by the principal. The two set dress up days each year are Wednesday as Class Color Day and Friday as Spirit Day. Each day is scored as previously mentioned (each day is up to 100 points for each class).

Bonfire

On Monday night, as a kickoff to Homecoming Week, the school will host a bonfire. The Student Council advisor will work with the city crew and the fire department to arrange to have a bonfire in front of the school. The bonfire should run from about 7:30 to 9:00 pm. Classes will earn spirit cup points based on their attendance at the bonfire. If the bonfire must be rescheduled, there will be no points for attendance awarded.

Wednesday Night Games

Each event for the WNG will be scored individually (up to 100 points for each). The class that scores the most points for that evening will be announced the next day. The games will begin at 5:30 pm. The events(in the order they will be scheduled) for the evening will be:

Opening Ceremony- The students will gather in the bleachers by the football field. To get the students gathered together and show off their banners and cheers.

Banner- Each class will design a banner (up to 3 ft by 6 ft) that they can carry through the opening ceremony- judged on creativity and originality.

Cheer- Each class will design and perform a cheer for their class- judged by participation and creativity.

Capture the Flag- Each class will field a team. They will compete in the woods behind the football field. Freshmen will compete against Seniors and Sophomores against Juniors. The winners will compete. There will be a tie for 3rd place, to save time. The teams will be made up of 10 people must be at least three girls. Only those present in the opening round of play may participate in subsequent rounds.

Girls' Football- Each class will field a team and compete on the football field. It will start with Seniors versus Freshmen and Sophomores versus Juniors. Then the winners will play each other and the losers will as well. Teams of 12, eight girls on the field at a time.The games will be two seven minute halves, with two thirty-second timeouts. Only two coaches MAX will be allowed on the field.

Eating Contest- Each class will field a team of three to eat assigned foods. The competition will take place on the pavement in front of the bleachers by the football field.

Boys' Volleyball- Each class will field a team to compete in the gym. Freshmen play seniors and Sophomores play Juniors. Winners play each other as well as the losers. Teams of twelve, six on the court at a time, two coaches MAX. The teams will play best of three games to 11.

Slip and Slide- One person from each class will compete. They are judged by the distance they travel on the tarp as measured by the staff assembled there. They will compete in the following order: Freshman, Sophomore, Junior, and Senior.

Sportsmanship is expected throughout the Wednesday Night Games. The judges and referees will be made up of staff volunteers. Any unsportsmanlike conduct will lead to immediate removal from the games and possible forfeiture of any contest. If students are not

able to participate in sports or phy ed classes because of an injury, they may not be eligible to participate in the games.

Video Scavenger Hunt

The length and activities that are expected in the Video Scavenger Hunt are determined by the Student Council Officer Team, with final approval of the principal. It will be released to the students the Wednesday before Homecoming and will be due at noon on the Wednesday of Homecoming so that the videos can be compiled into a presentation for the student body to view. The Scavenger Hunt will be judged by its adherence to the list of expectations.

Hallway

Students are expected to decorate the hallway designated for them by the Student Council. The hallway will be judged by the adherence to the theme and/or the designated colors, quality of work,originality, and creativity. The students will be allowed to hang decorations from the ceiling as long as it is removed properly by the beginning of the week following Homecoming.

Window

Each class will be designated a window in the commons to decorate. The paper will be provided by the Student Council but the paints and other materials needed should be purchased using the budget allowed. The window will be judged by adherence to the theme, quality of work, and creativity.

Float

Each class will design a float for the parade. The float will be judged by its adherence to the theme for each class. The float must be on a snowmobile trailer or smaller. It must also be pulled by a tractor, ATV, or UTV. It must NOT be pulled by a pickup truck to prevent any injuries or accidents. Final approval of the pulling vehicle will be made by the class advisor and/or the student council advisor. The float can be accompanied by as many students as needed to walk beside the float, but the Student Council Advisor will work with the Class Advisors to determine the safest number of students to ride on the float and in the vehicle pulling the float. The Class Advisor will also coordinate with the parents of the students designing/building the float to ensure that the float is being built safely and in a supervised way. The float will be judged on adherence to the theme, appearance, quality of work, and creativity.

Budget

Each class will have access to $250 (from class funds) to cover the costs of the Float, Window, Hallway, and Skit. When making purchases, students need to use the Tax-Exempt Form (available in the main office). Any questions should be directed to the Main Office staff or the Student Council Advisor.

Pep Rally

The pep rally will be on Friday, at a time and schedule to be determined by the student council.

During the pep rally, the following will take place:

A **volleyball match** between the staff and the winning team from Wednesday Night Games. If the students wish to, the senior girls can play the winning team from Wednesday Night Games instead of the staff. The teams will play one game to 25.

Tug of War between the classes. Seniors v. Freshmen and Sophomores v. Juniors. Then the winners play and if time the losers play to determine the places.

Skits are then performed by the classes- in the following order: Freshmen, Sophomores, Juniors, and Seniors. Skits will be judged on adherence to theme, creativity/originality, and quality of work. There may also be a penalty assessed for either too long or too short of a presentation.

Coronation takes place next. The Student Council Advisor will work with the Homecoming Royalty from the previous year to include them if they choose.

After the coronation, the student body will watch the highlights from **Video Scavenger Hunt**. If there is extra time, there may be a game of Ships and Sailors or a Minute to Win It game. Then, the student body will be dismissed for the parade.

Parade

The senior class working with their advisor(s) will choose the grand marshall for the parade. This person should be connected with the school district or have impacted students in a positive manner. That person will be at the front of the parade and will also be expected to speak at the pep rally at Triangle Park.

Each class will have a float as well as their representatives from court in the parade. The band and any other group that would like to is welcome to have a float or presence in the parade.

The route will be around the school and then on 4th St. down Grove St. to Union St. then to Bridge St. to Triangle Park.

Triangle Park Pep Rally

At the conclusion of the parade, there will be a brief pep rally at Triangle Park. The Homecoming Court will be announced and then the Grand Marshall of the parade will be asked to speak. After the Grand Marshall's speech, the Student Council advisor will present the Spirit Cup to the class that has earned the most points for the week.

Upon conclusion of the parade and Triangle Park pep rally, students must leave in a safe and appropriate manner. The students who rode in the parade on a float will be the only students allowed to leave the parade on a float.

Banner & Cheer Judging Sheet

Class	**9th**	**10th**	**11th**	**12th**	
Creativity	**1**	**2**	**3**	**4**	**5**
Originality	**1**	**2**	**3**	**4**	**5**
Quality of Work	**1**	**2**	**3**	**4**	**5**
				Total	

Comments:

Rank 1st 2nd 3rd 4th

WIndow & Hallway Judging Sheet

Class	**9th**	**10th**	**11th**	**12th**	
Creativity	**1**	**2**	**3**	**4**	**5**
Originality	**1**	**2**	**3**	**4**	**5**
Quality of Work	**1**	**2**	**3**	**4**	**5**
Adherence to Theme/Color	**1**	**2**	**3**	**4**	**5**
				Total	

Comments:

Rank 1st 2nd 3rd 4th

Skit Judging Sheet

Class	**9th**	**10th**	**11th**	**12th**	
Creativity	**1**	**2**	**3**	**4**	**5**
Originality	**1**	**2**	**3**	**4**	**5**
Quality of Work	**1**	**2**	**3**	**4**	**5**
Adherence to Theme	**1**	**2**	**3**	**4**	**5**
Time	**Too Short (-1 point)**	**Too Long (-1 point)**	**Just Right**		
				Total	

Comments:

Rank 1st 2nd 3rd 4th

Float Judging Sheet

Class	**9th**	**10th**	**11th**	**12th**	
Creativity	**1**	**2**	**3**	**4**	**5**
Originality	**1**	**2**	**3**	**4**	**5**
Quality of Work	**1**	**2**	**3**	**4**	**5**
Adherence to Theme/Color	**1**	**2**	**3**	**4**	**5**
				Total	

Comments:

Rank 1st 2nd 3rd 4th

Course Name:	Biology 1		
Credits:	1		
Prerequisites:	N/A		
Description:	This introductory course is designed to build the foundations needed for basic knowledge of life sciences as well as capture the interest of those looking to challenge themselves in more advanced science department offerings. Lab work and group presentations will be included to develop critical thinking and organizational skills.		
Academic Standards:	Next Generation Science Standards (NGSS)		
Units:	**Length:**	**Unit Standards:**	**Unit Outcomes:**
Intro to Biology	2 weeks	HS-LS1-2: Develop and use a model to illustrate the hierarchical organization of interacting systems that provide specific functions within multicellular organisms. HS-LS1-3: Plan and conduct an investigation to provide evidence that feedback mechanisms maintain homeostasis. HS-LS2-3: Construct and revise an explanation based on evidence for the cycling of matter and flow of energy in aerobic and anaerobic conditions.	Develop and use a model to illustrate the hierarchical organization of interacting systems that provide specific functions within multicellular organisms. Plan and conduct an investigation to provide evidence that feedback mechanisms maintain homeostasis. Construct and revise an explanation based on evidence for the cycling of matter and flow of energy in aerobic and anaerobic conditions.
Principles of Ecology	3 weeks	HS-LS2-3: Construct and revise an explanation based on evidence for the cycling of matter and flow of energy in aerobic and anaerobic conditions. HS-LS2-4: Use mathematical and/or computational representations to support explanations of factors that affect carrying capacity of ecosystems at different scales. HS-LS2-5: Develop a model to illustrate the role of photosynthesis and cellular respiration in the cycling of carbon among the biosphere, atmosphere, hydrosphere, and geosphere.	Construct and revise an explanation based on evidence for the cycling of matter and flow of energy in aerobic and anaerobic conditions. Use mathematical and/or computational representations to support explanations of factors that affect carrying capacity of ecosystems at different scales. Develop a model to illustrate the role of photosynthesis and cellular respiration in the cycling of carbon among the biosphere, atmosphere, hydrosphere, and geosphere.

Communities and Biomes	2 weeks	HS-LS4-2: Construct an explanation based on evidence that the process of evolution primarily results from four factors: (1) the potential for a species to increase in number, (2) the heritable genetic variation of individuals in a species due to mutation and sexual reproduction, (3) competition for limited resources, and (4) the proliferation of those organisms that are better able to survive and reproduce in the environment. HS-LS4-5: Evaluate the evidence supporting claims that changes in environmental conditions may result in: (1) increases in the number of individuals of some species, (2) the emergence of new species over time, and (3) the extinction of other species. HS-LS4-6: Create or revise a simulation to test a solution to mitigate adverse impacts of human activity on biodiversity.	Construct an explanation based on evidence that the process of evolution primarily results from four factors: (1) the potential for a species to increase in number, (2) the heritable genetic variation of individuals in a species due to mutation and sexual reproduction, (3) competition for limited resources, and (4) the proliferation of those organisms that are better able to survive and reproduce in the environment. Evaluate the evidence supporting claims that changes in environmental conditions may result in: (1) increases in the number of individuals of some species, (2) the emergence of new species over time, and (3) the extinction of other species. Create or revise a simulation to test a solution to mitigate adverse impacts of human activity on biodiversity.
Populations	2 weeks	HS-LS2-1: Use mathematical and/or computational representations to support explanations of factors that affect carrying capacity of ecosystems at different scales. HS-LS2-2: Use mathematical representations to support and revise explanations based on evidence about factors affecting biodiversity and populations in ecosystems of different scales. HS-LS2-6: Evaluate the claims, evidence, and reasoning that the complex interactions in ecosystems maintain relatively consistent numbers and types of organisms in stable conditions, but changing conditions may result in a new ecosystem. HS-LS4-5: Evaluate the evidence supporting claims that changes in environmental conditions may result in: (1) increases in the number of individuals of some species, (2) the emergence of new species over time, and (3) the extinction of other species.	Use mathematical and/or computational representations to support explanations of factors that affect carrying capacity of ecosystems at different scales.Use mathematical representations to support and revise explanations based on evidence about factors affecting biodiversity and populations in ecosystems of different scales.Evaluate the claims, evidence, and reasoning that the complex interactions in ecosystems maintain relatively consistent numbers and types of organisms in stable conditions, but changing conditions may result in a new ecosystem.Evaluate the evidence supporting claims that changes in environmental conditions may result in: (1) increases in the number of individuals of some species, (2) the emergence of new species over time, and (3) the extinction of other species.
Biodiversity	2 weeks	HS-LS2-2: Use mathematical representations to support and revise explanations based on evidence about factors affecting biodiversity and populations in ecosystems of different scales. HS-LS2-7: Design, evaluate, and refine a solution for reducing the impacts of human activities on the environment and biodiversity. HS-ETS1-1: Analyze a major global challenge to specify qualitative and quantitative criteria and constraints for solutions that account for societal needs and wants.	Use mathematical representations to support and revise explanations based on evidence about factors affecting biodiversity and populations in ecosystems of different scales.Design, evaluate, and refine a solution for reducing the impacts of human activities on the environment and biodiversity Analyze a major global challenge to specify qualitative and quantitative criteria and constraints for solutions that account for societal needs and wants.

Chemistry of Life	5 weeks	HS-LS1-3: Plan and conduct an investigation to provide evidence that feedback mechanisms maintain homeostasis. HS-LS1-6: Construct and revise an explanation based on evidence for how carbon, hydrogen, and oxygen from sugar molecules may combine with other elements to form amino acids and/or other large carbon-based molecules. HS-ETS-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.	Plan and conduct an investigation to provide evidence that feedback mechanisms maintain homeostasis.Construct and revise an explanation based on evidence for how carbon, hydrogen, and oxygen from sugar molecules may combine with other elements to form amino acids and/or other large carbon-based molecules.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
Life of a Cell	2 weeks	HS-LS1-6: Construct and revise an explanation based on evidence for how carbon, hydrogen, and oxygen from sugar molecules may combine with other elements to form amino acids and/or other large carbon-based molecules. HS-LS1-2: Develop a model to illustrate the hierarchical organization of interacting systems that provide specific functions within multicellular organisms. HS-LS1-3: Plan and conduct an investigation to provide evidence that feedback mechanisms maintain homeostasis. 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.	Construct and revise an explanation based on evidence for how carbon, hydrogen, and oxygen from sugar molecules may combine with other elements to form amino acids and/or other large carbon-based molecules. Develop a model to illustrate the hierarchical organization of interacting systems that provide specific functions within multicellular organisms. Plan and conduct an investigation to provide evidence that feedback mechanisms maintain homeostasis. 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.
Cell Transport and Cell Cycle	3 weeks	HS-LS1-4: Use a model to illustrate the role of cellular division (mitosis) and differentiation in producing and maintaining complex organisms. HS-LS1-3: Plan and conduct an investigation to provide evidence that feedback mechanisms maintain homeostasis. HS-LS2-3: Construct and revise an explanation based on evidence for the cycling of matter and flow of energy in aerobic and anaerobic conditions.	Use a model to illustrate the role of cellular division (mitosis) and differentiation in producing and maintaining complex organisms. Plan and conduct an investigation to provide evidence that feedback mechanisms maintain homeostasis. Construct and revise an explanation based on evidence for the cycling of matter and flow of energy in aerobic and anaerobic conditions.

Need for Energy	2 weeks	HS-LS2-5: Develop a model to illustrate the role of photosynthesis and cellular respiration in the cycling of carbon among the biosphere, atmosphere, hydrosphere, and geosphere. HS-LS1-5: Use a model to illustrate how photosynthesis transforms light energy into stored chemical energy. HS-LS1-3: Plan and conduct an investigation to provide evidence that feedback mechanisms maintain homeostasis. HS-LS1-7: Construct and revise an explanation based on evidence for the cycling of matter and flow of energy in aerobic and anaerobic conditions. HS-LS2-3: Use a model to illustrate that cellular respiration is a chemical process whereby the bonds of food molecules and oxygen molecules are broken and the bonds in new compounds are formed resulting in a net transfer of energy.	Develop a model to illustrate the role of photosynthesis and cellular respiration in the cycling of carbon among the biosphere, atmosphere, hydrosphere, and geosphere. Use a model to illustrate how photosynthesis transforms light energy into stored chemical energy. Plan and conduct an investigation to provide evidence that feedback mechanisms maintain homeostasis. Use a model to illustrate that cellular respiration is a chemical process whereby the bonds of food molecules and oxygen molecules are broken and the bonds in new compounds are formed resulting in a net transfer of energy.Construct and revise an explanation based on evidence for the cycling of matter and flow of energy in aerobic and anaerobic conditions.
Mendel and Meiosis	3 weeks	HS-LS2-8: Evaluate the evidence for the role of group behavior on individual and species' chances to survive and reproduce. HS-LS3-2: Make and defend a claim based on evidence that inheritable genetic variations may result from: (1) new genetic combinations through meiosis, (2) viable errors occurring during replication, and/or (3) mutations caused by environmental factors. HS-LS3-3: Apply concepts of statistics and probability to explain the variation and distribution of expressed traits in a population. HS-LS4-3: Apply concepts of statistics and probability to support explanations that organisms with an advantageous heritable trait tend to increase in proportion to organisms lacking this trait.	Evaluate the evidence for the role of group behavior on individual and species' chances to survive and reproduce.Make and defend a claim based on evidence that inheritable genetic variations may result from: (1) new genetic combinations through meiosis, (2) viable errors occurring during replication, and/or (3) mutations caused by environmental factors. Apply concepts of statistics and probability to explain the variation and distribution of expressed traits in a population. Apply concepts of statistics and probability to support explanations that organisms with an advantageous heritable trait tend to increase in proportion to organisms lacking this trait.

DNA to Genes: Biochemistry	2 weeks	HS-LS2-8: Evaluate the evidence for the role of group behavior on individual and species' chances to survive and reproduce. HS-LS3-1: Ask questions to clarify relationships about the role of DNA and chromosomes in coding the instructions for characteristic traits passed from parents to offspring. HS-LS3-2: Make and defend a claim based on evidence that inheritable genetic variations may result from: (1) new genetic combinations through meiosis, (2) viable errors occurring during replication, and/or (3) mutations caused by environmental HS-LS3-3: Apply concepts of statistics and probability to explain the variation and distribution of expressed traits in a population. HS-LS4-3: Apply concepts of statistics and probability to support explanations that organisms with an advantageous heritable trait tend to increase in proportion to organisms lacking this trait. HS-ETS1-1: Analyze a major global challenge to specify qualitative and quantitative criteria and constraints for solutions that account for societal needs and wants.	Evaluate the evidence for the role of group behavior on individual and species' chances to survive and reproduce. Ask questions to clarify relationships about the role of DNA and chromosomes in coding the instructions for characteristic traits passed from parents to offspring. Make and defend a claim based on evidence that inheritable genetic variations may result from: (1) new genetic combinations through meiosis, (2) viable errors occurring during replication, and/or (3) mutations caused by environmental factors. Apply concepts of statistics and probability to explain the variation and distribution of expressed traits in a population.Apply concepts of statistics and probability to support explanations that organisms with an advantageous heritable trait tend to increase in proportion to organisms lacking this trait. Analyze a major global challenge to specify qualitative and quantitative criteria and constraints for solutions that account for societal needs and wants.
Patterns of Heredity and Human Genetics	2 weeks	HS-LS1-1: Construct an explanation based on evidence for how the structure of DNA determines the structure of proteins which carry out the essential functions of life through systems of specialized cells. HS-LS3-1: Ask questions to clarify relationships about the role of DNA and chromosomes in coding the instructions for characteristic traits passed from parents to offspring. HS-LS3-2: Make and defend a claim based on evidence that inheritable genetic variations may result from: (1) new genetic combinations through meiosis, (2) viable errors occurring during replication, and/or (3) mutations caused by environmental factors. HS-LS3-3: Apply concepts of statistics and probability to explain the variation and distribution of expressed traits in a population. HS-LS4-3: Apply concepts of statistics and probability to support explanations that organisms with an advantageous heritable trait tend to increase in proportion to organisms lacking this trait. HS-LS4-6: Create or revise a simulation to test a solution to mitigate adverse impacts of human activity on biodiversity.	Construct an explanation based on evidence for how the structure of DNA determines the structure of proteins which carry out the essential functions of life through systems of specialized cells. Ask questions to clarify relationships about the role of DNA and chromosomes in coding the instructions for characteristic traits passed from parents to offspring. Make and defend a claim based on evidence that inheritable genetic variations may result from: (1) new genetic combinations through meiosis, (2) viable errors occurring during replication, and/or (3) mutations caused by environmental factors. Apply concepts of statistics and probability to explain the variation and distribution of expressed traits in a population.Apply concepts of statistics and probability to support explanations that organisms with an advantageous heritable trait tend to increase in proportion to organisms lacking this trait. Create or revise a simulation to test a solution to mitigate adverse impacts of human activity on biodiversity.

The Influences on Evolution	3 weeks	HS-LS2-8: Evaluate the evidence for the role of group behavior on individual and species' chances to survive and reproduce. HS-LS4-1: Communicate scientific information that common ancestry and biological evolution are supported by multiple lines of empirical evidence. HS-LS4-2: Construct an explanation based on evidence that the process of evolution primarily results from four factors: (1) the potential for a species to increase in number, (2) the heritable genetic variation of individuals in a species due to mutation and sexual reproduction, (3) competition for limited resources, and (4) the proliferation of those organisms that are better able to survive and reproduce in the environment. HS-LS4-3: Apply concepts of statistics and probability to support explanations that organisms with an advantageous heritable trait tend to increase in proportion to organisms lacking this trait. HS-LS4-4: Construct an explanation based on evidence for how natural selection leads to adaptation of populations. HS-LS4-5: Evaluate the evidence supporting claims that changes in environmental conditions may result in: (1) increases in the number of individuals of some species, (2) the emergence of new species over time, and (3) the extinction of other species.	Evaluate the evidence for the role of group behavior on individual and species' chances to survive and reproduce. Communicate scientific information that common ancestry and biological evolution are supported by multiple lines of empirical evidence. Construct an explanation based on evidence that the process of evolution primarily results from four factors: (1) the potential for a species to increase in number, (2) the heritable genetic variation of individuals in a species due to mutation and sexual reproduction, (3) competition for limited resources, and (4) the proliferation of those organisms that are better able to survive and reproduce in the environment. Apply concepts of statistics and probability to support explanations that organisms with an advantageous heritable trait tend to increase in proportion to organisms lacking this trait. Construct an explanation based on evidence for how natural selection leads to adaptation of populations. Evaluate the evidence supporting claims that changes in environmental conditions may result in: (1) increases in the number of individuals of some species, (2) the emergence of new species over time, and (3) the extinction of other species.

Unit Name: **Intro to Biology**	**Length:** 2 weeks
Standards: HS-LS1-2 HS-LS1-3 HS-LS2-3	**Outcomes:** Develop and use a model to illustrate the hierarchical organization of interacting systems that provide specific functions within multicellular organisms. Plan and conduct an investigation to provide evidence that feedback mechanisms maintain homeostasis. Construct and revise an explanation based on evidence for the cycling of matter and flow of energy in aerobic and anaerobic conditions.
Essential Questions: How can you relate Homeostasis to all of the Topics/Chapters in biology? What impact does each Level of Organization have on Homeostasis? What is the direct relationship between the Characteristics of Livings to the Levels of Organization? How does the use of non- linguistic representations of data allow us to analyze and conclude upon data? Why do scientists study/collect data on one variable vs. many variables? Why is it important to utilize the “correct tool for the job” in the science lab? **Academic Vocabulary:** Biology, Organism, Organization, Reproduction, Species, Growth, Development, Environment, Stimulus, Response, Adaptation, Homeostasis, Energy, Evolution, Scientific Methods, Hypothesis, Control, Independent Variable, Dependent Variable	**Learning Targets:** Students will be able to: (Skills) Compare and contrast the Levels of Organization of Living Things. Recall the characteristics of displaying organization. Students will know: (Concepts) Examples of Adaptations and Homeostasis Scientific Methods Interpretation and application of terminology. Data collection techniques Graphing Techniques
Topic 1: **What is Biology**	**Length:** 1 week
Lesson Frame: Characteristics of Living Things	We will:
	I will:
Lesson Frame: PHEOC	We will:
	I will:
Lesson Frame: Lab Protocols/ Procedures/Safety	We will:
	I will:

Performance Tasks: Mini Lab: Is Mildew Alive? Mini Lab: Microscope Sketch and Review Writing a Lab Report Lab Safety Quiz/Agreement	Notes: Collect leaf samples afflicted with fall mildew Walk About: ID Characteristics of Living Things
Topic 2: **Observations and Conclusions**	**Length:** 1 week
Lesson Frame: Proper Tool For the Job	We will:
	I will:
Lesson Frame: Data Collection/Types of Data	We will:
	I will:
Lesson Frame: The Best Way to Make a Conclusion: Graphing	We will:
	I will:
Performance Tasks: Practical Exam: ID Lab Equipment Parts of the Microscope Measurements - Data Collection - Graphing Lab Reflective Literacy: Current Event Google Classroom Turn In	Notes: Review Game Day: Kahoots Mind Jogger Pictionary
We will.., I will... statements:	
define biology.	define and give an example of a theory.
identify the 5 characteristics of life.	define independent variable.
use the 5 characteristics of life to determine if an object is alive.	identify the independent variable in an experiment.
define homeostasis and give an example.	define dependent variable.
list the two processes an organism uses to maintain homeostasis.	identify the dependent variable in an experiment.
define an negative feedback system.	define constants.
explain how a negative feedback system works.	identify the constants in an experiment.
identify the steps of scientific thinking.	define control.
give an example of what a student would be doing at each step.	identify the control of an experiment.
define and give an example of an observation using senses.	define a species.
define and give an example of an observation as data.	define biotechnology.
define and give an example of data.	determine if ethical behavior was followed during an investigation.
define and give an example of an experiment.	define Qualitative observation/data and give an example.
define and give an example of hypothesis.	

Unit Name: **Principles of Ecology**	**Length:** 3 weeks
Standards: HS-LS2-3: HS-LS2-4: HS-LS2-5:	**Outcomes:** Construct and revise an explanation based on evidence for the cycling of matter and flow of energy in aerobic and anaerobic conditions. Use mathematical and/or computational representations to support explanations of factors that affect carrying capacity of ecosystems at different scales. Develop a model to illustrate the role of photosynthesis and cellular respiration in the cycling of carbon among the biosphere, atmosphere, hydrosphere, and geosphere.
Essential Questions: How can you distinguish between the 3 types of symbiosis? How can you determine situational interactions in nature? What is the relevance of knowing and applying limiting factors to various ecosystems or other levels of organization? How will biome mapping help to reinforce learning through visual context? Why do Ecological Pyramids depicting changes in energy flow, population size, and biomasses have relevance to food chains and food webs? Why is it important to utilize the “correct tool for the job” in the science lab? **Academic Vocabulary:** Ecology, Biosphere, Abiotic Factor, Biotic Factor, Population, Biological Community, Ecosystem, Habitat, Niche, Symbiosis, Commensalism, Mutualism, Parasitism, Autotroph, Heterotroph, Decomposer, Food Chain, Trophic Level, Food Web, Biomass	**Learning Targets:** Students will be able to: (Skills) Compare and contrast the different levels of biological organization and living relationships important in ecology. Implement ecological pyramids to various food chains. Trace the path of energy and matter in an ecosystem. Recall symbiotic relationships citing several examples. Students will know: (Concepts) Biotic and abiotic factors in the environment. The three types of interactions. The difference between niche and habitat. How organisms satisfy their nutritional needs. How matter is “cycled” in the parts of the biosphere.
Topic 1: **Limiting Factors**	**Length: 2** weeks
Lesson Frame: Biotic vs.Abiotic	We will:
	I will:
Lesson Frame: Levels of Organization	We will:
	I will:
Lesson Frame: Units of Measure	We will:
	I will:

Performance Tasks: Venn Diagramming Mini Lab: Salt Tolerance of Seeds Problem Solving: How Cowbirds Affect Populations Metric System LAb	Notes: Milkweed (or similar) Community on site
Topic 2: **Ecological Pyramids**	**Length:** 1 week
Lesson Frame: Populations	We will:
	I will:
Lesson Frame: Energy	We will:
	I will:
Lesson Frame: Biomass	We will:
	I will:
Performance Tasks: Organisms and Their Environment Nutrition and Energy Flow Practical Exam: Cycling In Nature Reflective Literacy: Current Event Google Classroom Turn In	Notes: Review Game Day: Kahoots Mind Jogger Pictionary
We will..., I will... statements for Units 2-5	
define ecology and know the difference between a species, population, and community -abiotic factors -population -ecosytems -biotic factors - community -biome -organism -biosphere	know how matter transfers through an ecosystem.
the 4 factors involved in determiniing biomes	define biodiversity.
know how energy transfers through an ecosystem -trophic level -autotroph/producer -heterotroph/consumer and the different orders/ herbivore, carnivore, omnivore, decomposer, scavenger	locate where on Earth has more biodiversity.
know 4 parts of population dynamics	give an example of biodiversity.
compare a food chain and a food web and know what the arrows mean!	compare and contrast the levels of organization.
know how to interpret a pyramid of energy, numbers, or biomass	

Unit Name: **Communities and Biomes**	**Length:** 2 weeks
Standards: HS-LS4-2 HS-LS4-5 HS-LS4-6	**Outcomes:** Construct an explanation based on evidence that the process of evolution primarily results from four factors: (1) the potential for a species to increase in number, (2) the heritable genetic variation of individuals in a species due to mutation and sexual reproduction, (3) competition for limited resources, and (4) the proliferation of those organisms that are better able to survive and reproduce in the environment. Evaluate the evidence supporting claims that changes in environmental conditions may result in: (1) increases in the number of individuals of some species, (2) the emergence of new species over time, and (3) the extinction of other species. Create or revise a simulation to test a solution to mitigate adverse impacts of human activity on biodiversity.
Essential Questions: How do you determine limiting factors like precipitation, temperature, latitude in non-linguistic representations of specific biome data? How will biome mapping help to reinforce learning through visual context? Why does ecological succession get confused with evolution? How do you distinguish between the major land biomes through those biomes abiotic/biotic characteristic? What is the relevance of knowing and applying knowledge of aquatic biomes zones to the 4 sphere layers (biosphere, atmosphere, hydrosphere, and lithosphere)? **Academic Vocabulary:** Limiting Factor, Tolerance, Succession, Primary Succession, Climax Community, Secondary Succession, Biome, Photic Zone, Aphotic Zone, Estuary, Intertidal Zone, Plankton, Tundra, Taiga, Desert, Grassland, Temperate/Deciduous Forest, Tropical Rainforest	**Learning Targets:** Students will be able to: (Skills) Explain how Limiting Factors and Ranges of Tolerance affect the distribution of organisms in biomes. Describe the conditions under which primary and secondary succession take place. Students will know: (Concepts) Limiting Factors that make biomes imperfect. The sequence and stages of ecological succession. All Major Aquatic and Terrestrial Biomes. The various Aquatic Biome “zones” Photic, Aphotic and Intertidal.
Topic 1: Communities	**Length:**
Lesson Frame: Review Levels of Organization	We will:
	I will:
Lesson Frame: Symbiosis Examples	We will:
	I will:
Lesson Frame: the 4 Spheres	We will:
	I will:

Performance Tasks: Mini-Lab: Looking at Lichens/Pioneer Species Walk-About: 3 Levels of Succession Concept Mapping: Primary vs. Secondary Succession	Notes: Identify Pioneer Species and collect samples on site Compare and Contrast Three Levels of Succession on site
Topic 2: **Biomes**	**Length:**
Lesson Frame: Precipitation and Temperature	We will:
	I will:
Lesson Frame: Latitude Longitude	We will:
	I will:
Lesson Frame: Flora / Fauna	We will:
	I will:
Performance Tasks: Limiting Factors Activity Critical Thinking: Where am I? Practical Exam: Biome Ranges of Tolerance: Temp/Precip	Notes: Review Game Day: Kahoots Mind Jogger Pictionary
We will..., I will... statements for Units 2-5	
define ecology and know the difference between a species, population, and community -abiotic factors -population -ecosytems -biotic factors - community -biome -organism -biosphere	know how matter transfers through an ecosystem.
the 4 factors involved in determiniing biomes	define biodiversity.
know how energy transfers through an ecosystem -trophic level -autotroph/producer -heterotroph/consumer and the different orders/ herbivore, carnivore, omnivore, decomposer, scavenger	locate where on Earth has more biodiversity.
know 4 parts of population dynamics	give an example of biodiversity.
compare a food chain and a food web and know what the arrows mean!	compare and contrast the levels of organization.
know how to interpret a pyramid of energy, numbers, or biomass	

Unit Name: **Populations**	**Length:** 2 weeks
Standards: HS-LS2-1: HS-LS2-2: HS-LS2-6: HS-LS4-5:	**Outcomes:** Use mathematical and/or computational representations to support explanations of factors that affect carrying capacity of ecosystems at different scales.Use mathematical representations to support and revise explanations based on evidence about factors affecting biodiversity and populations in ecosystems of different scales.Evaluate the claims, evidence, and reasoning that the complex interactions in ecosystems maintain relatively consistent numbers and types of organisms in stable conditions, but changing conditions may result in a new ecosystem.Evaluate the evidence supporting claims that changes in environmental conditions may result in: (1) increases in the number of individuals of some species, (2) the emergence of new species over time, and (3) the extinction of other species.
Essential Questions: What are limiting factors for individual populations (including humans)? How can you distinguish between the five influences on population dynamics? (Cornell Notes Section 4.1) How can you put a “face to the name” when describing examples of Population Distribution? What is the relevance of knowing and applying the Effects of Population Growth Rate when studying Human Populations? (Cornell Notes Section 4.2) **Academic Vocabulary:** Population, Exponential Growth, Carrying Capacity, Life History Pattern, Density Dependent Factor, Density Independent Factor, Limiting Factor, Demography, Birth Rate, Death Rate, Doubling Time, Age Structure	**Learning Targets:** Students will be able to: (Skills) Predict the effects of environmental factors on population growth. Compare the Age Structure of human population growth rates. Explain the relationship between populations (humans included) and their environment. Identify how the birth rate and the death rate affect the rate at which a population changes. Students will know: (Concepts) How to Compare and Contrast Exponential Growth, and Linear Growth? How Carrying Capacity plays a major role in population dynamics? Relationships of reproductive patterns for different populations of organisms to the population models of population growth. The World and US Population calculations and outlooks.
Topic 1: **Population Dynamics**	**Length:** 1 week
Lesson Frame: Independent vs Dependent Density Factors	We will:
	I will:
Lesson Frame: Exponential vs Linear Growth	We will:
	I will:
Lesson Frame: Hardy Weinberg Equation	We will:
	I will:

Performance Tasks: BioLab: How to Determine Population Size? (Catch and Release) Critical Thinking: Effects of Predators on Prey Populations One acre plot calculations on site: Maple Tree Population vs Oak Tree Population Three age groups according to diameter Sub categories to consider red/white/bur oak and sugar/red/silver maple Graph Data	Notes:
Topic 2: **Human Population**	**Length:** 1 week
Lesson Frame: Age Structure Charts	We will:
	I will:
Lesson Frame: Immigration vs. Emigration	We will:
	I will:
Performance Tasks Mini-Lab: Calculating Doubling Time Practical Exam: Populations Reflective Literacy: Current Event Google Classroom Turn In	Notes: Review Game Day Kahoots Mind Jogger Pictionary
We will..., I will... statements for Units 2-5	
define ecology and know the difference between a species, population, and community -abiotic factors -population -ecosytems -biotic factors - community -biome -organism -biosphere	know how matter transfers through an ecosystem.
the 4 factors involved in determiniing biomes	define biodiversity.
know how energy transfers through an ecosystem -trophic level -autotroph/producer -heterotroph/consumer and the different orders/ herbivore, carnivore, omnivore, decomposer, scavenger	locate where on Earth has more biodiversity.
know 4 parts of population dynamics	give an example of biodiversity.
compare a food chain and a food web and know what the arrows mean!	compare and contrast the levels of organization.
know how to interpret a pyramid of energy, numbers, or biomass	

Unit Name: **Biodiversity**	**Length:** 2 weeks
Standards: HS-LS2-2 HS-LS2-7 HS-ETS1-1	**Outcomes:** Use mathematical representations to support and revise explanations based on evidence about factors affecting biodiversity and populations in ecosystems of different scales.Design, evaluate, and refine a solution for reducing the impacts of human activities on the environment and biodiversity Analyze a major global challenge to specify qualitative and quantitative criteria and constraints for solutions that account for societal needs and wants.
Essential Questions: How do you identify the 3 ways/methods in which Biodiversity can be studied? Citing several examples for each. What is the real life lesson to understanding and applying the importance of Biodiversity to nature and humans? (Cornell Notes Section 5.1) How do you recognize the difference between the loss or threat to biodiversity while describing examples? Does the threat of biodiversity hold long term or short term effects? Cite examples of habitat fragmentation vs habitat degradation. How can you relate to the 6 interventions that are the backbone of Conservation Biology and how will they practice them upon their departure from secondary education? **Academic Vocabulary:** Biodiversity, Extinction, Endangered Species, Threatened Species, Habitat Fragmentation, Edge Effect, Habitat Degradation, Acid Precipitation, Ozone Layer, Exotic Species, Conservation Biology, Natural Resources, Habitat Corridors, Sustainable Use, Reintroduction Programs, Captivity	**Learning Targets:** Students will be able to: (Skills) Describe strategies used in conservation biology. Relate the success in protecting an Endangered Species to the methods used to protect it. Personalize and Rank Order the 6 conservation interventions. Students will know: (Concepts) That having base knowledge of Biodiversity will influence their actions toward conservation. The various threats to the loss of biodiversity. How to distinguish between the changes the changes that may result in the loss of a species.
Topic 1: **Vanishing Species**	**Length:** 1 week
Lesson Frame: Threatened, Endangered vs Extinct Species	We will:
	I will:
Lesson Frame: Geographical literacy.	We will:
	I will:
Lesson Frame: Pollution, Recycling and Conservancy	We will:
	I will:

Performance Tasks: Mini-Lab: Measuring Species Diversity: I.D. Eye on the Environment: Habitat Degradation vs. Habitat Fragmentation Critical Thinking: DDT and the Food Chain Habitat Fragmentation Examples on site	Notes:
Topic 2: **Conservation Biology**	**Length:** 1 week
Lesson Frame: Habitat Degradation vs Habitat Fragmentation	We will:
	I will:
Lesson Frame: The 6 Interventions to Conservation Biology	We will:
	I will:
Lesson Frame: Conservation License WI DNR	We will:
	I will:
Performance Tasks Topic/Chapter Notes (Cornell) Lab Practical - Picture ID RAFT Writing Project: Losing or Lost our Habitat and Critters that Belong Index of Diversity Calculation (Tree Species) on site Reflective Literacy: Current Event Google Classroom Turn In	Notes: Review Game Day Kahoots Mind Jogger Pictionary
We will..., I will... statements for Units 2-5	
define ecology and know the difference between a species, population, and community -abiotic factors -population -ecosytems -biotic factors - community -biome -organism -biosphere	know how matter transfers through an ecosystem.
the 4 factors involved in determiniing biomes	define biodiversity.
know how energy transfers through an ecosystem -trophic level -autotroph/producer -heterotroph/consumer and the different orders/ herbivore, carnivore, omnivore, decomposer, scavenger	locate where on Earth has more biodiversity.
know 4 parts of population dynamics	give an example of biodiversity.
compare a food chain and a food web and know what the arrows mean!	compare and contrast the levels of organization.
know how to interpret a pyramid of energy, numbers, or biomass	

Unit Name: **Chemistry of Life**	**Length:** 5 weeks
Standards: HS-LS1-3: HS-LS1-6: HS-ETS-4:	**Outcomes:** Plan and conduct an investigation to provide evidence that feedback mechanisms maintain homeostasis.Construct and revise an explanation based on evidence for how carbon, hydrogen, and oxygen from sugar molecules may combine with other elements to form amino acids and/or other large carbon-based molecules. 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
Essential Questions: How does the does the Language of Chemistry have an impact on Living Things? What are the trends and history of the periodic table? Is there a direct relationship between the atomic structure and stability? If so, then how? Why is water the most influential and most important molecule on the planet? How do the 4 key factors affecting the rate of diffusion have a bearing on living things? Why do we concern ourselves so readily to the Essential Life Substances? Why do we get to promote the building of and breaking down life substances (meaning… the entire metabolic process)? What do we have to gain by emphasizing the 4 properties of water: Polarity, Resistant to Temp Change, Diffusion, and Capillary Action? Where did all life on earth come from? **Academic Vocabulary:** Element, Atom, Nucleus, Isotope, Compound, Covalent Bond, Molecule, Ion, Ionic Bond, Metabolism, Mixture, Solution, pH, Acid, Base, Polar Molecule, Hydrogen Bond, Diffusion, Dynamic equilibrium, Isomer, Polymer, Carbohydrate, Lipid, Protein, Amino acid, Peptide bond, Enzyme, Nucleic acid, Nucleotide	**Learning Targets:** Students will be able to: (Skills) Reflect upon such topics as presented in their Current Event. Identify how the process of diffusion occurs and why it is important to cells. Classify the variety of organic compounds. Describe how polymers are formed and broken down in organisms. Compare the chemical structures of carbohydrates, lipids, proteins, and nucleic acids, and relate their importance to living things. Students will know: (Concepts) The structure of an atom to the identity of elements. The formation of covalent and ionic chemical bonds to the stability of atoms. How to distinguish mixtures and solutions. When and how to define acids and bases and relate their importance to biological systems. To identify the effects of enzymes. How to relate water's unique features to its polarity
Topic 1: **The Language of Chemistry**	**Length:** 2 weeks
Lesson Frame: Atomic Structure	We will:
	I will:
Lesson Frame: Trends of the Periodic Table	We will:

	I will:
Lesson Frame: Bonding, Equations and Reactions	We will:
	I will:
Performance Tasks: BioLab: Chemical Reactions in Animals Lab Practical: ID Element Symbols Types of Bonding Balancing Equations 6 types of Chemical Reactions	**Notes:**
Topic 2: **Properties of Water**	**Length:** 1 week
Lesson Frame: Brownian Motion/Polarity	We will:
	I will:
Lesson Frame: Diffusion/ Osmosis	We will:
	I will:
Lesson Frame: Density of Water in States	We will:
	I will:
Performance Tasks: Mini Lab: Determining pH Mini Lab: Measuring the Rate of Diffusion Surface Tension Contest Density Testing Properties of Water Lab Practical #2	Notes: Soil Analysis (pH, moisture content, texture, and color) from various locations on site
Topic 3: **Life Substances (Biomolecules)**	**Length:** 2 weeks
Lesson Frame: Carbohydrates	We will:
	I will:
Lesson Frame: Lipids	We will:
	I will:
Lesson Frame: Proteins	We will:
	I will:
Lesson Frame: Nucleic Acids	We will:
	I will:

Performance Tasks: Mini Lab: Determining monomer vs. polymer Biomolecule Identification Building Biomolecules Lab Practical #3 Reflective Literacy: Current Event Google Classroom Turn In	Notes: Review Game Day Kahoots Mind Jogger Pictionary
We will..., I will... statements:	
follow the Language of Chemistry.	define macromolecule.
know and use the trends of the periodic table.	list all four carbon based macromolecules.
explain iodine turns black in the presence of..…	list the monomer for each of the four macromolecules.
explain benedicts (when heated) will turn red in the presence of…	list the atoms in each of the four macromolecules.
explain biuret turns purple/violet in the presence of …..	list the functions of each of the four macromolecules.
explain how lipids will look on a paper towel.	list several examples of each of the four macromolecule.
explain why living things are carbon based.	explain how carbohydrates are different from lipids.
explain why carbon is unique.	analyze the results of several different indicator tests to determine what macromolecule is in ordinary foods.
define monomer.	explain why enzymes are important to living things.
define polymer.	

Unit Name: **Life of a Cell**	**Length**: 2 weeks
Standards: HS-LS1-6 HS-LS1-2 HS-LS1-3 HS-ETS1-4	**Outcomes:** Construct and revise an explanation based on evidence for how carbon, hydrogen, and oxygen from sugar molecules may combine with other elements to form amino acids and/or other large carbon-based molecules. Develop a model to illustrate the hierarchical organization of interacting systems that provide specific functions within multicellular organisms. Plan and conduct an investigation to provide evidence that feedback mechanisms maintain homeostasis. 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.
Essential Questions: How do we utilize non-traditional measuring devices/tools in microscopy labs? What has the history of the cell and technology provided for science? What role(s) does Chemistry and Bio-Molecules play in microbiology (cellular) concepts? How does the composition of the plasma membrane allow the cell to function and survive in various environments? What impact does selective permeability have on survival of the cell? What is the correlation between surface area and volume of a cell and its ability to survive? How do the subtle differences in plant and animal cell structure enable survival? Why is it important for organelles to have separate roles in cellular functions? **Academic Vocabulary:** Part 1 - Cell, Organelle, Prokaryote, Eukaryote, Nucleus Part 2 - Plasma membrane, Selective permeability, Phospholipid, Fluid mosaic model, Transport protein Part 3 - Cell wall, Chromatin, Nucleolus, Ribosomes, Cytoplasm, Endoplasmic reticulum, Golgi apparatus, Vacuole, Lysosome, Chloroplast, Chlorophyll, Plastid, Mitochondria: Cytoskeleton, Microtubule, Microfilament, Cilia, Flagella	**Learning Targets:** Students will be able to: (Skills) Compare the operation of a compound light microscope with that of an electron microscope. Identify the main ideas of the cell theory. Describe how a cell's plasma membrane functions. Compare and contrast the structures of plant and animal cells. Students will know: (Concepts) How to relate advances in microscope technology to discoveries about cells and cell structure. What the relationship between the function of the plasma membrane to the fluid mosaic model. The identity, structure and function of the parts of a typical eukaryotic cell. Explain the advantages of highly folded membranes in cells. Relationships with the function of a cell to its organization and role in tissues, organs, and organ systems.
Topic 1: **Discovery of Cells and the Plasma Membrane**	**Length:** 1 week
Lesson Frame: Timeline of the Microscope	We will:

	I will:
Lesson Frame: Cell Theory	We will:
	I will:
Lesson Frame: The Plasma Membrane/Fluid Mosaic Model	We will:
	I will:
Performance Tasks: Microscopy Lab - Measuring Objects Shell off the Egg - Lab Practical Exam: 4 Parts/Functions of Fluid Mosaic	Notes:
Topic 2: **Eukaryotic Cell Structure**	**Length:** 1 week
Lesson Frame: Structure and Function of Organelles	We will:
	I will:
Lesson Frame: Plant Cells	We will:
	I will:
Lesson Frame: Animal Cells	We will:
	I will:
Performance Tasks: Mini Lab: Cell Organelles Multiple Species Leaf Sample Chloroplast Counting Decomposition Rates Comparison: Plants Tissue vs. Animal Tissue Practical Exam: Identify Parts of Plant Cell and Animal Cell (color code) Reflective Literacy: Current Event Google Classroom Turn In	Notes: Review Game Day Kahoots Mind Jogger Pictionary
We will.., I will... statements:	
list the 3 main principles of the cell theory	identify and list the function of the receptor protein.
list the contributions of Hooke, Leewenhooke, and Virchow to the cell theory	label the polar head and nonpolar tail of a phospholipid.
define and give an example of a prokaryotic cell.	explain why organ donors and recipients must be carefully matched.
define and give an example of a eukaryotic cell.	match an organelle with its function.
list the similarities and differences between a eukaryotic and prokaryotic cell	identify an organelle from a diagram
identify a prokaryotic cell from a diagram	identify a plant cell
identify a eukaryotic cell from a diagram.	identify an animal cell
identify and list the function of the cell membrane.	list the similarities and differences between an animal and plant cell.

identify and list the function of the Phospholipid.	list the organelles unique to an animal cell
identify and list the function of the channel protein.	list the features found in plant cells.
identify and list the function of the marker protein.	list the organelles found in both animal and plant cells.

Unit Name: **Cellular Transport and the Cell Cycle**	**Length**: 2 weeks
Standards: HS-LS1-4 HS-LS1-3 HS-LS2-3	**Outcomes:** Use a model to illustrate the role of cellular division (mitosis) and differentiation in producing and maintaining complex organisms. Plan and conduct an investigation to provide evidence that feedback mechanisms maintain homeostasis. Construct and revise an explanation based on evidence for the cycling of matter and flow of energy in aerobic and anaerobic conditions.
Essential Questions: How does the composition of the plasma membrane allow it to function in varied environments? What impact does energy have on selective permeability? Is there a direct relationship between the surface area and volume of a cell? If so, explain. What does the cell's size have to do with its limitations? How does the length of the cell cycle vary? How does functionality of specific cells relate to its cell cycle duration? How do the subtle differences in plant and animal cell structure promote or inhibit stages of the cell cycle? **Academic Vocabulary:** Part 1 - Osmosis, Isotonic Solution, Hypotonic Solution, Hypertonic Solution, Passive Transport, Facilitated Diffusion, Active Transport, Endocytosis, Exocytosis Part 2 - Chromosome, Chromatin, Interphase, Mitosis, Prophase, Sister Chromatid, Centromere, Centriole, Spindle, Metaphase, Anaphase, Telophase, Cytokinesis, Tissue, Organ, Organ System	**Learning Targets:** The process of diffusion, passive transport, and active transport occur and why they are important to the cell. The role of enzymes in the regulation of the cell cycle. Relationships with the function of a cell to its organization and role in tissues, organs, and organ systems. interpretation and application of terminology Predict the effects of a isotonic, hypertonic and hypotonic solutions on cells. Model the structure of a chromosome from DNA – Sister Chromatid. Sequence the events of the Cell Cycle using tissue samples. Distinguish between the events of a normal cell cycle and the abnormal events that result in cancer.
Topic 1: **Cellular Transport (plasma membrane)**	**Length:** 1 week
Lesson Frame: Passive Transport	We will:
	I will:
Lesson Frame: Active Transport	We will:
	I will:
Lesson Frame: Endocytosis vs. Exocytosis	We will:
	I will:

Performance Tasks: Mini Lab: Cell Membrane Simulation Cell Membrane Stress Test Tonicity Tests using chicken egg	Notes:
Topic 2: **Cell Cycles**	**Length:** 1 week
Lesson Frame: Interphase (G1-S-G2-G0)	We will:
	I will:
Lesson Frame: Mitosis (prophase metaphase anaphase telophase)	We will:
	I will:
Lesson Frame: Cytokinesis	We will:
	I will:
Performance Tasks: ID Lab: Find Phases of Cell Cycle in Plant vs. Animal Cell Mini Lab: Seeing Asters BioLab: Where is Mitosis Most Observed in Root Tissue Sample? Practical Exam: ID the Cell Cycle Reflective Literacy: Current Event Google Classroom Turn In	Notes: Review Game Day Kahoots Mind Jogger Pictionary
We will..., I will... statements:	
define active transport and give an example	define and give an example of exocytosis
define passive transport and give an example	define and give an example of exocytosis
define osmosis and give an example	define and give an example of phagocytosis
define diffusion and give an example	identify a diagram of facilitated diffusion
define and identify an isotonic solution d	identify a diagram of osmosis
define and identify an hypertonic solution	compare size limitations of cell (surface area to volume ratio)
define and identify an hypotonic solution	Id cell reproduction…why and how?
predict what will happen if a cell is put into a hypotonic solution	know the order IPMATC Cell Cycle
predict what will happen if a cell is put into a hypertonic solution	locate the Gap phases, Synthesis phase and mitosis
predict what will happen if a cell is put into an isotonic solution	know Mitosis details – do you know the major event of each phase
define concentration gradient	look at what causes a tumor?
define facilitated diffusion	know what happens to neighboring cells
compare and contrast facilitated diffusion and diffusion	list environmental risk factors?
compare and contrast active and passive transport	highlight risk Prevention of cancer

define and give an example of endocytosis	

Unit Name: **Need for Energy**	**Length**: 2 weeks
Standards: HS-LS2-5 HS-LS1-5 HS-LS1-3 HS-LS2-3 HS-LS1-7	**Outcomes:** Develop a model to illustrate the role of photosynthesis and cellular respiration in the cycling of carbon among the biosphere, atmosphere, hydrosphere, and geosphere. Use a model to illustrate how photosynthesis transforms light energy into stored chemical energy. Plan and conduct an investigation to provide evidence that feedback mechanisms maintain homeostasis. Use a model to illustrate that cellular respiration is a chemical process whereby the bonds of food molecules and oxygen molecules are broken and the bonds in new compounds are formed resulting in a net transfer of energy.Construct and revise an explanation based on evidence for the cycling of matter and flow of energy in aerobic and anaerobic conditions.
Essential Questions: How do the products of one biological process (photosynthesis) become the reactants for another biological process (cell respiration)? How does the Law of Conservation of Energy relate to the biological processes in eukaryotic cells? Where and how does the surface increase energy production in chloroplasts and mitochondria? What are the limiting factors involved in the photosynthesis and cell respiration/fermentation? **Academic Vocabulary:** Part 1 - ATP (adenosine triphosphate), ADP (adenosine diphosphate) Part 2 - Photosynthesis, Pigment, Chlorophyll, Photolysis, Calvin Cycle Part 3 - Cellular Respiration, Anaerobic, Aerobic, Glycolysis, Krebs Cycle, Alcoholic Fermentation, Lactic Acid Fermentation	**Learning Targets:** Students will be able to: (Skills) Model how energy is stored and released by ATP. Relate the structure of Chloroplasts to the events of Photosynthesis. Illustrate Light Dependent and Light Independent reactions in conjunction with Chemical Equation of Photosynthesis. Compare and Contrast cellular respiration and fermentation. Explain how cells obtain energy from cellular respiration. Students will know: (Concepts) Why organisms need a supply of energy? How energy is stored and released by ATP? All aspects of Light Dependent Reactions. Reactants and products of the Calvin Cycle. Aerobic and anaerobic metabolism.
Topic 1: **Photosynthesis**	**Length:** 1 week
Lesson Frame: Light Dependent Reactions	We will:
	I will:
Lesson Frame: Light Independent Reactions	We will:
	I will:
Lesson Frame: Analysis of Balanced Equation for Photosynthesis	We will:
	I will:

Performance Tasks: Production of Starches: Plant Tattoos Mini Lab: Separating Pigments from chlorophyll Bioluminescent Behaviors (ATP)	Notes: Compare and Contrast Energy Molecules: ATP-ADP-AMP
Topic 2: Cell Respiration	**Length:** 1 week
Lesson Frame: Aerobic Respiration (Normal Oxygen)	We will:
	I will:
Lesson Frame: Lactic Acid Fermentation (Run-out of Oxygen)	We will:
	I will:
Lesson Frame: Alcohol Fermentation (Oxygen was never present)	We will:
	I will:
Performance Tasks: Mini Lab 9.3: Determine if Apple Juice Ferments Lab Practical - ch 9 Reflective Literacy: Current Event Google Classroom Turn In	Notes: Review Game Day Kahoots Mind Jogger Pictionary
We will..., I will... statements:	know the Balanced equation
Id what is the energy used for?	Id how does photosynthesis provide energy and matter for all living things?
know the reaction on how to make and break ATP.	define cellular respiration
know photosynthesis	know the different stages and the molecules required/generated in each
Id pigments are used in photosynthesis	know where does it take place?
know the different stages and the molecules required/generated in each	know the Balanced equation
Id Light Dependent and Independent Reactions	Locate how many ATPs are produced: glycolysis, Krebs (citric acid) cycle, electron transport chain.
define where does it takes place?	be able to compare/contrast fermentation to photosynthesis
explain why are plants green?	

Unit Name: **Mendel's Laws and Meiosis**	**Length**: 3 weeks
Standards: HS-LS2-8 HS-LS3-2 HS-LS3-3 HS-LS4-3	**Outcomes:** Evaluate the evidence for the role of group behavior on individual and species' chances to survive and reproduce.Make and defend a claim based on evidence that inheritable genetic variations may result from: (1) new genetic combinations through meiosis, (2) viable errors occurring during replication, and/or (3) mutations caused by environmental factors. Apply concepts of statistics and probability to explain the variation and distribution of expressed traits in a population. Apply concepts of statistics and probability to support explanations that organisms with an advantageous heritable trait tend to increase in proportion to organisms lacking this trait.
Essential Questions: What is genetic variation and why has it been so important to humanity? How do Mendel's Laws of Heredity present themselves in Punnett Squares? Why are mathematical representations important in studying genetics? Where and how does gamete cell division (meiosis) increase variation? What are the limiting factors involved in meiosis? **Academic Vocabulary:** Part 1 - Heredity, Trait, Genetics, Gamete, Fertilization, Zygote, Pollination, Hybrid, Allele, Dominant, Recessive, Law of Segregation, Phenotype, Genotype, Homozygous, Heterozygous, Law of Independent Assortment Part 2 - Diploid, Haploid, Homologous Chromosome, Meiosis, Sperm, Egg, Sexual Reproduction, Crossing Over, Genetic Recombination, Nondisjunction	**Learning Targets:** Students will be able to: (Skills) Relate Mendel's two laws to the results he obtained in his experiments with garden peas. Analyze how meiosis maintains a constant number of chromosomes within a species. Students will know: (Concepts) The possible offspring of a genetic cross by using a Punnett square. How meiosis leads to variation in a species. Mendel's laws of heredity to the events of meiosis.

Topic 1: **Mendel's Laws**	**Length:** 2 weeks
Lesson Frame: Law of Dominance	We will:
	I will:
Lesson Frame: Law of Segregation	We will:
	I will:
Lesson Frame: Law of Independent Assortment	We will:
	I will:

Performance Tasks: Mini Lab: Looking at Pollen Vocab Series 1- 2 Punnett Square Series 1-2-3 DiHybrid Cross Gizmo: Two Trait Cross in Mice Simulation	Notes: Collect pollen samples for Mini-Lab
Topic 2: **Meiosis**	**Length:** 1 week
Lesson Frame: Cell Cycle Review	We will:
	I will:
Lesson Frame: Meiosis 1 vs. Meiosis 2	We will:
	I will:
Lesson Frame: Overlay Meiosis, Mendel's Laws and Punnett Squares	We will:
	I will:
Performance Tasks: Mini Lab: Modeling Crossing Over Problem Solving: Tracing a Family Tree Gizmo: Meiosis Lab Simulation Heredity Lab - Gamete Production to Reproduction to Offspring Production Chapter 10 Exam Reflective Literacy: Current Event Google Classroom Turn In	Notes: Review Game Day Kahoots Mind Jogger Pictionary
We will..., I will... statements:	
define haploid and diploid	explain the purpose of meiosis
give an example of a haploid and a diploid cell	identify the steps of meiosis
define somatic cell and give examples	give a brief description of the events at each step of meiosis.
define a chromosome	list the number of gametes produced during meiosis, both male and female
explain sister chromatids and identify them	explain the term nondisjunction
distinguish between an autosome and a sex chromosome	explain how nondisjunction can lead to a genetic disorder
explain how gender is determined in humans	give an example of a common genetic disorder caused by nondisjunction
list the number of chromosomes in an human somatic cell	compare and contrast mitosis and meiosis
list the number of chromosomes in an human sex cell.	define crossing over
define gamete and give two examples.	explain what happens to chromosomes during crossing over
list the number of chromosomes in a human gamete	identify a diagram sister chromatids, non-sister chromatids, and crossing over

define meiosis	

Unit Name: **DNA and Genes**	**Length**: 2 weeks
Standards: HS-LS2-8 HS-LS3-1 HS-LS3-2 HS-LS3-3 HS-LS4-3 HS-ETS1-1	**Outcomes:** Evaluate the evidence for the role of group behavior on individual and species' chances to survive and reproduce. Ask questions to clarify relationships about the role of DNA and chromosomes in coding the instructions for characteristic traits passed from parents to offspring. Make and defend a claim based on evidence that inheritable genetic variations may result from: (1) new genetic combinations through meiosis, (2) viable errors occurring during replication, and/or (3) mutations caused by environmental factors. Apply concepts of statistics and probability to explain the variation and distribution of expressed traits in a population.Apply concepts of statistics and probability to support explanations that organisms with an advantageous heritable trait tend to increase in proportion to organisms lacking this trait. Analyze a major global challenge to specify qualitative and quantitative criteria and constraints for solutions that account for societal needs and wants.
Essential Questions: Why biotechnology so important in scientific study? What is the order in which protein synthesis occurs? How to genetic mutations have positive and negative impacts on our society? Why are the respective locations for the steps in protein synthesis so important? What are the limiting factors involved in protein synthesis (replication, transcription and translation)? **Academic Vocabulary:** Part 1 - Nucleotides, Nitrogenous Base, Purines, Pyrimidines, Double Helix, DNA Replication Part 2 - Messenger RNA, Ribosomal RNA, Transfer RNA, Transcription, Codon, Translation Part 3 - Mutation, Point Mutation, Frameshift Mutation, Chromosomal Mutation, Mutagen	**Learning Targets:** Students will be able to: (Skills) Determine how the structure of DNA enables it to reproduce itself accurately. Relate the concept of the gene to the sequence of nucleotide in DNA. Categorize the different types of mutations that occur in DNA. Students will know: (Concepts) How to analyze the structure of DNA. When and where to (model) sequence the steps involved in protein synthesis. And compare the effects of different kinds of mutations on cells and organisms.
Topic 1: **From DNA to Protein**	**Length:** 1 week
Lesson Frame: DNA the Molecule of Heredity	We will:
	I will:
Lesson Frame: Transcription	We will:

	I will:
Lesson Frame: Translation	We will:
	I will:
Performance Tasks: Mini Lab: Transcription Translation DNA Replication Dominoes Pizza Analogy Concept Mapping: DNA vs. RNA	Notes: Search for Plant of Animal Mutations and whether they are helpful or harmful.
Topic 2: **Genetic Changes**	**Length:** 1 week
Lesson Frame: Gene Mutations - Point and Frameshift Mutations	We will:
	I will:
Lesson Frame: Chromosomal Mutations - Deletion, Inversion, Duplication, Translocation	We will:
	I will:
Performance Tasks: Mini Lab: Gene Mutations and Proteins Protein Synthesis Simulation Classroom Chapter 11 Exam Reflective Literacy: Current Event Google Classroom Turn In	Notes: Review Game Day Kahoots Mind Jogger Pictionary
We will..., I will... statements:	
know the difference between nitrogen bases (purine - pyramidine)	ID the locations of the RNA's and what their main jobs are?
review how nucleic acids are assembled.	define and identify transcription and translation.
locate and ID all the components of DNA Replication	know all the important locations within the cell that assist in protein synthesis.
know the nitrogen bases that make DNA unique	know these connections (transcription-codon-mRNA-Amino Acid and tranlation-anti codon-tRNA-Amino Acid.
locate the weak hydrogen bonds in DNA and why they are located there?	learn to read mRNA codons to locate amino acids
differentiate between DNA and RNA nitrogen bases.	practice and create analogies for DNA Replication, Transcription, Translation
compare and contrast the 2 main types of RNA (mRNA and tRNA)	make the connections between S-phase of Interphase (cell cycle = mitosis or mieosis) and transcription

Unit Name: **Patterns of Heredity and Human Genetics**	**Length**: 2 weeks	
Standards: HS-LS1-1 HS-LS3-1 HS-LS3-2 HS-LS3-3 HS-LS4-3 HS-LS4-6	**Outcomes:** Construct an explanation based on evidence for how the structure of DNA determines the structure of proteins which carry out the essential functions of life through systems of specialized cells. Ask questions to clarify relationships about the role of DNA and chromosomes in coding the instructions for characteristic traits passed from parents to offspring. Make and defend a claim based on evidence that inheritable genetic variations may result from: (1) new genetic combinations through meiosis, (2) viable errors occurring during replication, and/or (3) mutations caused by environmental factors. Apply concepts of statistics and probability to explain the variation and distribution of expressed traits in a population.Apply concepts of statistics and probability to support explanations that organisms with an advantageous heritable trait tend to increase in proportion to organisms lacking this trait. Create or revise a simulation to test a solution to mitigate adverse impacts of human activity on biodiversity.	
Essential Questions: How do genetic Mutations have positive and negative impacts on our society? Why is karyotyping so important in the diagnosis of genetic anomalies? What are the limiting factors involved in the Six Human Inheritance Patterns? Why was the completion of the Human Genome Project so important to geneticists? What is the importance of stem cell research? Why is stem cell research so controversial? **Academic Vocabulary:** Part 1 - Pedigree, Carrier, Fetus Part 2 - Incomplete Dominance, Codominant Allele, Multiple Allele, Autosome, Sex Chromosome, Sex Linked Trait, Polygenic Inheritance Part 3 - Karyotype, Syndromes	**Learning Targets:** Students will be able to: (Skills) Interpret a pedigree. Identify human genetic disorders caused by inherited recessive alleles. Distinguish between alleles for incomplete dominance and codominance. Explain the patterns of multiple allelic and polygenic inheritance. Analyze the pattern of sex linked inheritance. Summarize how internal and external environments affect gene expression. Distinguish among conditions that result from extra autosomal or sex chromosomes.	
Topic 1: Heredity Follows Different Rules	**Length:** 1 week	
Lesson Frame: Mendelian Inheritance	We will:	
	I will:	
Lesson Frame: Incomplete Dominance	We will:	
	I will:	
Lesson Frame: CoDominance	We will:	
	I will:	
Performance Tasks: Mini Lab: Illustrating a Pedigree Concept Mapping: Patterns of Heredity and Human Genetics CF vs Huntington's Disease Chicken Coupe Genetics Human Blood Associations	Notes:	
Topic 2: **Complex Human Patterns**	**Length:** 1 week	
Lesson Frame: Multiple Alleles	We will:	
	I will:	
Lesson Frame: X - Linked Inheritance	We will:	
	I will:	
Lesson Frame: Polygenic Inheritance	We will:	
	I will:	

Performance Tasks: Mini Lab: Detecting Colors and Patterns in Eyes Karyotyping Investigation Human Blood Associations Labrador Retriever Study Reflective Literacy: Current Event Google Classroom Turn In	Notes: Review Game Day Kahoots Mind Jogger Pictionary	
We will..., I will... statements:		
define and provide examples: incomplete dominance. co-dominance, multiple alleles, X linked (sex linked) Inheritance, and polygenic inheritance.	list at least threes processes that lead to genetic variation.	
compare and contrast the 5 complex Inheritance Paterns impacting humans (blood is the connection).	define karyotype.	
define and explain genetic variation.	explain why scientists use a karyotype.	
explain the importance of genetic variation.	make a karyotype.	

Unit Name: **Influences on Evolution**	**Length**: 3 weeks	
Standards: HS-LS2-8 HS-LS4-1 HS-LS4-2 HS-LS4-3 HS-LS4-4 HS-LS4-5	**Outcomes:** Evaluate the evidence for the role of group behavior on individual and species' chances to survive and reproduce. Communicate scientific information that common ancestry and biological evolution are supported by multiple lines of empirical evidence. Construct an explanation based on evidence that the process of evolution primarily results from four factors: (1) the potential for a species to increase in number, (2) the heritable genetic variation of individuals in a species due to mutation and sexual reproduction, (3) competition for limited resources, and (4) the proliferation of those organisms that are better able to survive and reproduce in the environment. Apply concepts of statistics and probability to support explanations that organisms with an advantageous heritable trait tend to increase in proportion to organisms lacking this trait. Construct an explanation based on evidence for how natural selection leads to adaptation of populations. Evaluate the evidence supporting claims that changes in environmental conditions may result in: (1) increases in the number of individuals of some species, (2) the emergence of new species over time, and (3) the extinction of other species.	
Essential Questions: How does Natural Selection affect allelic frequency? What are the limiting factors involved with the Influences on Evolution? Why are the mechanisms for determining evolution geographical in nature? What is the connection between what we have already learned and the Theory of Evolution? When to organisms "ensure" survival? **Academic Vocabulary:** Part 1 - Artificial Selection, Natural Selection, Mimicry, Camouflage, Homologous Structure, Analogous Structure, Vestigial Structure, Embryo Part 2 - Gene Pool, Allelic Frequency, Genetic Equilibrium, Genetic Drift, Stabilizing Selection, Directional Selection, Disruptive Selection, Speciation, Geographic Isolation, Reproductive Isolation, Polyploidy, Gradualism, Punctuated Equilibrium, Adaptive Radiation, Divergent Evolution, Convergent Evolution	**Learning Targets:** Students will be able to: (Skills) Explain the role of natural selection in convergent and divergent evolution. Distinguish among the types of evidence for evolution. Summarize the effects of the different types of natural selection on gene pools. Students will know: (Concepts) Summarize Darwin's theory of natural selection. How to explain the structural and physiological adaptations of organisms and where they apply to natural selection. When to relate changes in genetic equilibrium to mechanisms of speciation.	
Topic 1: **Geologic Time**	**Length:** 1 week	
Lesson Frame: Fossil Records	We will:	
	I will:	
Lesson Frame: Adaptations	We will:	
	I will:	
Performance Tasks: Charles Darwin Bio and Timeline Mini Lab: Camouflage Provides an Adaptive Advantage BioLab: Natural Selection and Allelic Frequency	Notes: Camouflage Contest Scavenger Hunt	
Topic 2: **Recent Influences**	**Length:** 1 week	
Lesson Frame: Anatomical Features	We will:	
	I will:	
Lesson Frame: Embryology	We will:	
	I will:	
Lesson Frame: BioChemistry	We will:	
	I will:	

Performance Tasks: Mini Lab: Detecting a Variation Planet Earth Series: Limiting Factors and Influences on Evolution Concept Mapping: The Influences on Evolution Final Exam Reflective Literacy: Current Event Google Classroom Turn In	Notes: Review Game Day Kahoots Mind Jogger Pictionary	
We will..., I will... statements:		
know the influences on Evolution and who proposed the theory of Evolution.	define Natural selection.	
know the evidences to support the theory of evolution.	know the differences between the various types and examples of each: -directional selection -stabilizing selection -disruptive selection -sexual selection -artificial selection.	
know Comparative Structures: homologous and vestigial, analogous.	define adaptation, mimicry, and camouflage.	
Id Embryonic Development.	explain the statement that “Populations evolve, not individuals.”	
know Biochemical: DNA and Protein Synthesis.	define Fitness ❑ Variation ❑ Adaptation ❑ Speciation.	
study fossils (how do they form and know the various examples).		

Course Name:	Biology 2		
Credits:	1		
Prerequisites:	Biology 1 and PS or Chem 1		
Description:	This course is a continuation of Biology I. The Organization of Life and the six-kingdom classification system (Taxonomy) will be explored in depth starting with lower life forms and working up to animals. Labs will have an emphasis on identification and dissecting of several species. Lab work and group presentations will be included to develop critical thinking and organizational skills.		
Academic Standards:	Next Generation Science Standards		
Units:	**Length:**	**Unit Standards:**	**Unit Outcomes:**
Organizing Life's Diversity	2 weeks	HS-LS2-5: Develop a model to illustrate the role of photosynthesis and cellular respiration in the cycling of carbon among the biosphere, atmosphere, hydrosphere, and geosphere. HS-LS4-6: Create or revise a simulation to test a solution to mitigate adverse impacts of human activity on biodiversity. HS-LS2-6: Evaluate the claims, evidence, and reasoning that the complex interactions in ecosystems maintain relatively consistent numbers and types of organisms in stable conditions, but changing conditions may result in a new ecosystem.	Develop a model to illustrate the role of photosynthesis and cellular respiration in the cycling of carbon among the biosphere, atmosphere, hydrosphere, and geosphere. Create or revise a simulation to test a solution to mitigate adverse impacts of human activity on biodiversity. Evaluate the claims, evidence, and reasoning that the complex interactions in ecosystems maintain relatively consistent numbers and types of organisms in stable conditions, but changing conditions may result in a new ecosystem.
Viruses and Bacteria	3 weeks	HS-LS2-3: Construct and revise an explanation based on evidence for the cycling of matter and flow of energy in aerobic and anaerobic conditions. HS-LS1-4: Use a model to illustrate the role of cellular division (mitosis) and differentiation in producing and maintaining complex organisms.	Construct and revise an explanation based on evidence for the cycling of matter and flow of energy in aerobic and anaerobic conditions. Use a model to illustrate the role of cellular division (mitosis) and differentiation in producing and maintaining complex organisms.

Protists	2 weeks	HS-LS1-3: Plan and conduct an investigation to provide evidence that feedback mechanisms maintain homeostasis. HS-LS1-5: Use a model to illustrate how photosynthesis transforms light energy into stored chemical energy.	Plan and conduct an investigation to provide evidence that feedback mechanisms maintain homeostasis. Use a model to illustrate how photosynthesis transforms light energy into stored chemical energy.
Fungi	3 weeks	HS-LS1-6: Construct and revise an explanation based on evidence for how carbon, hydrogen, and oxygen from sugar molecules may combine with other elements to form amino acids and/or other large carbon-based molecules.	Construct and revise an explanation based on evidence for how carbon, hydrogen, and oxygen from sugar molecules may combine with other elements to form amino acids and/or other large carbon-based molecules.
Intro to Animals	2 weeks	HS-LS4-2: Construct an explanation based on evidence that the process of evolution primarily results from four factors: (1) the potential for a species to increase in number, (2) the heritable genetic variation of individuals in a species due to mutation and sexual reproduction, (3) competition for limited resources, and (4) the proliferation of those organisms that are better able to survive and reproduce in the environment.	Construct an explanation based on evidence that the process of evolution primarily results from four factors: (1) the potential for a species to increase in number, (2) the heritable genetic variation of individuals in a species due to mutation and sexual reproduction, (3) competition for limited resources, and (4) the proliferation of those organisms that are better able to survive and reproduce in the environment.

Invertebrates	12 weeks	HS-LS2-8 Evaluate the evidence for the role of group behavior on individual and species' chances to survive and reproduce. HS-LS1-7 Use a model to illustrate that cellular respiration is a chemical process whereby the bonds of food molecules and oxygen molecules are broken and the bonds in new compounds are formed resulting in a net transfer of energy. HS-LS1-2 Develop a model to illustrate the hierarchical organization of interacting systems that provide specific functions within multicellular organisms. HS-LS3-2 Make and defend a claim based on evidence that inheritable genetic variations may result from: (1) new genetic combinations through meiosis, (2) viable errors occurring during replication, and/or (3) mutations caused by environmental factors. HS-LS4-1 Communicate scientific information that common ancestry and biological evolution are supported by multiple lines of empirical evidence. HS-LS4-3 Apply concepts of statistics and probability to support explanations that organisms with an advantageous heritable trait tend to increase in proportion to organisms lacking this trait.	Evaluate the evidence for the role of group behavior on individual and species' chances to survive and reproduce. Use a model to illustrate that cellular respiration is a chemical process whereby the bonds of food molecules and oxygen molecules are broken and the bonds in new compounds are formed resulting in a net transfer of energy. Develop a model to illustrate the hierarchical organization of interacting systems that provide specific functions within multicellular organisms. Ask questions to clarify relationships about the role of DNA and chromosomes in coding the instructions for characteristic traits passed from parents to offspring. Evaluate the evidence for the role of group behavior on individual and species' chances to survive and reproduce. Develop a model to illustrate the hierarchical organization of interacting systems that provide specific functions within multicellular organisms. Communicate scientific information that common ancestry and biological evolution are supported by multiple lines of empirical evidence. Develop a model to illustrate the hierarchical organization of interacting systems that provide specific functions within multicellular organisms.Make and defend a claim based on evidence that inheritable genetic variations may result from: (1) new genetic combinations through meiosis, (2) viable errors occurring during replication, and/or (3) mutations caused by environmental factors. Communicate scientific information that common ancestry and biological evolution are supported by multiple lines of empirical evidence. Develop a model to illustrate the hierarchical organization of interacting systems that provide specific functions within multicellular organisms. Apply concepts of statistics and probability to support explanations that organisms with an advantageous heritable trait tend to increase in proportion to organisms lacking this trait.
Vertebrates	9 weeks	HS-LS3-1: Ask questions to clarify relationships about the role of DNA and chromosomes in coding the instructions for characteristic traits passed from parents to offspring. HS-LS3-3: Apply concepts of statistics and probability to explain the variation and distribution of expressed traits in a population. HS-LS4-5: Evaluate the evidence supporting claims that changes in environmental conditions may result in: (1) increases in the number of individuals of some species, (2) the emergence of new species over time, and (3) the extinction of other species.	Ask questions to clarify relationships about the role of DNA and chromosomes in coding the instructions for characteristic traits passed from parents to offspring. Apply concepts of statistics and probability to explain the variation and distribution of expressed traits in a population. Evaluate the evidence supporting claims that changes in environmental conditions may result in: (1) increases in the number of individuals of some species, (2) the emergence of new species over time, and (3) the extinction of other species. Apply concepts of statistics and probability to explain the variation and distribution of expressed traits in a population.

Mammals	3 weeks	HS-LS4-3: Apply concepts of statistics and probability to support explanations that organisms with an advantageous heritable trait tend to increase in proportion to organisms lacking this trait.	Apply concepts of statistics and probability to explain the variation and distribution of expressed traits in a population. Apply concepts of statistics and probability to support explanations that organisms with an advantageous heritable trait tend to increase in proportion to organisms lacking this trait.

Unit Name: **Organizing Life's Diversity**	**Length:** 2 weeks
Standards: HS-LS2-5 HS-LS4-6 HS-LS2-6	**Outcomes:** Develop a model to illustrate the role of photosynthesis and cellular respiration in the cycling of carbon among the biosphere, atmosphere, hydrosphere, and geosphere. Create or revise a simulation to test a solution to mitigate adverse impacts of human activity on biodiversity. Evaluate the claims, evidence, and reasoning that the complex interactions in ecosystems maintain relatively consistent numbers and types of organisms in stable conditions, but changing conditions may result in a new ecosystem.
Essential Questions: What is the difference between calssification methods? **Academic Vocabulary:** Part 1- Classification,Taxonomy, Binomial Nomenclature,Genus, Specific Epithet, Family, Order, Class, Phylum, Division, Kingdom Part 2 - Phylogeny, Cladistics, Cladogram, Eubacteria, Protist, Fungus	**Learning Targets:** Evaluate the history, purpose, and methods of taxonomy. Explain the meaning of a scientific name. Describe the organization of taxa in a biological classification system. Describe how evolutionary relationships are determined. Explain how cladistics reveals phylogenetic relationships. Interpret and apply terminology Compare the six kingdoms of organisms.
Topic 1: **Methodology in Classification**	**Length:** 1 week
Lesson Frame: Dicotomous Keys	We will learn to read a dichotomous key.
	I will built a dichot key for leaf samples.
Lesson Frame: Phylogenic Fans	We will identify all the components phylogeny.
	I will be able to competently read a phylogenic fan.
Lesson Frame: Cladistics	We will discuss and give examples of clads.
	I will be able to associate clasdograms to fossil records.
Lesson Frame: Specific Examples for Each Methology	We will review the 5 influences on evolution.
	I will be able to give specific examples for all the factes of the 5 influences.
Performance Tasks: Using a Dicotomous Key in a Field Investigation Identifying Key Characteristics Base off of The 5 Influences on Evolution. Costructing a Cladogram	Notes:
Topic 2: **Classification System = Taxonomy**	**Length:** 1 week
Lesson Frame: The Six Kingdoms	We will introduce the 6 kingdoms and Phylogeny
	I will be able to identify characteristics and timelines for each Kingdom.

Lesson Frame: Taxonomical Hierarchy	We will define taxonomy.
	I will know the taxonomy of humans and one other organism.
Lesson Frame: Bionomial Nomenclature	We will list contributions from scientists that devised BN.
	I will be able to write the genus and species name of several organism.
Performance Tasks: Identifying Shark Species The History of Taxonomy Who was Carlus Linneus	Notes: Latin notes: prefix suffix and root word associations

Unit Name: **Viruses and Bacteria**	**Length:** 2 weeks
Standards: HS-LS2- HS-LS1-4	**Outcomes:** Construct and revise an explanation based on evidence for the cycling of matter and flow of energy in aerobic and anaerobic conditions. Use a model to illustrate the role of cellular division (mitosis) and differentiation in producing and maintaining complex organisms.
Essential Questions: How will students identify the 4 main types of viruses? Will they be abe to distinguish between the reproductive cycles of viruses? Why is it important to know how to use classification system specifically for bacteria? How many different ways can bacteria reproduce? Can students determine the usefulness of bacteria and viruses? **Academic Vocabulary:** Part 1 - Virus, Host Cell, Bacteriophage, Capsid, Lytic Cycle, Lysogenic Cycle, Provirus, Retrovirus, Reverse Transcriptase, Prion, Viroid Part 2 - Chemosynthesis, Binary Fission, Conjugation, Obligate Aerobe, Obligate Anaerobe, Endospore, Toxin, Nitrogen Fixation	**Learning Targets:** Identify the different kinds of viruses and their structures. Compare and contrast the replication cycles of viruses. Compare the types of prokaryotes. Explain the characteristics and adaptations of bacteria. Gain in depth understanding of concepts from reading chapter 18. Interpret and apply terminology Evaluate the economic importance of bacteria.
Topic 1: **Virus**	**Length:** 1 week
Lesson Frame: Classification of Viruses	We will determine taxonomy for viruses.
	I will be able to ID viruses by physical characterisitcs.
Lesson Frame: Reproductive Tactics of Viruses	We will compare and contrast reproductive habits of viruses.
	I will be able tell which is more harmful.
Lesson Frame: Measuring and determining whether viruses and good, bad or neither	We will use micrographs to determine specific viruses and thier environments.
	I can tell the difference between good, and bad viruses.
Performance Tasks: Using a Model for Measure Virus Lab Practical	Notes:
Topic 2: **Bacteria**	**Length:** 1 week
Lesson Frame: Different Ways to ID Bacteria	We will determin taxonomy for bacteria.

	I will be able to ID bacteria by their shapes and arrangements.
Lesson Frame: Bacteria Evolution = Fast	We will monitor the growth and development of cultures.
	I will be able to determine the rate of growth.
Lesson Frame: Compare and Contrast reproductive tactics	We will compare and contrast the reproductuctive tactics of bacteria.
	I will be able to ID them by monitoring growth and species.
Performance Tasks: Bacteria Cartoon Pathology Identification Economic Benefits Making Cultures - Lab Lab Practical = Microscope usage and bacterial measure and shapes	Notes:

Unit Name: **Protists**	**Length:** 2 weeks
Standards: HS-LS1-3: HS-LS1-5	**Outcomes:** Plan and conduct an investigation to provide evidence that feedback mechanisms maintain homeostasis. Use a model to illustrate how photosynthesis transforms light energy into stored chemical energy.
Essential Questions: How will students compare and contrast the 3 different Protists? Will students determine reproductive strategies of each Protist group? Why is it important to key on the diversity of Protist's life cycles? **Academic Vocabulary:** Part 1 - Protozoan, Alga, Pseudopodia, Asexual Reproduction, Flagellate, Ciliate, Sporozoan, Spore Part 2 - Thallus, Colony, Fragmentation, Alternation of Generations, Gametophyte, Sporophyte Part 3 - Plasmodium, Malaria	**Learning Targets:** Identify the characteristics of Kingdom Protista. Compare and contrast the four groups of protozoans. Compare and contrast the variety of plantlike protists. Explain the process of alternation of generations in algae. Contrast the cellular differences and life cycles of the two types of slime molds. Discuss the economic importance of the downy mildews and water molds. Gain in depth understanding of concepts from reading chapter 18. Interpret and apply terminology.
Topic 1: **Protozoan = Animal-Like**	**Length:** 1 week
Lesson Frame: Pseudopoda (ameoba)	We will determine the taxonomy for protozoans.
	I will be able to list the phyla for protozoans.
Lesson Frame: Ciliates and Flagellates	We will compare and contrast modes of locomotion.
	I will match locomotion to classes of protozoans.
Lesson Frame: Sporozoans (plasmodium and Malaria)	We will review the history of good and bad protozoans
	I will know precautions to limit infection from Protist.
Performance Tasks: Feeding Ciliates and Flagellates Pathology investigation of Protozoans Lab Practical - Picture ID	Notes:
Topic 2: **Algae = Plant-Like**	**Length:** 1 week
Lesson Frame: Chlorophyta Examples/Populations	We will determine the taxonomy for alga.
	I will be able to list the phyla for alga.
Lesson Frame: Diatoms	We will determine the habitats for alga.
	I will be able to match habitat to various alga.
Lesson Frame: Helpful and Harmful Algae	We will introduce the uses for algae.

	I will be able to identify algae usage through research.
Performance Tasks: Microscopic Observations of anatomy, feeding, and reproduction Lab Practical - Picture ID	Notes:
Topic 3: **Slime Molds and Downy Mildews = Fungus-Like**	**Length:** 1 day
Lesson Frame: Phylogenic Fan Review of Classes	We will review taxonomy and examples for slime molds.
	I will be able to ID each class of SM.
Lesson Frame: Growth Patterns and Strategies = Where do they live?	We will
	I will
Performance Tasks: Lab Practical - Picture ID	Notes:

Unit Name: **Fungi**	**Length: 2** weeks
Standards: HS-LS1-6:	**Outcomes:** Construct and revise an explanation based on evidence for how carbon, hydrogen, and oxygen from sugar molecules may combine with other elements to form amino acids and/or other large carbon-based molecules.
Essential Questions: How will students ID Fungi Specimens? Can students determine reproductive and life cycles of fungi classifications? Do students know how to utilize microscopes to make measurements and ID anatomy of fungi? Are students creative enought to put together a menu consisting fungus dishes matching up with their resturant theme? How will students compare and contrast good vs. bad fungi? **Academic Vocabulary:** Part 1 - Hypha, Mycelium, Chitin, Haustoria, Budding, Sporangium Part 2 - Stolon, Rhizoid, Zygospore, Gametangium, Ascus, Ascospore, Conidiophore, Conidium, Basidium, Basidiospore, Mychorrhiza, Lichen	**Learning Targets:** Identify the basic characteristics of the fungi kingdom. Explain the role of fungi as decomposers and how this role affects the flow of both energy and nutrients through food chains. Identify the four major phyla of fungi. Distinguish among the ways spores are produced in zygomycotes, ascomycotes, and basidiomycotes. Summarize the ecological roles of lichens and mycorrhizae.
Topic 1: **Phylogeny of Fungi**	**Length:** 1 week
Lesson Frame: Saporphytes vs. Parasites vs. Mutualists = Feeding Relationsips	We will determine the taxonomy for fungi.
	I will list all fugi feeding relationships with examples.
Lesson Frame: Reproduction and Life Cycles of Fungi	We will monitor the growth patterns of fungi.
	I will learn the best environment to grow fungi.
Lesson Frame: Parts of a Basidiomycote.	We will ID the parts and functions of a mushroom.
	I will label the parts of a mushroom.
Performance Tasks: Growing Mold Microscope Observation of Anatomy (Lichen, Deutero, Basidio, Asco, and Zygomycota) Lab Practical	Notes: Collect local fungi samples.
Topic 2: **Usefulness of Fungi**	**Length:** 2 weeks
Lesson Frame: Economic Impact of Fungi	We will review the historical significance of mushrooms.

	I will make a timeline of fungus facts.
Lesson Frame: Living With Fungi	We will compare and contrast different fungi.
	I will be able to ID which fungi are helpful and harmful
Lesson Frame:	We will create a menu with fungi influenced dishes
	I will make and share one of the dishes from our menu.
Performance Tasks Fungus Among Us = Resturant Simulation Creating a Menu that includes various fungi	Notes: Fungus an the Food Industry Research

Unit Name: **Intro to Animals**	**Length:** 2 weeks
Standards: HS-LS4-2	**Outcomes:** Construct an explanation based on evidence that the process of evolution primarily results from four factors: (1) the potential for a species to increase in number, (2) the heritable genetic variation of individuals in a species due to mutation and sexual reproduction, (3) competition for limited resources, and (4) the proliferation of those organisms that are better able to survive and reproduce in the environment.
Essential Questions: How will students ID stages of animal development? Can students determine reproductive and life cycles? How will students compare and contrast body plans vs. arrangements vs. symmetrry? Do students have and opportunity see first hand conception to birth of Deuterostomes and Protostomes? **Academic Vocabulary:** Part 1 - Sessile:, Blastula, Gastrula, Ectoderm, Endoderm, Mesoderm, Protostome, Deuterostome Part 2 - Radial Symmetry, Bilateral Symmetr, Asymmetry, Anterior, Posterior, Dorsal, Ventral, Accoelomate, Pseudocoelomate, Coelom, Exoskeleton, Invertebrate, Endoskeleton, Vertebrate	**Learning Targets:** Identify the characteristics of Animals. Identify cell differentiation of the typical animal cell. Sequence the development of a typical animal cell. Compare and Contrast radial and bilateral symmetry. Trace the phylogeny of animal body plans. Distinguish among the body plans of accoelomate, pseudocoelomate, and coelomate animals.
Topic 1: **Observing Animal Characteristics**	**Length:** 1 week
Lesson Frame: Dermal Layers and Developmental Stages	We will observe the (2) developmental stages in animals.
	I will ID whether an animal embryo looks like parents or not.
Lesson Frame: Reproduction and Life Cycles Animals	We will locate the germ layers in animals.
	I will know what tissues and organs form from the germ layers.
Lesson Frame: View of Animals Inside Out	We will list the early stages of zygote development through characterisitcs.
	I will observe and sketch the stages from fertilization through zygote.
Performance Tasks: Observing Vinegar Eels Compare and Contrast Protostome and Deuterostome Building Kahoots	Notes:
Topic 2: **Cells to Tissue to Organs to Organ Systems**	**Length:** 1 week

Lesson Frame: Symmetry/Body Arrangement	We will list the possible body symmetries and arrangements.
	I will learn the difference between symmetry and arrangement.
Lesson Frame: Body Plans/Coelomate vs. Accoelomate vs. Pseudocoelomate	We will introduce body plans in accordance to body cavities.
	I will be able to distinguish between, accoelomate, pseudocoelomate and coelomate.
Lesson Frame: Body Locations/Directional Terms	We will learn the correlations for coresponding body locations.
	I will be able to locate and label all body location and direction terms on an organism.
Performance Tasks Levels of Organization Investigation Internal Protection vs. External Protection Bio Lab Lab Practical	Notes:

Unit Name: **Animal Invertebrates**	**Length:** 12 weeks
Standards: HS-LS2-8 HS-LS1-7 HS-LS1-2 HS-LS3-2 HS-LS4-1 HS-LS4-3	**Outcomes:** Evaluate the evidence for the role of group behavior on individual and species' chances to survive and reproduce. Use a model to illustrate that cellular respiration is a chemical process whereby the bonds of food molecules and oxygen molecules are broken and the bonds in new compounds are formed resulting in a net transfer of energy. Develop a model to illustrate the hierarchical organization of interacting systems that provide specific functions within multicellular organisms. Ask questions to clarify relationships about the role of DNA and chromosomes in coding the instructions for characteristic traits passed from parents to offspring. Evaluate the evidence for the role of group behavior on individual and species' chances to survive and reproduce. Develop a model to illustrate the hierarchical organization of interacting systems that provide specific functions within multicellular organisms. Communicate scientific information that common ancestry and biological evolution are supported by multiple lines of empirical evidence. Develop a model to illustrate the hierarchical organization of interacting systems that provide specific functions within multicellular organisms.Make and defend a claim based on evidence that inheritable genetic variations may result from: (1) new genetic combinations through meiosis, (2) viable errors occurring during replication, and/or (3) mutations caused by environmental factors. Communicate scientific information that common ancestry and biological evolution are supported by multiple lines of empirical evidence. Develop a model to illustrate the hierarchical organization of interacting systems that provide specific functions within multicellular organisms. Apply concepts of statistics and probability to support explanations that organisms with an advantageous heritable trait tend to increase in proportion to organisms lacking this trait.

Essential Questions:	**Learning Targets:**
Can students determine reproductive and life cycles? How will students compare and contrast body plans vs. arrangements vs. symmetry? How will students understand how digestive systems work? Do roundworms have an impact on world health? Do annelids have an economic/environmental/medical impacts? Do molluskshave an economic impact on the resturant and jewelry industry? How will students compare and contrast the 3 main characteristics of arthropods? Can students determine reproductive and life cycles? How will students understand how the exoskeleton works? Do insects have an economic impact on society both positive and negative? How will students compare and contrast the classes of echinoderms? What kind of heterotrophs would we classify echinoderms as? How will students understand how the watervascular system works? **Academic Vocabulary:** Filter Feeding, Hermaphrodite, External Fertilization, Internal Fertilization, Regeneration, Pharynx, Scolex, Proglottid, Accoelomate, Trichinosis, Pseudocoelomate, Setae, Crop, Gizzard, Nephridia, Pharynx, Closed Circulatory System, Coelom, Mantle, Radula, Siphon, Open Circulatory System, Pericardium, Umbo, Gonad, Appendage, Molting, Cephalothorax, Tracheal Tube, Spiracle, Book Lung, Pheromone, Simple Eye, Compound Eye, Mandible, Malpighian Tubule, Parthenogenesis, Chelicerae, Pedipalp, Spinneret, Metemorphosis, Larv, Pupa, Nymph, Ray, Pedicellaria, Water Vascular System, Madreporite, Tube Foot, Ampulla, Asteroidea, Ophiuroidea, Echinoidea, Crinoidea, Holothuroidea, Concentricycloidea	Identify the characteristics of sponges. Relate the sessile life of sponges to their food gathering adaptations. Describe reproductive adaptations in sponges. Understand phylogeny of Porifera. Analyze the relationships among the classes of cnidarians. Sequence the stages in the life cycle of a Cnidarian. Evaluate the adaptations of cnidarians for obtaining food. Distinguish between the structural adaptations of parasitic flatworms and free living planarians. Explain how parasitic flatworms are adapted to their way of life. Understand phylogeny of Platyhelmenthes. Compare and Contrast the structural adaptations of roundworms and flatworms. Distinguish between the structural adaptations of parasitic roundworms. Identify the characteristics of four roundworm parasites. Identify the characteristics of segmented worms. Compare the Adaptations of the different classes of Annelida. Describe reproductive adaptations in Segmented Worms. Describe the characteristics of segmented worms and their importance to the survival of these organisms. Evaluate the adaptations of for obtaining food. Compare and Contrast the Classes of segmented worms. Become Familiar with ALL Taxonomical Classes for Annelida. Relate the structural and behavioral adaptations of arthropods to their ability to live in different habitats. Analyze the adaptations that make arthropods an successful evolutionary phylum. Compare and contrast the similarities and differences among the major Classes and Orders of arthropods. Explain the adaptations of insects that contribute to their success. Evaluate the adaptations of for obtaining food. Compare and contrast the similarities and differences among the major classes of Echinoderms. Interpret data suggesting that echinoderms are close relatives of chordates. Gain an in depth understanding of Anatomy and Physiology for a Starfish. Know all taxonomy for Echinodermata. Evaluate the adaptations of for obtaining food.

Topic 1: **Sponges**	**Length:** 1 week
Lesson Frame: Features of Sponges	We will determine the taxonomy for porifera.
	I will know the classifications for sponges.
Lesson Frame: Types of Sponges (body typeID)	We will observe the various body types of sponges.
	I will know all of the functional parts, inside and out..micro and macro, of porifera.
Lesson Frame: Filter Feeding vs. Reproduction	We will compare the filter feeding process to reproduction.

	I will label the life cycle of a sponge and list the important anantomy involved.
Performance Tasks: Porifera Specimens Lab Observing Spicules - Microscope Lab	Notes:
Topic 2: **Cnidarians**	**Length:** 1 week
Lesson Frame: Classes of Cnidarians (Hydrozoa, Scyphozoa, Anthozoa, Cubozoa)	We will determine taxonomy for cnidarians.
	I will be able to ID the classes of cnidarians from physical traits.
Lesson Frame: What features makes each class unique?	We will observe the structures and functions that make cnidarians unique.
	I will be to locate and label bady parts of a Hydra.
Lesson Frame: Feeding Strategies	We will observe feeding habits of various cnidarians.
	I will be able to explain special anatomy and function of a nematocyst.
Performance Tasks: Microscopic observations of nematocysts Lullaby Parody and Mobile of a Cnidarian	Notes:
Topic 3: **Flatworms**	**Length:** 1 week
Lesson Frame: What is a planarian?	We will identify characteristics of NP flatworms.
	I will be able to name species and habitats.
Lesson Frame: Feeding and Habitat	We will investigate correlations to environment and taxonomy.
	I will be able to name species and habitats.
Lesson Frame: Tapeworms feeding, reproduction and habitat	We will identify characteristics of parasitic flatworms.
	I will be able to name species by physical characteristics.
Lesson Frame: Flukes feeding, reproduction and habitat	We will investigate correlations to environment and taxonomy.
	I will be able to name species and habitats.
Performance Tasks: Labeling Diagrams Life Cycle of Turbellarians Lab Practical Extreme Conditions ID Anatomy/Physiology of Tapeworms Lab PRactical	Notes: Parasitic Worm Treatments Accoelomate Body Plan Review
Topic 4: **Nematoda Phylogeny**	**Length:** 1 week
Lesson Frame: ID species of roundworms	We will investigate various species of round worms.
	I will be able to identify 4 examples of round worms.
Lesson Frame: Matching habitat, reproducive strategies and feeding to	We will determine survival tactics of round worms with habitat.

Nematodes	I will match round worm to habitat and/or survival tactic.
Lesson Frame: Erratication of parasites	We will study the timeline of the Guinea Worm.
	I will know who was responsible for the erratication of the Guinea Worm took place.
Performance Tasks: Diagram Labeling Ascaris Dissection Lab Practical	Notes: What is the CDC?
Topic 5: Oligochaeta - Earthworm	**Length:** 2 weeks
Lesson Frame: Habitat - Reproduction - Feeding	We will learn the rules and procedure for lab dissections.
	I will perfrom the dissection on an earthworm.
Lesson Frame: Anatomy and Physiology - Body Systems and Function	We will emphasize anatomy and function for body systems.
	I will differentiate the parts of digestion, reproduction, circulatory systems.
Lesson Frame: ID other classes of Annelids and usefulness (Hirunidea/Polychaeta)	We will determine the taxonomy for annelids.
	I know examples and habitats for hirunidea and polychaeta.
Performance Tasks: Earthworm Dissection Lab Practical	Notes: Economic Impact Medicinal Uses
Topic 6: **Mollusks**	**Length:** 1 week
Lesson Frame: ID anatomy and physiology of squid - locomotion/protection/feeding	We will determine the taxonomy of mollusca.
	I will be able to ID each class of mollusk and give examples.
Lesson Frame: Helpful/Harmful Gastropods and Bivalvia	We will follow the protocols for dissections
	I will correctly and safely dissect a bivalve.
Lesson Frame: ID anatomy and physiology of bivalvia - feeding/reprocuction	We will ID all Internal and external characteristics of bivalves.
	I will be abel to match anatomical features with their respective functions.
Performance Tasks: Labeling Diagrams Clam Dissection Snail Dissection	Notes: Gastropod ID via video
Topic 7: **Characterisitics of Arthropods**	**Length:** 2 weeks
Lesson Frame: Anatomy for Locomotion and Breathing	We will determine the breakdown for Arthropod classifications.
	I will be able to read the phylogenic fan for arthropoda.
Lesson Frame: Anatomy for Feeding	We will ID the internal and external features of crustaceans
	I will correctly and safely dissect and match features to function of crayfish.

Lesson Frame: Anatomy for Reproduction	We will compare and contrast habitat for classes of Arthropods.
	I will know the methodology and timeline for matching Arthro to Enviro.
Performance Tasks: Crustacean External Anatomy - Lab Crayfish Dissection Grasshopper Dissection Lab Practical	Notes:
Topic 8: **Diversity of Arthropods**	**Length:** 2 weeks
Lesson Frame: Arthropod Classes	We will locate reproductive organs and strategies for arthropods.
	I will ID the various reproductive organs and tactics for Arthropods.
Lesson Frame: Life Cycles = Metamorphosis	We will determine the classification orders for insects.
	I will match the 11 insect orders to examples within.
Lesson Frame: Insect Orders	We will ID the internal and external structures of orthoptera (grasshopper).
	I will correctly and safely dissect and match features to function in the grasshopper.
Performance Tasks: Phylogeny of Arthropoda Arthropod Poetry Life in the Undergrowth - BBC Series	Notes: Life in the Undergrowth (BBC Documentary)
Topic 1: **Taxonomy of Echinderms**	**Length:** 1 week
Lesson Frame: Unique Characterisic for each Class of Echinoderm	We will determine the taxonomy of echinoderms.
	I will match classes to examples via external characteristics.
Lesson Frame: Feeding and Reproduction Strategies	We will ID feeding strategies for classes of echinoderms.
	I will list and match feeding and reproduction tactics to classes.
Lesson Frame: Pedicellariae and Locomotion	We will ID external and internal features for echinoderms.
	I will correctly and safely dissect the sea star labeling and functioning anatomy for locomotion, feeding, reproduction and support/structure.
Performance Tasks: Observing Pedicellariae - mini-Lab Sea Star Dissection Lab Practical - Picture ID and Anatomy/Physiology	Notes:
Topic 1: **Chordates**	**Length:** 2 days
Lesson Frame: The Lancelet	We will determine the taxonomy for IC.
	I will be able to ID classifications of IC.
Lesson Frame: The Tunicate	We wil observe various organs related to chordates.

	I will be able to ID anatomy and physiology of tunicates and lancelets.
Lesson Frame: Features of the Invert Chordate	We will compare and contrast habitat for Urochordata and Invert. Chordates.
	I will make a smooth transition from invertebrates to vertebrate after this chapter.
Performance Tasks: Observing Lancelets - Lab Lab Practical	Notes: Transiton Organisms research

Unit Name: **Vertbrate Animals**	**Length**: 9 weeks
Standards: HS-LS3-1 HS-LS3-3 HS-LS4-5	**Outcomes:** Ask questions to clarify relationships about the role of DNA and chromosomes in coding the instructions for characteristic traits passed from parents to offspring. Apply concepts of statistics and probability to explain the variation and distribution of expressed traits in a population. Evaluate the evidence supporting claims that changes in environmental conditions may result in: (1) increases in the number of individuals of some species, (2) the emergence of new species over time, and (3) the extinction of other species. Apply concepts of statistics and probability to explain the variation and distribution of expressed traits in a population.

Essential Questions: What are the 4 main classifications of fish? Will they be abe to distinguish parts of the reproductive cycles? Why is it important to know how to use classification system specifically for fish? How many different ways can fish reproduce? What are the positive and negatives for various fish populations? What is our transition organism between fish and amphibians? How will students identify the classifications of amphibians? Will they be abe to distinguish between stages of metemorhosis? Why is it important to know how to use classification system specifically for amphibians? How many different ways can amphibians communicate? What is the most important positive outcome for studying amphibian populations? What is our transition organism between amphibian and reptile? Why is it important to know how to use classification system specifically for reptiles? How many different environments can we find reptiles? What is the most important positive outcome for studying reptilian migration and hibernation? What is our transition organism between reptile and birds? What are the parts of the developing chick? Why is it important to know how to use classification and orders for birds? How many continents can we find birds? What are the outcomes for studying migration? What is our transition organism between birds and mammals? **Academic Vocabulary:** Spawning , Fins, Lateral Line, Swim Bladder, Cloaca, Ectotherm, Vocal Cord, Vomerine Teeth, Tympanic Membrane, Nictatating Membrane, Glottis, Metamorphosis, Phenology, Amniotic Egg, Shell, Plasma Membrane, Albumen, Chorion, Amnion, Yolk Sac, Embryo, Allantois, Hibernation, Migration, Ectotherm, Jacob's Organ, Feather, Sternum, Air Sacs, Preening, Endotherm, Incubate	**Learning Targets:** Compare and Contrast similarities and differences between classes of fish. Relate structural Adaptations of fish to their environments. Interpret the phylogeny of fish. Know and understand all body systems and the accompanying organs for fish. Relate the demands of terrestrial life to the adaptation s of amphibians. Relate the evolution of the 3 chambered heart to amphibian life style. Compare and contrast the characteristics of the different groups of amphibians. Relate the structural adaptations of the amniotic egg to various environments on land. Explain how Reptile adaptations make them suited for life on land. Identify all anatomical structures and physiological adaptations Reptile possess. Relate reptile adaptations to their ability to live in most environments. Interpret the phylogeny and taxonomy of reptiles. Relate the structural adaptations of the amniotic egg to various environments on land. Explain how bird adaptations make them suited for life on land. Identify all anatomical structures and physiological adaptations birds possess. Relate bird adaptations to their ability to fly. Interpret the phylogeny and taxonomy of birds.
Topic 1: **Characteristics of Fish**	**Length:** 1 week
Lesson Frame: Fin Location and Function	We will observe movement in fish.
	I will be able to match movement direction to fins.
Lesson Frame: External Organs and Function	We will determine the taxonomy for fish.
	I will be able to match classes to major features.
Lesson Frame: Internal Organs and Function	We will dissect a perch (osteichthyes)

	I will know what the external organs and internal organs jobs are.
Performance Tasks: Perch Dissection Gill Dissection - Microscope Scale Diversity	Notes:
Topic 2: **Diversity of Fish**	**Length:** 1 week
Lesson Frame: Fish Family Tree	We will ID what physical features for survival that determine classification in fish.
	I will compare and contrast survival evolution in fish classes.
Lesson Frame: Agnatha vs. Gnathostomata vs. Myxini vs. Cephalaspidomorphii	We will observe a timeline for historical facts about each class of fish.
	I will list important dates (time) for turning points in the evolution of fish.
Lesson Frame: Unique Strategies in Reproduction	We will dissect the shark.
	I will be able to ID and match specialized organs in chondrichthyes.
Performance Tasks: Shark Dissection Lab Practical/Specialized Organs	Notes: Research Tonic Immobility Sketch findings in Shark Dissection.
Topic 3: **Diversity in Amphibians**	**Length:** 1 week
Lesson Frame: Amphibian Phylogeny	We will dertermine the taxonomy for amphibians.
	I will list and match examples to taxonomy.
Lesson Frame: Habitat and Feeding	We will ID survival strategies for amphibians.
	I will know the specific organs that have allowed amphibians to evolve.
Lesson Frame: Mapping Chordates	We will review the phylogenic fan for chordates.
	I will know which amphibians are related due in part to their environment.
Performance Tasks: Wisconsin Amphibian Survey Frog Phenology	Notes: Procedures and protocols for nationwide amphibian species to population survey.
Topic 4: **Amphibian Features**	**Length:** 1 week
Lesson Frame: External Characterisitics	We will dissect the frog.
	I will corretly and safely ID both external and internal characteristics.
Lesson Frame: Internal Organs and Function	We will function the specialized organs for frogs.
	I will locate the tympanic and nictating membranes, vocal chords, heart and lungs.

Performance Tasks: Frog Dissection Lab Practical	Notes: Research metamorphosis of amphibs.
Topic 5: **Reptile Characteristics**	**Length:** 1 week
Lesson Frame: External Anatomy and Function	We will determine the taxonomy for reptiles.
	I will list and match the sub-orders/orders and families of reptiles.
Lesson Frame: Internal Anatomy and Function	We will dissect a turtle.
	I will correctly and safely locate the external and internal organs of a turtle.
Lesson Frame: Specialized Organ's Among the Classes of Reptiles	We will identify specialized organs that make each order of reptile unique.
	I will list, locate and match specialized organs to snakes, lizards and turtles.
Performance Tasks: Turtle Dissection Virtual Dissections (snake, alligator, leatherback)	Notes:
Topic 6: **Taxonomy of Reptiles**	**Length:** 1 week
Lesson Frame: Reptile Orders, Sub-Orders and Families Review	We will research the classification of reptiles.
	I will create a visual project (Prezi) based on the reptile taxonomy, habitat, feeding habits, specialized organs and reproductive strategies.
Performance Tasks: Reptile PRezi Presentation Lab Practical	**Notes:**
Topic 7: **Characteristics of Birds**	**Length:** 2 weeks
Lesson Frame: Anatomy of a Feather	We will observe the anatomy of a feather.
	I will know the icroanatomy of the differrent types of feathers.
Lesson Frame: Adaptations for Flight	We will analyze the principles of flight.
	I will list all of the adaptation birds possess for flight.
Lesson Frame: Rituals: Feeding, reproduction and survival strategies	We will observe special circumstances that make bird reproduction, feeding and survival strategies unique.
	I will choose a unique ritual of birds and create a cartoon.

Performance Tasks: Feather ID - Lab Feather Micro-Anatomy Lab Chicken Wing Dissection Pigeon Dissection Duck Breast Dissection	Notes: Fly tying demo from Dave Ehrenberg, President of Trouts Unlimited Tomorrow River Chpt
Topic 8: **Bird Taxonomy - Aves**	**Length:** 1 week
Lesson Frame: Orders of Aves	We will determine the taxonomy for aves.
	I will know all of the bird orders.
Lesson Frame: Darwin's Finches	We will review the study and timeline for Charles Darwin's finches.
	I will list the benchmark dates for evolutionary influences on finches.
Lesson Frame: Divergent Evolution	We will observe specific species of birds and whether they follow the two types of e
	I will be able to compare and contrast dviergent vs. convergent evolution.
Performance Tasks: Create Kahoots or Pear Deck Study Guide for Aves Orders Egg Incubation - 28days to full term "Chick in a Cup" - Lab Lab Practical	Notes:

Unit Name: **Mammals**	**Length**: 3 weeks
Standards: HS-LS4-3 HS-LS3-3	**Outcomes:** Apply concepts of statistics and probability to explain the variation and distribution of expressed traits in a population. Apply concepts of statistics and probability to support explanations that organisms with an advantageous heritable trait tend to increase in proportion to organisms lacking this trait.
Essential Questions: How will students identify mammal taxonomy? What is the difference between herbivore and carnivore chewing anatomy? Why is it important to know how to use classification and orders for mammals? How many continents can we find mammals? What are the outcomes for studying migration and hibernation? **Academic Vocabulary:** Part 1 - Exocrine Gland, Endocrine Gland, Mammary Gland, Diaphragm Part 2 - Uterus, Placenta, Gestation	**Learning Targets:** Distinguish Mammalian Characteristics Explain how the characteristics of mammals enable them to adapt to most habitats. Distinguish among the 3 main Sub Classes of mammals. (Monotreme, Marsupial, and Placental) Relate the structural adaptations of mammals to their environments. Compare and Contrast reproduction in marsupial, placental, and monotreme. Identify all anatomical structures and physiological adaptations mammals possess. Interpret the phylogeny and taxonomy of mammals.
Topic 1: **Characteristics of Mammals**	**Length:** 2 weeks
Lesson Frame: Digestive Traits	We will ID the traits that make mammals...mammals.
	I will list the traits of all mammals.
Lesson Frame: Cardiovascular Traits	We will dissect a mammal.
	I will correctly and safely locate fand "landmark" the traits for mammals
Lesson Frame: Uro-Genital Traits	We will explore the vital organs of the fetal pig or rat.
	I will ID the organs with functions for all the body systems.
Performance Tasks: Pig or Rat Dissection 4 Chambered Heart Dissection- route of blood flow Chewing Mechanics Anatomy of a Tooth	Notes:
Topic 2: **Mammal Taxonomy**	**Length:** 1 week
Lesson Frame: Phylogenic Fan for Mammals	We will determine the taxonomy for mammals.
	I will match examples and orders of mammals.

Lesson Frame: Compare and Contrast Mammal Locomotion	We will correlate the classification of mammals to their means of locomotion.
	I will compare and contrast the various ways mammals move around.
Lesson Frame: Reproductive Strategies in Mammals (3)	We will study the unique ways by which mammals reproduct and rear their young.
	I will list and match specific mammals to their reproductive strategies.
Performance Tasks: Lab Practical including picture ID for Orders Unique mammal behaviors - reearch project	Notes: Planet Earth Series

Course Name:	Human Biology	
Credits:	1	
Prerequisites:	Biology 2	
Description:	This course presents the structure and function of the human body. Practical use of medical terminology as applied to and identifying organ systems, organs and what they do, pathology, treatments, and specialists in medical fields. Students will be required to participate in lab exercises, dissections, lab practical, quizzes and exams. This course does include a laboratory component and meets graduation requirements for science.	
Academic Standards:	This course is an extension of other science cources and is not covered by content standards.	
Units:	**Length:**	**Unit Outcomes:**
Introduction	5 weeks	These introductory chapters provide a foundation for the study of medical terminology. It teaches students to divide words into component parts, recognize basic combining forms (that will be used extensively when body system chapters are covered), suffixes, and prefixes along with all their meanings. Additionally, students gain an understanding of the organization and complexity of the body and become familiar with the location and function of major body organs. Lastly and most important is the transition form one body system to another in the order in which units are set up. Each unit has a bearing or a relationship to the next. It is important to understand that conection and eventually leads to the big picture.
Digestive	2 weeks	Name and ID organs of the digestive system. Describe the disease process and symptoms that affect these organs.
Urinary	2 weeks	Given an opportunity to learn about the structure and function of the microanatomy and macroanatomy of the urinary system.
Blood	2 weeks	Allow students to ID the various functions, formation and composition of blood; including different 7 blood cells, whole blood samples, blood types, diseases of blood, clinical procedures and lab tests.
Cardiovascular	3 weeks	Opportunities to understand the anatomy and physiology of the heart and accompanying blood vessels that transport blood to tissues as needed. Realize that gas exchange is integral in systemic circulation. Become acquainted with clinical procedures and tests to ID conditions and pathology.

Respiratory	2 weeks	Opportunities to understand the anatomy and physiology of the organs of respiration and thorascic cavity along with concepts learned from the last two units: Blood and Cardiovascular. Become acquainted with clinical procedures and tests to ID conditions and pathology. Learn about the abbreviations that accompany respiratory and breathing tests.
Nervous	2 weeks	Understand anatomy and physiology of the organs of the cranial and spinal cavities. along with concepts learned from the last 3 units: Blood, Cardiovascular and Respiration. Identify the 2 divisions of the NS - Central NS and Peripheral NS. Become acquainted to ID conditions and pathology. Learn about the efferent vs. afferent nerves along with the autonomic NS. Cranial Nerves, meninges, and parts of the brain are critical components.
Skeletal	4 weeks	Understand microanatomy and physiology of bones. Determine connections and concepts learned from the last 4 units: Blood, Cardiovascular, Respiration and Nervous Systems. Identify the 2 divisions of the skeleton. Become acquainted to ID conditions and pathology. Learning about parts, type, locations and shapes of bones are the critical components.
Muscular	2 weeks	Understand microanatomy and physiology of muscle. Determine connections and concepts learned from the last 5 units: Blood, Cardiovascular, Respiration, Nervous, and Skeletal Systems. Identify the 3 types of muscle. Become acquainted to ID conditions and pathology. Learning about parts, type, locations and naming of muscles and joints are the critical components.
Integumentary	2 weeks	The student will have an opportunity to learn about skin, the largest organ in the body. Skin functions include thermoregulation, protection from foreign antigens, protection from desiccation, and sensation of the environment for pain, temperature, pressure, and touch. The student will become familiar with terms associated with the medical specialty of dermatology. The student will be introduced to pathological conditions of the skin and the laboratory procedures used for diagnosis and treatment of these abnormalities

Reproduction	4 weeks	Opportunity to learn the major organs of the male reproductive system, define some abnormal and pathological conditions that affect the male system, and learn to differentiate between several types of sexually transmitted infections. Students will also be given the opportunity to define many combining forms used to describe the structures of the male system and explain various laboratory tests, clinical procedures, and abbreviations that are pertinent to the system. Opportunity to learn the major organs of the male reproductive system, define some abnormal and pathological conditions that affect the male system, and learn to differentiate between several types of sexually transmitted infections. Students will also be given the opportunity to define many combining forms used to describe the structures of the male system and explain various laboratory tests, clinical procedures, and abbreviations that are pertinent to the system.

Unit Name: **Introduction**	**Length:** 5 weeks
Essential Questions: How do we analyze words by dividing them into their component parts? How will student relate medical terms to the structure and function of the human body? Can you ID organs, tissues and cells from body systems? How could you use a system of location like N-S-E W to describe locations on a patient's body?	**Outcomes:** These introductory chapters provide a foundation for the study of medical terminology. It teaches students to divide words into component parts, recognize basic combining forms (that will be used extensively when body system chapters are covered), suffixes, and prefixes along with all their meanings. Additionally, students gain an understanding of the organization and complexity of the body and become familiar with the location and function of major body organs. Lastly and most important is the transition form one body system to another in the order in which units are set up. Each unit has a bearing or a relationship to the next. It is important to understand that conection and eventually leads to the big picture.
Academic Vocabulary: cell, tissue, organ, organ systems, body cavities, abdominopelvic regions, body quadrants, spinal column, body planes , prone, supine, lateral, medial, superior, Inferior, proximal, distal, anterior, posterior, dorsal, ventral, -plasty, -ectomy, -globin, -osis, -centesis, -cele, -trophy, -stomy, -tomy, -megaly, -oma, -plasia, -pathy, -penia, -sclerosis, -dynia, -malacia, -emia, -lysis, -algia, -gen / -genic, -gram, -stasis, -blast, -oid, ultra-, anti-, inter-, ecto-, endo-, hemi-, dia-, brady-, tachy-, epi-, auto-, dys-, pan-, neo-, peri-, para-, hyper-, retro-, trans-, syn-/sym-, poly-, intra-, pseudo-, re-	**Learning Targets:** Relate basic word parts to anatomical locations. Review the operation of a compound microscope for microanatomy of tissues. Identify the main word parts: prefix, suffix, combining vowel, and root words. Utilize the rules in medical terminology or word construction. Compare and contrast the studies associated with body systems. Identify the main word parts: prefix, suffix, combining vowel, and root words. Pronounce and spell terminology correctly. Apply the rules in medical terminology to topics. Compare and contrast the studies associated with body systems. Identify organs and regions to which they belong. Compare and contrast the studies associated with body systems. Identify symptoms and conditions of patients along with the procedures and possible remedies for patient well-being.
Topic 1: **Rules for Building Med Terms**	**Length:** 1 week
Lesson Frame: Bingo for terms list	We will review the three rules to basic word structure.
	I will apply the 3 rules to building med terms.
Lesson Frame: Dictation Comprehension Practical	We will practice with common prefix, root words and suffixes for med terms.
	I will know how to define med terms through the 3 rules and practice.
Perfrmance Tasks: Lab Practical	Notes:
Topic 2: **Levels of Organization**	**Length:** 1 week
Lesson Frame: Cells and Tissues	We will learn and review the leveles of organization.

	I will know the levels of organization leading up to organ systems.
Lesson Frame: Body Cavitites and Organ ID	We will observe and ID the 5 body cavities and organs within.
	I will be able to match organs to body cavities.
Lesson Frame: Anatomical and Clinical Divisions of the body	We will locate specific body locations and areas of interest.
	I will be able to determine a location or clinical division of the human body.
Performance Tasks: Microscopy Review Body Cavities Lab	Notes:
Topic 3: **Body Regions**	**Length:** 1 week
Lesson Frame: Locations of the Back:	We will analyze specific areas of the spinal cavity.
	I will be able to locate all 6 areas of the spine along with specific names.
Lesson Frame: Planes of the Body	We will analyze planes of the body.
Lesson Frame: Diretional and Positional Terms	We will review how to ID body positioning and anatomical locating.
	I will know patient perspective (left-right), antognistic directions and specific local of organs.
Performance Tasks: Lab Practical Identify new word elements and understand the new medical term meaning. Dictation Comp Quiz	Notes:
Topic 4: **Suffixes and Terminology**	**Length**: 1 week
Lesson Frame: Building Body System Terms with Common Suffixes	We will determine the importance of suffixes.
	I will ID the most commonly uses suffixes.
Lesson Frame: Pear Deck - Term Factory	We will review suffixes.
	I will create study peices for suffixes.
Lesson Frame: Face to the Name - Power Point	We will create photo discriptions of conditions containing specific suffixes.
	I will match the slideshow to a list of conditions.
Performance Tasks: Dictation Comp Quiz (See Unit 4 Performance Task)	Notes:

Topic 5: **Prefixes and Terminology**	**Length:** 1 week
Lesson Frame: Prefix Bingo	We will determine the importance of prefixes.
	I will ID the most commonly uses prefixes..
Lesson Frame: Face to the Name	We will review prefixes.
	I will create study peices for prefixes.
Lesson Frame:	We will create photo discriptions of conditions containing specific prefixes.
	I will match the slideshow to a list of conditions.
Performance Tasks: Dictation Comp quiz Lab Practical for Chapter 3-4 Given are the most commonly used Prefixes and Suffixes in Human Biology Terminology. 1.) Using each Suffix below and in the order they are listed , create slide depicting (illustrating) a Human Biology Term that contains that Suffix. 2.) Using each Prefix below and in the order they are listed , create slide depicting (illustrating) a Human Biology Term that contains that Prefix. Options for presentation: PowerPoint, Prezi, or Animoto	Notes:

Unit Name: **Digestive System**	**Length**: 2 weeks
Academic Vocabulary: absorption, amino acids, digested, elimination, enzymes, fatty acids, gastrointestinal, glucose, triglycerides, deglutition, emulsification, peristalsis, mastication, defication	**Outcomes**: Name and ID organs of the digestive system. Describe the disease process and symptoms that affect these organs.
Essential Questions: What are the 3 main functions of the digestive system? What are the differences between the ailmentary canal organs and the accessory digestive organs?	**Learning Targets**: Relate basic word parts to anatomical locations. Apply the rules in medical terminology to topics. Compare and contrast the studies associated with the digestive system. Identify symptoms and conditions of patients along with the procedures and possible remedies for patient well-being.
Topic 1: **Structure and Function**	**Length**: 1 week
Lesson Frame: Oral Cavity	We will ID mechanical and chemical digestion in the oral cavity.
	I will know what teeth, tongue, salivary glands and salive do to aide in digestion.
Lesson Frame: Upper GI	We will ID mechanical and chemical digestion of the upper GI.
	I will know what the esophagus, stomach and duodenum do to aide in digestion.
Lesson Frame: Lower GI	We will ID mechanical and chemical digestion of the lower GI.
	I will know what the jejunum, ilium, ceacum and the rest of the colon does to aide in digestion.
Performance Tasks: Taste Bud Lab Fetal Pig Dissection Organic Compound Detection Lab Dictation Comp Terminology	Notes:
Topic 2: **Pathology and Procedure**	**Length**: 1 week
Lesson Frame: Symptoms of Digestive Pathology	We will dissect the fetal pig to ID digestive system.
	I will locate and function all digestive organs.
Lesson Frame: Describe by acting out Pathology of Digestive Organs	We will review the possible pathologya nd conditions in the ailmentary canal.
	I will use prefix suffix and root combos to determine pathology of GI.
Lesson Frame: ID certain procedures and treatments for digestive system anaomalies	We will observe symptoms of GI conditions.
	I will be able to determine pathology and possible treatment for problems.

Performance Tasks: Charades/Video Clips Dictation Comp Symptoms Dictation Comp Pathology Lab Practical for Dissections	Notes:

Unit Name: **Urinary System**	**Length**: 2 weeks
Essential Questions: What are the major fincyions of the kidneys? What are the medical and anatomical terms assiciated with th urinary system?	**Outcomes:** Given an opportunity to learn about the structure and function of the microanatomy and macroanatomy of the urinary system.
Academic Vocabulary: Bowman's Capsule, arterioles, calices, catheter, cortex, filtration, glomerulus, hilum, meatus, micturition, nephron, nitrogenous waste, potassium, reabsorption, trigone, ureter, urethra, urine, voiding, renal pelvis, renal medulla, cystoscopy, nephrolithiasis	**Learning Targets:** Apply the rules in medical terminology to topics. Compare and contrast differences in men and women. Learn major organs of the urinary system and their function. Identify the importance of the waste conversion process. Learn how a urinalysis has become an important diagnostic tool.
Topic 1: **Urinary structure and function**	**Length:** 1 week
Lesson Frame: Urinary Organs ID	We will dissect a fetal pig to ID urinary tract.
	I will locate and list all organs and function.
Lesson Frame: Microanatomy (parts of a nephron)	We will dissect a kidney to determine functionality.
	I will locate and list all microanatomy and function within the kidney.
Lesson Frame: Function of the Urinary System	We will compare and contrast functionality of urinary organs through urinalysis.
	I will be able to chemically analyze a urinalysis and ID problems from results.
Performance Tasks: Fetal Pig Dissection Kidney Dssection Kidney Function/Build a Nephron Dictation Comp Terminology	Notes:
Topic 2: **Pathology and Tests**	**Length**: 1 week
Lesson Frame: Urinalysis	We will use procedure to analyze urine samples.
	I will test urine for essential compound deficiencies or excesses.
Lesson Frame: Clinical Procedures for Pathology	We will use procedure to analyze pathology and condition..
	I will test and observe for urogenital deficiencies or conditions.
Lesson Frame: Compare and Contrast Pathology in male and female	We will compare and contrast male to female anatomical differences.
	I will ID the variance that exists in male and female anatomy of urinary tract.

Performance Tasks: Urinalysis Lab Dictation Comp Pathology Lab Practical from Cell-Tissue-Organ-Organ System	Notes:

Unit Name: **Blood**	**Length:** 2 weeks
Essential Questions: How do blood cells develop from a common stem cell? What does each blood cell do? What is the finction of each part of blood (plasma, serum, blood cells?) What is cell differentiation? How do you ID Blood Cells in microscopy?	**Outcomes**: Allow students to ID the various functions, formation and composition of blood; including different 7 blood cells, whole blood samples, blood types, diseases of blood, clinical procedures and lab tests.
Academic Vocabulary: albumin, antibodybilirubin, coagulation, antigen, basophil, neutophil, eosinophil, erythrocyte, leukocyte, thrombocyte, hemolysis, hemoglobin, heparin, lymphocyte, monocyte, macrophage, plasma, platelet, plasmapheresis, hemophilia, leukemia, anemia, hematocrit	**Learning Targets:** Name, locate, and describe the functions of the components of blood. Identify functions of other systems that are directly related to the blood system to include skeletal, circulatory, respiratory, lymphatic, endocrine systems and digestive systems. Identify the pathological conditions that affect and exist with the blood system. Be able to verify the circulation/pathway of blood throughout the body. Describe important laboratory tests and clinical procedures.
Topic 1: **Composition of Blood**	**Length:** 1 week
Lesson Frame: Plasma-RBC-WBC	We will ID blood components.
	I will be able to visually ID, through microscopy, blood components.
Lesson Frame: Functions of 7 blood cells	We will function out the 7 parts of blood.
	I will ID the parts of blood through physical characteristics.
Lesson Frame: Reading a Hematocrit	We will read and study various blood samples.
	I will know what a normal hematocrit look like in comparision to deficiencies.
Performance Tasks: Stages of development and differentiation Lab Microscopy of blood sample Lab Essential Compounds in Blood Lab Dictation Comp Quz Terminology	Notes:
Topic 2: **Blood Condtions/Pathology and Tests**	**Length**: 1 week
Lesson Frame: ABO blood Typing	We will become familiar with ABO typing system.
	I will be able to explain the differences in blood types.
Lesson Frame: Immunology: Antibody vs. Antigen	We will look at functionality of each blood component.
	I will know what differentiates the blood typs and Rh factor.
Lesson Frame: Blood Borne Pathogens ID	We will emphasize the importance of safety when handleing blood.

	I will comply with protocols when dealing with Blood Born Pathogens.
Performance Tasks: ABO Typing Lab Dictation Comp Quiz Pathology/Procedure Identifying Abbreviations for Blood system Damage and Repair: Anatomy of a Clot What is CRISPR?	Notes:

Unit Name: **Cardiovascular System**	**Length:** 3 weeks
Essential Questions: How pulmonary circulation different than systemic circulation? What are the functions cardio anatomy? How is an EKG related to electro conduction of the heart and blood pressure?	**Outcomes**: Opportunities to understand the anatomy and physiology of the heart and accompanying blood vessels that transport blood to tissues as needed. Realize that gas exchange is integral in systemic circulation. Become acquainted with clinical procedures and tests to ID conditions and pathology.
Academic Vocabulary: aorta, artery, bundle of His, AV node, atrium, capillaries, Vena Cava, veins, ventricles, coronary arteries, diastole, systole, pericardium, endocardium, myocardium, pulmony artery, pulmonary vein, septum, SA node, pacemaker, sphygmomanometer, tricuspid valve, mitral valve, aortic valve, pulmonary valve, pulse, blood pressure, murmujr, aneurysm, varicose vein, fibrillation	**Learning Targets:** Apply the rules in medical terminology to topics. Name, locate, and describe the functions of the major organs of the cardiovascular system, especially the heart and major blood vessels. Identify the pathological conditions that affect and exist in the cardiovascular system. Be able to verify the circulation/pathway of blood throughout the body. Describe important laboratory tests and clinical procedures.

Topic1: **Cardio Anatomy and Physiology**	**Length**: 2 weeks
Lesson Frame: Parts and Function ID	We will dissect the fetal pig to ID cardiovascular organs.
	I will locate and list all organs and function.
Lesson Frame: Compare and Contrast: Left Side vs. Right Side	We will dissect a heart to determine functionality.
	I will locate and list all accessory organs and function in route of blood flow in 4 chambered heart.
Lesson Frame: Trace a Pathway - Capillary Circulation, Systemic Circulation, Cardio Circulation, and Pulmonary Circulation	We will compare and contrast functionality of left and right side of heart.
	I will be able to physically analyze blood and ID problems within CV system.
Performance Tasks: Fetal Pig Dissection 4 Chambered Heart Dissection Route of Blood Flow Practical Series of 4 Lab (valves, vessels, chambers, and circulations) Oxygenated vs. Deoxygenated blood Dictation Comp Quiz Terminology	Notes:

Topic 2: **Procedure/Test and Pathology**	**Length**: 1 week
Lesson Frame: Blood Pressure Lab - vasodilation and vasoconstriction	We will analyze the physiology of the heart itself for pathology.
	I will learn to use a sphygmonometer in conjuction with a stethoscope to test BP.
Lesson Frame: Electricity and Pacemaker	We will locate and the start of electricity and follow it throughout the heart.

	I will know how electricity flows through the heart and its importance.
Lesson Frame: PQRST waves Electrocardiogram	We will study various EKG's to become familiar with all of the elctrical movements.
	I will be able to read a normal PQRST and ID what is happening at each graph point in EKG.
Performance Tasks: BP and Tools Lab Cardio Conduction Lab ID How to Read an EKG Identify deficiency in EKG Congenital Heart Conditions Dictation Comp Quiz Pathology	Notes:

Unit Name: **Respiratory System**	**Length:** 2 weeks
Essential Questions: What are the main structures of the chest cavity and respiratory system? Describe the mechanical process of breathing. Why is tissue elasticity important for optimal functioning?	**Outcomes:** Opportunities to understand the anatomy and physiology of the organs of respiration and thorascic cavity along with concepts learned from the last two units: Blood and Cardiovascular. Become acquainted with clinical procedures and tests to ID conditions and pathology. Learn about the abbreviations that accompany respiratory and breathing tests. Opportunity to learn the major organs of the male reproductive system, define some abnormal and pathological conditions that affect the male system, and learn to differentiate between several types of sexually transmitted infections. Students will also be given the opportunity to define many combining forms used to describe the structures of the male system and explain various laboratory tests, clinical procedures, and abbreviations that are pertinent to the system.
Academic Vocabulary: adenoids, alveoli, apex, bronchioles, bronchus, CO2, cilia, diaphragm, epiglottis, trachea, expiration, inspiration, pharynx, larnynx, mediastinum, pleura, tonsil, paranasal sinuses, auscultation, sputum, asthma, atelectasis, pneumonia, tracheostomy, tracheotomy, Tuberculosis	**Learning Targets:** Apply the rules in medical terminology to topics. Name, locate, and describe the functions of the major organs of the respiratory system, especially the lungs and some parts of the Cardio System. Identify the pathological conditions that affect and exist in the respiratory system. Be able to verify the circulation/pathway of blood throughout the body. Be able to verify locations of gas exchange ie. CO2-> O2 and O2 -> CO2. Describe important laboratory tests and clinical procedures.
Topic 1: **Anatomy and Physiology**	**Length**: 1 week
Lesson Frame: Model a respiratory system	We will dissect the respiratory system of fetal pig.
	I will be able to list and match organs and function.
Lesson Frame: ID and Remove Respiratory Organs	We will make analogies to respiratory system from household items.
	I will be able build a model of respiratory system to list and match organs and function.
Lesson Frame: Tracheotomy vs. Tracheostomy	We will perform a tracheotomy and create a tracheostomy on our fetal pigs.
	I will know the difference between -otomy and -ostomy.
Performance Tasks: Respiration in the Bag Fetal Pig Dissection - Thorascic Cavity Endotracheal Intubation and Tracheostomy Practice (pig) Dictation /Comp Quiz Terminology	Notes:

Topic 2: **Pathology vs. Conditions of Respiratory**	**Length**: 1 week
Lesson Frame: Breathing Mechanics - PFT's	We will ID organs involved on respiration.
	I will match structure and function of accessory organs to respiratory system.
Lesson Frame: Modeling Pathology and Conditions for primary and accessory organs	We will observe symptoms and pathology of repiratory organs.
	I will review prefix and suffix ID to determine pathology.
Lesson Frame: Auscultation Excercises (stethoscope usage)	We will perform various observations to determine PFT's.
	I will be able to read and analyze my own PFT by using tools and measurements.
Performance Tasks: Complete Respiration Measurments Lab Abbreviations and Formulas for Pulmonary Function Testing Medical Report Diagnosis Symptoms Lab - Auscultation Dictation /Comp - Pathology /Procedure Lab Practical	Notes:

Unit Name: **Nervous System**	**Length:** 2 weeks
Essential Questions: What are the key parts of the functioning Nervous System? Identify the different neurons as well as microanatomy of neurons. What are some neurological disorders and conditions?	**Outcomes:** Understand anatomy and physiology of the organs of the cranial and spinal cavities. along with concepts learned from the last 3 units: Blood, Cardiovascular and Respiration. Identify the 2 divisions of the NS - Central NS and Peripheral NS. Become acquainted to ID conditions and pathology. Learn about the efferent vs. afferent nerves along with the autonomic NS. Cranial Nerves, meninges, and parts of the brain are critical components.
Academic Vocabulary: acetylcholine, astrocyte, axon, autonomic NS, blood -brain barrier, cauda equina, cell body, CNS, PNS, cerebellum, cerebrum, brain stem, dendrite, myelin sheath, dura mater, glial cell, hypothatlamus, meninges, moter nerves, sensory nerves, neurotransmitter, stimuli, gyri, sulci, plexus, pons, synapse, venticles, EEG	**Learning Targets:** Apply the rules in medical terminology to topics. Name, locate, and describe the functions of the major organs of the nervous system. Identify the pathological conditions that affect and exist in the nervous system. Describe important laboratory tests and clinical procedures used.
Topic 1: **Microanatomy of the NS**	**Length**: 1 week
Lesson Frame: Parts of a Neuron and their Functions	We will ID parts of a neuron.
	I will locate the microantomy of the NS.
Lesson Frame: Types of Neurons and Locations	We will study the various types of neurons.
	I will list and match specific neuron to function and location.
Lesson Frame: Motor vs. Sensory Nerves	We will compare and contrast input vs output impulse.
	I will determine whether an action is a stimulus or a response.
Performance Tasks: Microscope Lab to ID various nerve tissue Action/Reaction Lab- Video Dictation Comp Terminology	Notes:
Topic 2: **CNS and PNS**	**Length**: 1 week
Lesson Frame: Parts of the Brain	We will dissect a brain.
	I will locate and function major parts of the brain.
Lesson Frame: Parts of the PNS - Spinal Cord, Plexuses, and Peripheral Nerves	We will compare and contrast the PNS and the CNS.
	I will locate and function major parts of the brain and spinal column.
Lesson Frame: Cranial Nerves and their Functions	We will study the number, name and function of the Cranial Nerves.
	I will ID and match Cranial Nerves 1-12 to their function.

Performance Tasks: Sheep Brain Dissection Color Code Brain Diagram Differentiate between the Plexuses Labeling the Meninges	Notes:

Unit Name: **Skeletal System**	**Length**: 4 weeks
Essential Questions: Many of the bones of the body have an English as well as a medical name. How many of these bones can you currently name? Many different types of fractures occur in bones, what are they? What is forensic science? What is the benefit of being strong, durable and yet light weight?	**Outcomes**: Understand microanatomy and physiology of bones. Determine connections and concepts learned from the last 4 units: Blood, Cardiovascular, Respiration and Nervous Systems. Identify the 2 divisions of the skeleton. Become acquainted to ID conditions and pathology. Learning about parts, type, locations and shapes of bones are the critical components.
Academic Vocabulary: acetabulum, acromion, articular cartilage, bone, calcaneus, calcium, cancellous bone, cartilaginous tissue (cartilage), collagen, compact bone, condyle, cranial bones, diaphysis, disk (disc), epiphyseal plate, epiphysis, facial bones, fissure, fontanelle, foramen, fossa, haversian canals, malleolus, manubrium, mastoid process, medullary cavity, metaphysis, olecranon, osseous tissue, ossification, osteoblast, osteoclast, osteoporosis, periosteum, phosphorus, pubic symphysis, red bone marrow, ribs, sella turcica, sinus, styloid process, suture, temporomandibular joint, trabeculae, trochanter, tubercle, tuberosity, vertebra, xiphoid process, yellow bone marrow	**Learning Targets:** Apply the rules in medical terminology and forensic anthropology skeletal system. Name, locate, and describe the functions of bones. Identify types of mechanical movements related to these systems. Identify the pathological conditions that affect and exist with the skeletal system. Verify the how other body systems affect the skeletal system. Describe important laboratory tests and clinical procedures. Acquire an in depth understanding of skeletal system by completing the text/manual exercises and patient medical reports.
Topic 1: **Gross Anatomy of Bones**	**Length**: 2 weeks
Lesson Frame: Microanatomy of Bone	We will review the use of microscopy of tissue.
	I will be able to ID microanatomy of bone.
Lesson Frame: Type of Bone	We will physically ID the types of bone through observation.
	I know what and where compact and spongy bone is.
Lesson Frame: Landmarks and Shapes of Bone	We will observe various bone samples.
	I will be able to ID many landmarks on specific bones.
Performance Tasks: Microscope ID of Bone Material Lab Practical using Skeleton Race, Age and Gender of Skeleton - Lab	Notes:
Topic 2: **Skeleton Types and Measurements**	**Length**: 2 weeks
Lesson Frame: Axial Skeleton	We will compare and contrast the axial vs appendicular skeleton.
	I will know the function of axial skeleton and influencial bones.
Lesson Frame: Appendicular Skeleton	We will compare and contrast the axial vs appendicular skeleton.

	I will locate and function the bones that comprise the appendages.
Lesson Frame: Forensic Anthropology	We will introduce various methodologies in forensic science.
	I will know how to ID and measure bones and landmarks involved in forensic anthropology.
Performance Tasks: Lab Practical - Complete Skeleton Forensic Science Lab - ID victums through Measurements Dictation Comp Quiz Terminology	Notes:

Unit Name: **Muscular System (and joints)**	**Length:** 2 weeks
Essential Questions: Can you explain various musculoskeletal disease conditions and terms related to joints? Will students be able to make a distinction between learning the location of the major bones, joints, and muscles of the body and understand how movement and flexibility of both internal and external structures depends on these tissues and organ systems, including parts of the viscera and blood vessels play an important in movement.	**Outcomes**: Understand microanatomy and physiology of muscle. Determine connections and concepts learned from the last 5 units: Blood, Cardiovascular, Respiration, Nervous, and Skeletal Systems. Identify the 3 types of muscle. Become acquainted to ID conditions and pathology. Learning about parts, type, locations and naming of muscles and joints are the critical components.
Academic Vocabulary: Part 1 - abduction, adduction, dorsiflexion, extension, fascia, flexion, insertion of a muscle, origin of a muscle, plantar flexion, pronation, rotation, skeletal muscle, smooth muscle, striated muscle, supination, visceral muscle Part 2 - articulation, bursa, bursae, ligament, suture joint, synovial cavity, synovial fluid, synovial joint, synovial membrane, tendon	**Learning Targets:** Apply the rules in medical terminology to topics for muscle and joints Name, locate, and describe the functions muscles, and joints. Identify types of mechanical movements related to these systems. Identify the pathological conditions that affect and exist with the muscle system. Verify the how other body systems affect the muscle system. Describe important laboratory tests and clinical procedures.
Topic 1: **Muscles**	**Length:** 1 week
Lesson Frame: Gross Anatomy of Muscles and Compare and Contrast the 3 Muscle Types	We will observe through microscopy the types of muscle.
	I will ID the three muscle types according to nucleus location.
Lesson Frame: Naming Strategies and ID of Skeletal Muscle	We will use all strategies in maning and ID of muscles.
	I will be able to make distinction between major classifications of muscle.
Lesson Frame: Skeletal Muscle Movements (Kinesiology)	We will observe the physiology of muscle.
	I will match muscles to location, fiber direction, action, origin/insertion and divisions.
Performance Tasks: Muscle Types Microscopy: ID of nuclei Lab Practical - ID and Location of Muscles (Axial vs. Appendicular Skeleton)	Notes:
Topic 2: **Joints**	**Length**: 1 week
Lesson Frame: Types of Joints	We will study movements.
	I will ID movements and match muscle to bone to joint.
Lesson Frame: Parts of a Synovial Joint	We will dissect a synovial joint.
	I will become familiar with the anatomy and physiology of a synovial joint.

Lesson Frame: Joint Movement and Conditions	We will review actions and simple machines within the human body.
	I will demonstrate the 8 major actions for joints and match to joint types.
Performance Tasks: Kinesiology Lab Lab Practical - Joint Types and Locations (naming) Dictation Comp Quiz (muscle and joints)	Notes:

Unit Name: **Integumentary System**	**Length**: 2 weeks
Essential Questions: What are the structures in the skin and its accessory organs? What types of glands in the skin are responsible for the condition called acne? Where are these glands located, and how do they produce acne? How does the function of melanin explain not only the variety of skin colors but susceptibility to skin cancer? Which component of the skin is responsible for the stretch marks that pregnant women get when their bellies become very large?	**Outcomes:** The student will have an opportunity to learn about skin, the largest organ in the body. Skin functions include thermoregulation, protection from foreign antigens, protection from desiccation, and sensation of the environment for pain, temperature, pressure, and touch. The student will become familiar with terms associated with the medical specialty of dermatology. The student will be introduced to pathological conditions of the skin and the laboratory procedures used for diagnosis and treatment of these abnormalities.
Academic Vocabulary: albino, apocrine sweat gland, basal layer, collagen, cuticle, dermis, epidermis, epithelium, hair follicle, integumentary system, keratin, lipocyte, lunula, melanin, paronychium, pore, sebaceous gland, sebum, squamous epithelium, stratified, stratum, strata, stratum corneum, subcutaneous tissue, crust, cellulitis, eczema, exanthematous viral diseases, gangrene, impetigo, psoriasis, scabies, scleroderma, systemic lupus erythematosus (SLE), tinea, vitiligo, cyst, erosion, fissure, macule, nodule, papule, polyp, pustule, ulcer, vesicle, wheal	**Learning Targets:** Apply the rules in medical terminology to topics. Name, locate, and describe the functions of the components of skin. ID functions of other systems that are directly related to the skin system to include digestive, circulatory, nervous, and musculoskeletal systems. Identify the pathological conditions that affect and exist with the skin system. Be able to verify how the body regulates temperature. Describe important laboratory tests and clinical procedures.
Topic 1: **Gross Anatomy of Skin**	**Length**: 1 week
Lesson Frame: Microanatomy of Dermal Tissue	We will view integumentary system under microscope.
	I will ID anatomy by sight.
Lesson Frame: Skin Function Related to Other Organ Systems	We will reference the importance of skin.
	I will now all of the jobs that skin is responsible for.
Lesson Frame: Skin Pathology and Conditions	We will observe structural integrity of skin and the changes that result in breech.
	I will be able to ID the 15 pathological symptoms.
Performance Tasks: Microscopy of Skin Samples of various mammal vs. human Lab Practical - ID PArts of Skin Lab Practical - Matching Illustrations to skin pathology	Notes:
Topic 2: **Accessory Organs to Skin**	**Length:** 1 week
Lesson Frame: Hair	We will look at all accesory organs associated with skin.
	I will list the accessory organs to skin.

Lesson Frame: Nails	We will look at all accessory organs associated with skin.
	I will function out the accessory organs.
Lesson Frame: Glands	We will compare and contrast glandular function externally.
	I will know the difference between endocrine and exocrine glands.
Performance Tasks: Microscopy of Hair and Nails Protein Synthesis ID for Skin, Hair, Nails and Glandular Secretions Lab Practical	Notes:

Unit Name: **Reproductive System**	**Length**: 4 week
Essential Questions: What are the terms for the organs in the male reproductive system? How do hormones have an impact on male characteristics and spermtogenesis? What are the combining forms that are used with the male reproductive system? What are the terms for the organs in the female reproductive system? How do the organs interact with hormones and function in the processes of menstruation and pregnancy? What are the combining forms that are used with the female reproductive system? What are the benchmark moments from conception to birth?	**Outcomes:** Opportunity to learn the major organs of the male reproductive system, define some abnormal and pathological conditions that affect the male system, and learn to differentiate between several types of sexually transmitted infections. Students will also be given the opportunity to define many combining forms used to describe the structures of the male system and explain various laboratory tests, clinical procedures, and abbreviations that are pertinent to the system.
Academic Vocabulary: bulbourethral gland, Cowper gland, ejaculation, ejaculatory duct, epididymis, epididymides, erectile dysfunction, flagellum, fraternal twins, glans penis, identical twins, impotence, interstitial cells of the testis, parenchyma, perineum, prepuce (foreskin), prostate gland, scrotum, semen , seminal vesicle, seminiferous tubules, spermatozoon, spermatozoa, sterilization, stroma, testis, testes, testosterone, vas deferens, adnexa uteri, amnion, areola, Bartholin glands, cervix, chorion, clitoris, coitus, corpus luteum, cul de sac, embryo, endometrium, estrogen, fallopian tube, fertilization, fetus, fimbriae, follicle stimulating hormone (FSH), gamete, genitalia, gestation, gonad, graafian follicle, gynecology, human chorionic, gonadotropin (HCG), hymen, labia, lactiferous ducts, luteinizing hormone (LH), mammary papilla, menarche, menopause, menstruation, myometrium, neonatology, obstetrics, orifice, ovary, ovulation, ovum, parturition, perineum, pituitary gland, placenta, pregnancy, progesterone, puberty, uterine serosa, uterus, vagina, vulva	**Learning Targets:** Compare and contrast abnormal conditions that exist for males. Learn major organs of the reproductive and their function. Identify the importance of hormone function and the processes of sperm production. Describe important laboratory tests and clinical procedures used. Relate basic word parts to anatomical locations. Compare and contrast abnormal conditions that exist for females and of the newborn child. Learn major organs of the reproductive and their function. Identify the importance of hormone function and the processes of menstruation and pregnancy. Describe important laboratory tests and clinical procedures used in gynecology and obstetrics.
Topic 1: **Male Reproductive Organ Anatomy and Physiology**	**Length**: 1 week
Lesson Frame: Urogenital Observation	We will ID the male genital components
	I will be able to ID via sight and location.
Lesson Frame: Spermatogenesis to Copulation	We will review meiosis.
	I will be able ID location of sperm production.
Lesson Frame: STD's	We will research and ID various pathologies to male reproduction.
	I will link bacterial and viral pathologies to symptoms.

Performance Tasks: Lab Practical - Structure and Function Lab Practical - Causes for Pathology and Symptoms Dictation Comp Quiz Terminology	Notes:
Topic 2: **Female Reproductive Organ Structure and Function**	**Length**: 1 week
Lesson Frame: Urogenital Observation	We will ID the female genital components
	I will be able to ID via sight and location.
Lesson Frame: Accessory Organs	We will review meiosis.
	I will be able ID location of egg production.
Lesson Frame: Pathology and Conditions	We will research and ID various pathologies to female reproduction.
	I will link bacterial and viral pathologies to symptoms.
Performance Tasks: Lab Practical - Diagraming Hormone Production, Location and Function Cause and Effect of Pathogens Dictation Comp - Terminoogy	Notes:
Topic 3: **Mentrual Cycle to Conception to Birth**	**Length**: 2 week
Lesson Frame: Hormones Before and After Conception	We will match and monitor hormone production before and after conception.
Lesson Frame: Trimesters 1, 2, and 3	We will monitor development during these stages of pregnancy.
	I will annotate the changes for both mom and fetus.
Lesson Frame: Birthing	We will observe the differences in birthing methods.
	I will know the difference between natural birth, assited birth, and caesarian birth.
Performance Tasks: Hormone Matching/Timing Trimester Monitoring and Benchmarks - video series Compare and Contrast Birthing Procedures Monitoring Stages of Birth	Notes:

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**	**Unit Standards:**	**Unit Outcomes:**
Nature of Science	2 weeks	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. 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. HS-PS1-7. Use mathematical representations to support the claim that atoms, and therefore mass, are conserved during a chemical reaction.	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.
Motion	3 weeks	HS-PS2-3. Apply scientific and engineering ideas to design, evaluate, and refine a device that minimizes the force on a macroscopic object during a collision. HS-PS2-1. 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. HS-PS2-2. 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. 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.	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.

Work, Force and Power	3 weeks	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. 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). HS-PS4-1. Use mathematical representations to support a claim regarding relationships among the frequency, wavelength, and speed of waves traveling in various media.	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.
Momentum and Mechanical Advantage	3 weeks	HS-PS4-2. Evaluate questions about the advantages of using a digital transmission and storage of information. 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.	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.
Energy Conversion and Conservation	4 weeks	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. 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). 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.	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.

Electricity and Magnetism	4 weeks	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.	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.
Nature of Matter	5 weeks	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.	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.
Diversity of Matter	5 weeks	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.	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.

Waves	4 weeks	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. 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. 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. 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. 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. HS-PS4-1. Use mathematical representations to support a claim regarding relationships among the frequency, wavelength, and speed of waves traveling in various media.	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.

Unit Name: Nature of Science	**Length**: 2 weeks
Standards: HS-ETS1-1 HS-ETS1-2 HS-PS1-7	**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.
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? **Academic Vocabulary:** Part 1 - Scientific Method/PHEOC, Independent Variable, Dependent Variable, Constant:, Controls, Standard Part 2 - Volume, Mass, Density, Qualitative Data, Quantitative Data	**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.
Topic 1: **Metric System and Units of Measure**	**Length**: 1 week
Lesson Frame: Metric System Stairway	We will study and manipulate numbers for the metric system.
	I will know how to use the metric stairway.
Lesson Frame: Metric Mania Scavenger Hunt	We will convert numbers and measures into and out of metric system.
	I will practice my metric conversions.
Lesson Frame: Metric System Challenge	We will take measurements in length, mass and volume.
	I will be able to use the proper tool for the job.
Performance Tasks: Measuring Objects Unit Conversions within Metric System Unit Conversions from Standard to Metric System	Notes:
Topic 2: **Density**	**Length**: 1 week
Lesson Frame: Density Pyramids	We will learn to use the density pyramid for converting measures.

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

Unit Name: **Motion**	**Length**: 3 weeks
Standards: HS-PS2-3 HS-PS2-1 HS-PS2-2 HS-PS2-4	**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.
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? **Academic Vocabulary:** Distance, Displacement, Speed, Average Speed, Instantaneous Speed, Velocity, Acceleration, Deceleration, Newton's 1st Law	**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.
Topic 1: **Speed vs. Velocity**	**Length**: 2 weeks
Lesson Frame: Exploring Reference Points, Newton's 1st Law	We will devise ways to measure distance and time.
	I will know what a reference point is.
Lesson Frame: Calculating speed of vehicles without RADAR	We will analyze speed and velocity.
	I will calculate the speed and velocity of various objects.
Lesson Frame: Unit Conversions Km/m = mph	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.
Performance Tasks: Bowling Ball - Change in Velocity Speed Trap 400m walk vs.run	Notes:
Topic 2: **Acceleration and Deceleration**	**Length:** 1 week
Lesson Frame: Describing Acceleration	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.
Lesson Frame: Exploring changes in direction	We will make and use an accelerometer.
	I will utilize my accelerometer to make measurements.

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:

Unit Name: **Work, Force and Power**	**Length:** 3 weeks
Standards: HS-PS1-5. HS-PS3-4. HS-PS4-1.	**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.
Essential Questions: Do our students possess the capacity to take these measurements/calculations and manipulate them to support a real life situation? **Academic Vocabulary:** Force, Net Force, Balanced Force, Inertia, Work, Power, Types of Force, Free Body Diagram, Newton's 1st Law, 2nd Law, 3rd Law	**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.
Topic 1: **Force**	**Length**: 1 week
Lesson Frame: Balanced and Unbalanced forces (Newton's 1st Law)	We will demonstrate inertia.
	I will define and apply Newton's 1st Law (inertia).
Lesson Frame: Types of Force	We will demonstrate multiple forces.
	I will be able to determine differences in force.
Lesson Frame: Newton's 2nd Law	We will utilize the force formula for calculations and then conversions.
	I will measure mass and acceleration to get force.
Performance Tasks: Crash Reconstruction - Inertia Free Body Diagrams Making and Reading Accelerometers Whirlybird Contest	Notes:

Topic 2: **Work and Power**	**Length**: 2 weeks
Lesson Frame: Exploring Work, Direction and Weight	We will observe moving objects and monitor their work output.
	I will know how to calculate work. w = f * d.
Lesson Frame: Calculating Work	We will demonstrate work in and work out for efficiency.
	I will will be able to calculate the work under several conditions.
Lesson Frame: Calculating Power	We will demonstrate power.
	I will know how to calculate power P = w/t under specific conditions.
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)	Notes: Research and compare horsepower, electrical power and normal power.

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.
	I will know that every action yields an equal and opposite reaction.
Lesson Frame: Calculating Momentum Law of Conservation of Momentum	We will demonstrate momentum under various conditions.
	I will measure mass and velocity to get momentum.
Lesson Frame: Friction and Gravity	We will demonstrate all different kinds of friction.
	I will know how to make a free body diagram for multiple scenarios.

Performance Tasks: Fitch Barrier Calculations Action Reaction - Bouncing Ball Collisions - Data Collection and Graphing Construction of the Great Pyramids Friction Labs	Notes:
Topic 2: **Mechanical Advantage and Efficiency**	**Length:** 1 week
Lesson Frame: Compare and Contrast MA and Efficiency	We will demonstrate work in and work out.
	I will know how to calculate mechanical advantage of a can opener.
Lesson Frame: Simple Machines	We will introduce the 6 simple machine with all their variations.
	I will ID simple machines.
Lesson Frame: Machines in the Human Body	We will learn the basic of kinesiology.
	I will be able to match human movement examples to the 3 classes of levers.
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	Notes:

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 form 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).

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

Unit Name: **Electricity and Magnetism**	**Length**: 4 weeks
Standards: HS-PS1-3 HS-PS2-4 HS-PS2-5 HS-PS3-5 HS-PS4-4	**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.
Essential Questions: How do the basics of electricity and power relate to consumer goods and affairs in relation to safety, technology, and conservation? **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	**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.

Topic 1: **Electricity and Ohm's Law**	**Length**: 2 weeks
Lesson Frame: Electrical Charge	We will demonstrate flow of electricity.
	I will model static electricity.
Lesson Frame: OHM's Law - Calculations	We will learn the three components of electrical conduction.
	I will use Ohm's law to calculate current, volts and resistance.
Lesson Frame: Identifying Circuits	We will build circuits to get light bulbs to work.
	I will know the difference between parallel and series circuit.
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	Notes: Must be able to label (Ohm's Law) volts, current, resistance on circuits.

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

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.
	I will be able to locate characteristics and statistics of elements.
Lesson Frame: Atomic Structure	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.

	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.explorelearning.com	Notes: List Chemical Reactions

Unit Name: **Diversity of Matter: *New Materials Through Chemistry***	**Length**: 4 weeks
Standards: HS-PS1-4 HS-PS2-6 HS-PS1-5 HS-PS1-5	**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.
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, alloy, polymer, and composite? **Academic Vocabulary:** Metal, Malleable, Ductile, Metallic Bonding, Radioactive Element, Transition Element, Nonmetal, Sublimation, Metalloid, Allotrope, Transuranium Element, Alloy, Luster, Polymer, Monomer, Synthetic, Composite	**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.
Topic 1: **Metals and Alloys**	**Length**: 2 weeks
Lesson Frame: Materials of the Past	We will research the history of various metals.
	I will build a working timeline for this chapter.
Lesson Frame: Observing Properties of Alloys	We will observe the bonding of metals.
	I will ID the thing that make substances like metal stronger and weaker.
Lesson Frame: Iron Age, Bronze age	We will continue to add to our timeline.
	I will be able to site differences in the iron age vs. bronze age.
Performance Tasks: Building Timelines Metallic Glass - Enrichment Observing Properties of Alloys - Lab	Notes:

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

Unit Name: **Waves**	**Length:** 6 weeks
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	**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.

Essential Questions: What is the connection with wave properties and anatomy to the senses, namely hearing and sight? **Academic Vocabulary:** Wave, Medium, Transverse Wave, Compressional Wave, Crests, Troughs, Rarefaction, Wavelength, Frequency, Period, Amplitude, Refraction, Diffraction, Interference, Standing Wave *Sound* - Resonance, Eardrum, Cochlea, Ossicles:, Intensity, Loudness, Decibel, Pitc, Doppler Effect, Music, Acoustics, Sonar *Light* - Opaque, Translucent, Transparent, Pigment, Coherent Light, Incoherent Light, Polarized Light	**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.
Topic 1: **Sound and Hearing**	**Length:** 3 weeks
Lesson Frame: Types of Waves, Anatomy of Waves	We will study the anatomical features of mechanical waves.
	I will be able to ID the major differences in Longitudinal waves and compressional waves.
Lesson Frame: Sound Through Mediums, Measuring Decibels	We will learn to calculate the characteristics of waves.
	I will learn and apply the formulas for frequency, amplitude, and wavelength to actual waves.
Lesson Frame: Anatomy and Physiology of the Ear	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.

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	Notes: Specialize communication and hearing. Match amplitude - decibel frequency - pitch wavelength - speed
Topic 2: **Light and Sight**	**Length**: 3 weeks
Lesson Frame: Behavior of Light	We will research statistics on light.
	I will know the speed of light and how travels through mediums.
Lesson Frame: Light and Color	We will analyze the electromagnetic spectrum (ROYGBIV).
	I will observe how we see and determine colors.
Lesson Frame: Anatomy and Physiology of the Eye	We will study the anatomy and physiology of the eye.
	I will know the difference between rods and cones (light and color detection cells on retina).
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	Notes:

Course Name:	Overcoming Obstacles		
Credits:	1		
Prerequisites:	none		
Description:	A life skills course for middle school students.		
Academic Standards:	CASEL Domains #1, 2, 3, 4, 5, 6, 7, 8, 10, 11, 12, 14, 15, 16, 17, 18, 20, 22, 23, 24		
Units:	**Unit Length:**	**Unit Standards:**	**Unit Outcomes:**
Creating a Positive Environment	10, 60 min. lessons	CASEL Domains #7, 8, 12, 14, 18, 22	Work and communicate effectively as a team, while understanding their own strengths and weaknesses.
Acquiring Cores Skills	14, 60 min. lessons	CASEL Domains # 7, 10, 11, 12, 16, 17, 18, 20, 22, 23, 24	Students will set personal goals and construct a timeline to achieve them.
Developing Related Skills	27, 60 min. lessons	CASEL Domains #1, 2, 3, 4, 5, 6, 7, 10, 11, 15, 17, 18, 24	Students will create and utilize a personal organization system.

Unit Name: **Creating a Positive Environment**	**Length:** 10, 60 min. lessons
Standards: CASEL Domains #7, 8, 12, 14, 18, 22	**Outcomes:** Work and communicate effectively as a team, while understanding their own strengths and weaknesses.
Essential Questions: Who am I? Which traits and skills contribute to success? How can I utilize my own strengths and weaknesses to positively affect my life?	**Learning Targets:** Identify individual personal spaces, develop teamwork, communicate effectively, and set personal goals.
Topic 1: **Getting Started**	**Length:** 4, 60 min. lessons
Standards: 7, 8, 18	**Academic Vocabulary:** characteristics, personal space, traits, skills, obstacles, preferences, values
Lesson Frame: Who are You?	We will: Explore and share images and ideas that represent us.
	I will: participate in a game to break down personal space and develop teamwork.
Lesson Frame: What is Overcoming Obstacles?	We will: identify traits and skills that are necessary for achieving success.
	I will: discuss how traits and skills impact an individual's ability to successfully overcome obstacles.
Lesson Frame: Working in Teams	We will: identify benefits and challenges to working in teams.
	I will: negotiate and agree to a set of classroom rules/guidelines.
Lesson Frame: Setting Expectations	We will: identify and explore our dreams and goals for the future.
	I will: create a visual representation of my dreams for the future.
Performance Tasks: create a cereal box with themselves as hero. Make a collage to show what success means to them. Create a 'personal dream' slogan and put it on a poster.	Notes:
Topic 2: **Confidence Building**	**Length:** 6, 60 minute lessons
Standards: CASEL Domains #7, 8, 12, 14, 22	**Academic Vocabulary:** respect, self-respect, strengths, weaknesses, values, stereotype, perception
Lesson Frame: Giving and Earning Respect	We will: define respect, identify people we respect, and the reason we respect them.
	I will: evaluate my own level of self-respect.
Lesson Frame:Identifying Strengths and Weaknesses	We will: identify and discuss personal strengths and weaknesses

	I will: identify ways I can use my weaknesses to my advantage.
Lesson Frame: Staying Healthy	We will: discuss how diet, sleep, and exercise affect our health and wellbeing.
	I will: create a weekly plan for eating well, sleeping regularly, and exercising.
Lesson Frame: Clarifying Values	We will: analyze how our values influence the decisions we make.
	I will: demonstrate how my values influence my decision making.
Lesson Frame: Avoiding Stereotypes	We will: define stereotype and analyze the effects of stereotyping.
	I will: identify ways to avoid stereotyping others.
Lesson Frame: Developing Personal Power	We will: discover we have the power to affect our lives through the decisions we make.
	I will: create personal symbols that remind me of my personal power.
Performance Tasks: Write a radio announcement describing a recent accomplishment Create a plan for staying healthy Select, share and discuss a video that demonstrates the impact of stereotypes	Notes:

Unit Name: **Acquiring Core Skills**	**Length:** 14, 60 min. lessons
Standards: CASEL Domains # 7,10,11,12,16,17,18,20,22,23,24	**Outcomes:** Students will set personal goals and construct a timeline to achieve them.
Essential Questions: What are my goals and how can I achieve them?	**Learning Target:** Students will study nonverbal and verbal communication and its importance in achieving personal goals. Students will identify barriers that hinder goal achievement and options to combat giving up using a "stepping stone" for achievement.
Topic 1: **Communication**	**Length:** 5, 60 min. lessons
Standards: CASEL Domains #12, 16, 17, 18, 23	**Academic Vocabulary:** nonverbal, assertive, passive, aggressive
Lesson Frame: Understanding nonverbal messages	We will: explore and analyze nonverbal messages.
	I will: use nonverbal messages to communicate.
Lesson Frame: Listening	We will: recognize the importance of and identify ways of improving, listening skills.
	I will: practice and evaluate the effectiveness of active listening skills.
Lesson Frame: Speaking	We will: develop an understanding of the power of our words to affect other people.
	I will: evaluate and choose words to demonstrate the relationship between words and their consequences.
Lesson Frame: Being Assertive	We will: define and find examples of passive, aggressive, and assertive behaviors.
	I will: demonstrate how to use assertive behavior to communicate more effectively.
Lesson Frame: Expressing Opinions Constructively	We will: recognize that it is possible to communicate productively when disagreeing with others.
	I will: participate in a debate, using effective communication skills to express and listen to opinions.
Performance Tasks: Students create and present role plays that involve non-verbal cues. Create a comic of passive, aggressive, or assertive problem solving.	Notes:
Topic 2: **Decision Making**	**Length:** 5, 60 min. lessons
Standards: Casel Domains #20, 22, 24	**Academic Vocabulary:** consequence, collaborate, procrastination, perseverance
Lesson Frame: Making Decisions Big and Small	We will: identify factors that influence the decisions we make.
	I will: use my power to make decisions even when they are hard.
Lesson Frame: Gathering Information	We will: recognize that gathering info. is an important part of decision making.
	I will: practice asking relevant questions and listening to answers to gather information.
Lesson Frame: Identifying Options	We will: recognize that gathering info. is an important part of decision making.

	I will: generate a list of options in response to a given stimulus.
Lesson Frame: Weighing Options and Consequences	We will: practice a method for evaluating options and consequences.
	I will: evaluate pros and cons in order to weigh options and consequences.
Lesson Frame: Making a Choice	We will: collaborate to make a decision about our school.
	I will: demonstrate the decision making process and make a personal decision
Performance Tasks: Write about a difficult decision. Make an informed decision. Make a list of options and consequences given a question.	Notes:
Topic 3: **Goal Setting**	**Length:** 4, 60 min. lessons
Standards: CASEL Domain #7, 10, 11, 24	**Academic Vocabulary:** procrastination, perseverance
Lesson Frame: Defining Goals (2 sessions)	We will: recognize the importance of having realistic, personal goals.
	I will: list goals and use specific criteria to evaluate them.
Lesson Frame: Stepping-Stone Goals	We will: identify short and medium range goals and relate them to the achievement of long-term goals.
	I will: set stepping-stone goals for myself.
Lesson Frame: Taking Action	We will: define 'procrastination'.
	I will: identify obstacles to taking action and develop a plan to act on an immediate goal.
Lesson Frame: Persevering	We will: define perseverance and identify its importance in achieving our goals.
	I will: revise a 'stepping-stone' goal in order to overcome an obstacle and achieve a goal.
Performance Tasks: Students will create acrostics of the word procrastination writing a strategy for avoid procrastinating for each letter of the word.	Notes:

Unit 3: **Developing Related Skills**	**Length:** 27, 60 min. lessons
Standards: CASEL Domains #1, #2, #3, #4, #5, #6, #7, #10, #11, #15, #17, #18, #24	**Outcomes:** Students will create and utilize a personal organization system.
Essential Questions: How do I manage my school tasks in an efficient way?	**Learning Targets:** Students will identify and explore attitudes, environmental factors, stressors, and ineffective strategies that can be barriers to success. Students will recognize the value of being accountable for their own actions and they will develop and practice problem-solving, conflict resolution, organization, and study skills they can utilize to lower these barriers.
Topic 1: **Managing Personal Resources**	**Length:** 5, 60 min. lessons
Standard(s): CASEL Domains #24, #10, #11, #4	**Academic Vocabulary:** time management, credible, initiative, prioritize, stress, time management, excuse
Lesson Frame:Developing a Positive Attitude	We will: identify and analyze positive and negative attitudes and their consequences.
	I will: analyze and identify my positive and negative attitudes and the effects of positive and negative environments.
Lesson Frame: Being Accountable	We will: explore the positive consequences of being accountable for our actions.
	I will: define accountability and list three benefits of being accountable for my actions.
Lesson Frame: Handling Stress	We will: explore sources of stress and the behavioral and emotional signs of stress.
	I will: identify factors in my life that cause me to feel stress and brainstorm ways to handle stress.
Lesson Frame: Managing your Time	We will: study time management strategies and create possible to-do lists.
	I will: analyze a to-do list, setting priorities and scheduling time.
Lesson Frame: Taking the Initiative	We will: explore the benefits and seeking assistance from others and understand that initiative affects the ability to seek assistance and gather information.
	I will: listen to a guest speaker and consider how initiative makes a difference in life.

Performance Tasks: Create a system for organizing their work. Identify stressors in life and how to deal with those stressors.	Notes:
Topic 2: **Studying Effectively**	**Length:** 7, 60 min. lessons
Standards: CASEL Domains - #4, 11, 10	**Academic Vocabulary:** atlas, bibliography, encyclopedia, paraphrase, resource, thesaurus, visuals
Lesson Frame: Getting Organized	We will: explore ways to organize information and materials for school subjects.
	I will: identify the importance of planning and scheduling study time and will create a system for my work.
Lesson Frame: Following Instructions	We will: examine the importance of understanding instructions and practice active listening and reading.
	I will: apply active listening and reading to follow instructions and will practice clarifying written and verbal instructions.
Lesson Frame: Using Appropriate Resources	We will: learn appropriate reference material and resource including computer and internet option.
	I will: identify appropriate reference materials and resources in both print and internet.
Lesson Frame: Taking Notes	We will: study strategies for taking effective notes and important details.
	I will: identify various strategies for effective note taking and will practice note-taking skills
Lesson Frame: Writing Reports	We will: learn to focus on a topic and gather information for writing a report
	I will: identify ways to paraphrase and organize information in a report.
Lesson Frame: Taking Tests	We will: review organizational skills and will identify ways to study and prepare for tests.
	I will: identify test-taking strategies that are beneficial to me.
Lesson Frame: Learning How You Learn Best	We will: discover that we all learn different ways.
	I will: compare and contrast my organizational strategies to those of other students.
Performance tasks: Identify strategies for test taking	Notes:
Topic 3: **Problem Solving**	**Length:** 4, 60 min. lessons

Standards: CASEL Domain #7, #18, #17, #4	**Academic Vocabulary:** collaboration, skills, solution, pros, cons
Lesson Frame: Defining Problems	We will: understand the importance of defining a problem before acting on a solution.
	I will: define a problem and brainstorm possible solutions
Lesson Frame: Identifying options	We will: students will gather information and explore options in order to solve a problem.
	I will: identify options that generate possible solutions to problems.
Lesson Frame: Considering pros and cons	We will: I recall and review the problem solving process and will identify ways to evaluate the pros and cons of different options.
	I will: list pros and cons and weigh options in order to choose the best solutions to problems.
Lesson Frame: Finding Solutions	We will: gather information they need in order to complete a task.
	I will: collaborate with others and use problem solving skills in order to complete a task.
Performance Tasks: Create a plan for a community park that has allotted only a limited amount of space.	Notes:
Topic 4: **Resolving Conflicts**	**Length:** 6, 60 min. lessons
Standards: CASEL Domain #5, #6, #3, #2. #1, #15,	**Academic Vocabulary:** conflict, dynamics, erupt, escalate, intolerance, miscommunication, misspeak, mood
Lesson Frame: Understanding Conflicts	We will: explore positive and negative aspects of conflict and will define “conflict.”
	I will: identify conflicts and the people involved
Lesson Frame: Identifying emotions in conflicts	We will: explore the underlying feelings and emotions that are involved in conflicts. We will: recognize the relationship between emotions and behaviors. We will: identify emotions and behaviors involved in a personal conflicts.
	I will: identify emotions and behaviors involved in a personal conflict.
Lesson Frame: Controlling emotions in conflicts	We will: explore the power we have to control our emotions and behaviors.
	I will: apply methods of controlling emotions and changing reactions to conflict situations.

Lesson Frame: Using communication skills effectively	We will: study how miscommunication can escalate a conflict and even create new conflicts.
	I will: apply assertive behavior skills to conflict situations and apply it in my own life.
Lesson Frame: Creating a Win-Win situation	We will: study the dynamics of win-lose and lose-lose situations and will recognize the benefits of win-win situations.
	I will: practice resolving conflicts.
Lesson Frame: Resolving Conflicts	We will: discuss strategies that we have learned for resolving conflicts.
	I will: analyze conflict situations and make decisions about how to resolve them.
Performance Tasks: complete a scale of emotions. Develop Imessages to communicate various emotions felt during conflicts.	Notes:
Topic 5: **Looking to the Future**	**Length:** 5, 60 min. lessons
Lesson Frame: Adapting to Change	We will: study the positive and negative reactions to change.
	I will: understand that I have the power to accept and adapt to change. I will visualize potential changes in themselves and their lives.
Lesson Frame: Handling peer pressure	We will: discuss peer pressure and will define the concept of peer pressure.
	I will: create solutions to a dilemma that involves peer pressure.
Lesson Frame: Getting Along	We will: participate in an activity in which we will use a variety of skills in order to overcome obstacles and achieve goals.
	I will: identify skills they learned and used in the activity.
Lesson Frame: Playing by the Rules	We will: discuss the importance of learning rules in order to participate successfully in school and in life. We will: recognize that learning about and following rules are matters of personal responsibility. We will: conduct mock trials in order to determine responsibility and resolve conflicts.
	I will: collaborate with my peers to develop mock trials to determine responsibility and resolve conflicts.
Lesson Frame: Presenting yourself	We will: review information we have learned about ourselves.
	I will: identify categories of personal information and record current information about myself.

Performance Tasks: Students will create posters for overcoming obstacles and achieve goals. Students will conduct mock trials in order to determine responsibility and resolve conflicts. Students will write letters in which they present information about themselves in order to achieve an imaginary goal.	Notes:

September	October	November	December	January	February	March	April	May	June
Unit 1	Unit 1	Unit 2	Unit 2	Unit 2	Unit 3	Unit 3	Unit 3	Unit 3	Unit 3
	Unit 2			Unit 3					