

## SCOPE AND SEQUENCE

### LE: 7th Grade Life Science (Trimester 1)

RESOURCES/ CHAPTERS	Time	OBJECTIVES/ GOALS(ELO)	ACTIVITIES/ HOW	ASSESSMENT
Holt Life Science chapter 1 MNPCC unit 1 Science Plus Green Diamond	2-3 weeks	~I will learn the safety procedures needed in a secondary science classroom and model these behaviors through high school. ~Introduction to the areas of Life Science & tools of the life scientist; describe how the other types of science are related to and blend together *~Be able to identify the steps of scientific method and plan out a controlled experiment, ~practice using the metric system	~Read Safety skills packet together and complete the problems ~Reading text book together, directed reading packet work to find content material, ~notes from smart board ~observation activities, ~Study Blue vocabulary practice option	Lab write ups, metric charts, metric math worksheets, section quizzes Student will be self- correcting directed reading packets Unit review and test

<p>tree key work Holt Life Science chapter 2 &amp; 9 Young Naturalist articles: *Tremendously Marvelous Trees; *Ubiquitous Conifers ~Dichotomous Key for Trees Native to Bemidji Area ~Human Body chapters in Holt Life Science</p>	<p>1.5 weeks (3rd week)  2 week for chapter 2 &amp; 9</p>	<p>* I can use a dichotomous key to identify the native coniferous &amp; deciduous trees in Northern MN *students will increase tree key vocabulary *I can model how scientists use classification to help us understand living organisms *I can identify the life processes carried out by all living things *1. Tissues, organs and organ systems are composed of cells and function to serve the needs of all cells for food, air and waste removal. *I can describe how the organs in the respiratory, circulatory, digestive, nervous, skin and urinary systems interact to serve the needs of vertebrate organisms.</p>	<p>~ key in samples brought to class from teacher and students ~students create leaf rubblings with vocabulary pointed out on paper (Leaf pictionary page) ~read and discuss MN Volunteer Conservation articles  ~reading text book Ch 2 together and independently; directed reading packet work to find content material, notes from smart board observation activities, Study Blue vocabulary practice option ~chapter review &amp; final test</p>	<p>List &amp; journal with steps &amp; scientific names; What I Know pre - write  Pond water observation lab write up  Building Blocks reinforcement Poste project,  Classification chart f Homo sapien  Human Body System notetaking Chart</p>
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<p>Holt Life Science chapter 3 &amp; 4</p> <p>Youtube: Mr Anderson's cell lessons from Bozeman:<a href="https://www.youtube.com/watch?v=2aVnN4RePyl">https://www.youtube.com/watch?v=2aVnN4RePyl</a></p> <p>Untamed Science videos</p>	<p>3 weeks</p>	<p>~ All living organisms are composed of one or more cells which carry on the many functions needed to sustain life.</p> <p>~ Recognize that all cells do not look alike and that specialized cells in multicellular organisms are organized into tissues and organs that perform specialized functions.</p> <p><i>For example : Nerve cells and skin cells do not look the same because they are part of different organs and have different functions.</i></p> <p>~I recognize that cells repeatedly divide to make more cells for growth and repair.</p> <p>~I can use the presence of the cell wall and chloroplasts to distinguish between plant and animal cells.</p>	<p>~reading text book together and independently; directed reading packet work to find content material,</p> <p>~notes from smart board observation activities,</p> <p>~visual Cell Flashcards</p> <p>~Edible Cell Project</p> <p>~Egg Osmosis</p> <p>~ Compare microscopic views of plant cells and animal cells.</p> <p>~Study Blue vocabulary practice option</p>	<p>~section quizzes</p> <p>~self correcting directed reading packets,</p> <p>~lab journals documenting observations,</p> <p>~project plan for Edible Cell</p> <p>~ microscope drawings and explanation</p>
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<p>Holt Life Science chapters 5 &amp; 6</p>	<p>3 - 4 weeks</p>	<p><b>1. Reproduction is a characteristic of all organisms and is essential for the continuation of a species. Hereditary information is contained in genes which are inherited through asexual or sexual reproduction.</b></p> <p><i>a. I can Recognize that cells contain genes and that each gene carries a single unit of information that either alone, or with other genes, determines the inherited traits of an organism.</i></p> <p><i>b. I can Recognize that in asexually reproducing organisms all the genes come from a single parent, and that in sexually reproducing organisms about half of the genes come from each parent.</i></p> <p><i>c. I can Distinguish between characteristics of organisms that are inherited and those acquired through environmental influences.</i></p> <p><i>d. Describe examples where selective breeding has resulted in new varieties of cultivated plants and particular traits in domesticated animals.</i></p>	<p>reading text book together and independently; directed reading packet work to find content material, notes from smart board observation activities, Study Blue vocabulary practice option</p>	<p>pretest/post test, section quizzes, self correcting directed reading packets, personal traits inventory, DNA model building project and evaluatic</p>
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<p>Holt Life Science chapter 7 &amp; 8</p>	<p>3 weeks</p>	<p><b>Individual organisms with certain traits in particular environments are more likely than others to survive and have offspring.</b></p> <ul style="list-style-type: none"> <li>a. <i>I can explain how the fossil record documents the appearance, diversification and extinction of many life forms.</i></li> <li>b. <i>I can Use internal and external anatomical structures to compare and infer relationships between living organisms as well as those in the fossil record.</i></li> <li>c. <i>I can Recognize that variation exists in every population and describe how a variation can help or hinder an organism's ability to survive.</i></li> <li>d. <i>Recognize that extinction is a common event and it can occur when the environment changes and a population's ability to adapt is insufficient to allow its survival.</i></li> </ul>	<p>reading text book together and independently; directed reading packet work to find content material, notes from smart board observation activities, Study Blue vocabulary practice option, cast &amp; mold activity with sea shells</p>	<p>pretest/post test, section quizzes, self correcting directed reading packets, cast &amp; mold activity with sea shells</p>
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<p>Physical science Standards for 7th grade  Science World CORE content material  interactive reading packet from Glenco  Physical Science Text</p>	<p>PS  1-2 wks  Science World  throughout the entire  12 weeks</p>	<p>1. The idea that matter is made up of atoms and molecules provides the basis for understanding the properties of matter.</p> <p>a. I can Recognize that all substances are composed of one or more of approximately one hundred elements and that the periodic table organizes the elements into groups with similar properties.</p> <p>b. I can Describe the differences between elements and compounds in terms of atoms and molecules.</p> <p>c. I can Recognize that a chemical equation describes a reaction where pure substances change to produce one or more pure substances whose properties are different from the original substance(s).</p>	<p>~ Science World; reading articles, doing comprehension &amp; digital skills sheets.  ~ Oreo atoms,  ~periodic table coloring key, interactive reading packets, notes from smart board,  ~periodic table T-shirt w/ saying and  ~integration into Life Science text  Example: photosynthesis &amp; cellular respiration</p>	<p>~comprehension &amp; digital skills sheets. sections on post test  ~Lab reports,  ~completion of projects in 3 ring binder evaluation</p>
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## SCOPE AND SEQUENCE

### LE: 7th Grade Life Science (Trimester 3)

RESOURCES/ CHAPTERS	Time	OBJECTIVES/ GOALS	ACTIVITIES/ HOW	ASSESSMEN

Human beings are constantly interacting with other organisms that cause disease.

- a. *Explain how viruses, bacteria, fungi and parasites may infect the human body and interfere with normal body functions.*
- b. *Recognize that a microorganism can cause specific diseases and that there are a variety of medicines available that can be used to combat a given microorganism.*
- c. *Recognize that vaccines induce the body to build immunity to a disease without actually causing the disease itself*
- d. *Recognize that the human immune system protects against microscopic organisms and foreign substances that enter from outside the body and against some cancer cells that arise from within.*

reading text book together and independently; directed reading packet work to find content material, notes from smart board observation activities, Study Blue vocabulary practice option,



Chapter 12 & 13

Fast Plants kits or  
Monocots & dicots  
plantings

Recognize that producers use the energy from sunlight to make sugars from carbon dioxide and water through a process called photosynthesis. This food can be used immediately, stored for later use, or used by other organisms.

reading text book together and independently; directed reading packet work to find content material, notes from smart board observation activities and dissections of flower parts, Study Blue vocabulary practice option,

reading text book  
packet work to find  
notes from smart b  
Food web posters  
Study Blue vocabu

**1. Natural systems include a variety of organisms that interact with one another in several ways.**

*a. I can Identify a variety of populations and communities in an ecosystem and describe the relationships among the populations and communities in a stable ecosystem.*

*b. I can compare and contrast the roles of organisms within the following relationships: predator/prey, parasite/host, and producer/consumer/ decomposer.*

*C. I can Explain how the number of populations an ecosystem can support depends on the biotic resources available as well as abiotic factors such as amount of light and water, temperature range and soil composition.*

**2. The flow of energy and the recycling of matter are essential to a stable ecosystem.**

*a. I can recognize that producers use the energy from sunlight to make sugars from carbon dioxide and water through a process called photosynthesis. This food can be used immediately, stored for later use, or used by other organism*

*b. Describe ways that human activities can change the populations and communities in an ecosystem.*

*c. I can Describe the roles and relationships among producers, consumers, and decomposers in changing energy from one form to another in a food web within an ecosystem. decomposers in changing energy from one form to another in a food web within an ecosystem.*


**SCOPE AND SEQUENCE**

**LE: 8th Grade Earth and Space Science (Trimester 1)**

RESOURCES/ CHAPTERS	Time	Essential learner outcomes	ACTIVITIES/ HOW	ASSESSMENT
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		"I can"...		
holt earth science text  Chapter 1, Science Plus Holt	2 weeks	~Identify the branches of Earth Science & describe how the other types of science are related to and blend together ~Be able to identify the step of scientific method and plan out a controlled experiment, ~practice using the metric system	reading text book together, directed reading packet work to find content material, notes from smart board observation activities, Measurement Activities	section quizzes post test Lab reports 3 ring binder evaluation
MN Biomes research Project Will Steiger Climate Change website & MN DNR website on Biomes	2 weeks		Web based research on Climate change and Minnesota Biomes	Final Quiz Research Report in Google Docs

<p>Rocks &amp; Minerals of MN and Natural Resources, holt earth science text Chapters 3 - 5, MNUSGS website MN Volunteer Young Naturalist digital articles. interactive reading packet from Holt Science Spectrum</p>	<p>2 weeks</p>	<p>Chapter &amp; Section Objectives listed on the following pages.  ch 3; pgs 66, 70 &amp;74  ch 4; pgs 90, 98,102, 106  ch 5; pgs 122, 126,134</p>	<p>reading text book together, directed reading packet work to find content material, Or, content outlines from reading text based on section objectives. notes from smart board observation activities, Measurement Activities</p>	<p>section quizzes  post test  Lab reports  3 ring binder evaluation</p>
<p>Earth History Plate tectonics, Earthquakes &amp; Volcanoes chapters 6 - 9 OR interactive reading packet from Holt Science Spectrum</p>	<p>2 weeks</p>	<p>Chapter &amp; Section Objectives listed on the following pages.  ch 6; pgs 152,156,162, 166, 172  ch 7; pgs 190, 198, 202, 206  ch 8; pgs 224, 230, 234  ch 9; pgs 250, 256,260</p>	<p>reading text book together &amp; independently, directed reading packet work to find content material, notes from smart board, map work STem activity from textbook, computer simulated activity, Volcanoes chemical activities</p>	<p>section quizzes  post test  Lab reports  3 ring binder evaluation</p>

Weathering and Erosion by Wind, Water & Ice, Holt earth science text 10-12, OR interactive reading packet from Holt Science Spectrum	2 weeks	Chapter & Section Objectives listed on the following pages ch 10; pgs 278, 284, 288, 294 ch 11; pgs 308, 316, 320, 326 ch 12; pgs 342, 348, 352, 358	interactive reading packets, notes from smart board, stream table erosion activity, MN glacial deposition map	section quizzes post test Lab reports MN glacial deposition m. 3 ring binder evaluation
Physical Science Standards for 8th grade & MCA II Science World CORE material	1 -2 weeks throughout the trimester	MN State Standard objectives as stated on MN ED site.	Science World; reading articles, doing comprehension & digital skills sheets. Oreo Isotopes, interactive reading packets, notes from smart board,	comprehension & digital skills sheets. sections on post test Lab reports 3 ring binder evaluation

### SCOPE AND SEQUENCE

#### LE: 8th Grade Earth and Space Science (Trimester 2)

RESOURCES/ CHAPTERS	Time	OBJECTIVES/ GOALS	ACTIVITIES/ HOW	ASSESSMENT	

Meteorology Chapters 15-17	3 weeks	Global climate and weather Atmosphere	interactive reading packets, notes from smart board,	Test Quiz Lab water cycle	8.3.2.1.2 through 8.3.2.2.3
Astronomy Chapters 18-21	4 weeks	Planets Galaxies Gravity Inertia moons	interactive reading packets, notes from smart board,	Test Quiz Lab: phases of the moon, location of stars and	8.3.3.1.1 through 8.3.3.1.5
Oceanography Chapter 13-14	2 weeks		interactive reading packets, notes from smart board,	Test Quiz Lab	8.1.3.4.1 8.2.3.1.1 8.3.1.1.2

## SCOPE AND SEQUENCE

### LE: 9th Grade Physical Science

	RESOURCES/ CHAPTERS	OBJECTIVES/ GOALS	ACTIVITIES/ HOW	ASSESSMENT	Standards
	Holt Physical Science <ul style="list-style-type: none"> <li>• Chapter 1</li> </ul>	1) Review Scientific Method 2) Review Metric System 3) Introduce Dimensional analysis 4) Make accurate and precise measurements 5) Organize and Interpret data by making and using graphs	1) Unit 1 Study Guide 2) Science Skill Scramble Lab 3) Surface Tension Lab 4) History of Metric Article 5) Incredible Measurement activity 6) Skittles Graphing Activity	1) Unit 1 Vocab Quiz 2) Open Note Quiz - Measurement and Metric 3) Metric Conv and Dimen. Analysis Quiz 4) Unit 1 Test - The Nature of Science	9.1.3.2.2 Analyze possible careers in science and engineering in terms of education 9.1.1.1.1 Explain the implications of the assumption that the rules of the universe are the same everywhere and these rules can be discovered via investigation 9.1.1.1.6 Describe how change in scientific knowledge generally occur in incremental steps that include and build on earlier knowledge 9.1.1.2.1 Formulate a testable hypothesis, design and conduct an experiment. 9.1.3.4.2 Determine and use appropriate safety procedures. 9.1.3.4.5 Demonstrate how unit



					consistency and dimensional analysis can guide the calculation of quantitative solutions and verification of results.
r	Holt Physical Science <ul style="list-style-type: none"> <li>Chapter 2</li> </ul>	1) Identify the differences between: <ul style="list-style-type: none"> <li>a) elements, compounds, molecules, and mixtures</li> <li>b) physical and chemical properties</li> <li>c) physical and chemical changes</li> </ul>	1) Unit 2 Study Guide 2) Mixtures Activity 3) Hail in a test tube lab 4) Rainbow dens column lab 5) Density Calculations Worksheet	1) Unit 2 Vocab Quiz 2) Open Note Quiz - Matter 3) Density Calc Quiz 4) Unit 2 Test - Matter	9.1.3.4.3 Select and use appropriate numeric, symbolic, pictorial, or graphical representation to communicate scientific ideas, procedures and experimental results. 9.2.1.1.1 Describe the relative charges, masses, and locations of the protons, neutrons, and electrons in an atom of an element. 9.2.3.2.6 Compare fission and fusion in terms of the reactants and the products formed.
s	Holt Physical Science <ul style="list-style-type: none"> <li>Chapter 3</li> </ul>	1) Identify the differences in K.E. in solids, liquids, gases and plasma 2) Describe energy transfers in changes of state 3) Describe principles associated with buoyancy and gas laws	1) Unit 3 Study Guide 2) Melting of ice lab 3) Virtual Lab - Phase Changes 4) Oobleck Lab 5) Ice Cream Lab	1) Unit 3 Vocab Quiz 2) Boyles and Charles Law Quiz 3) Open Note Quiz on Changes of State 4) Unit 3 Test -States of Matter	9.2.3.2.1 Identify the energy forms and explain the transfers of energy involved in the states of matter 9C.2.1.4.1 Use kinetic molecular theory to explain how changes in energy content affect the state of matter 9C.2.1.4.2 Use kinetic molecular theory to explain the behavior of gases and the relationship among temperature, pressure, volume and the number of particles.
s e	Holt Physical Science <ul style="list-style-type: none"> <li>Chapter 4 &amp; 5</li> </ul>	1) Describe the history of the atom; scientists and discoveries 2) Identify the particles found within the atom 3) Draw and describe Bohr Model 4) Describe the contributions of Mendeleev and Moseley in organizing the periodic table	1) Unit 4 Study Guide 2) History of the atom project 3) Elements Video 4) Flame Test Lab	1) Unit 4 Vocab Quiz 2) Open Note Quiz on Bohr Models and atoms 4) Unit 4 Test -States of Matter	9.1.1.1.7 Explain how scientific and technological innovations -as well as new evidence- can challenge portions of, or entire accepted theories and models including the atomic theory. 9.1.3.4.6 Analyze the strengths and limitations of physical, conceptual, mathematical and computer models used by scientists. 9.2.1.1.2 Describe how experimental evidence led Dalton, Rutherford, Thompson, Chadwick and Bohr to develop increasingly

				<p>accurate models of the atom.</p> <p>9.2.1.1.3 Explain the arrangement of the elements on the Periodic Table, including the relationships among elements in a given column or row.</p> <p>9.2.1.1.4 Explain that isotopes of an element have different numbers of neutrons.</p>
<p>Holt Physical Science</p> <ul style="list-style-type: none"> <li>Chapter 6</li> </ul>	<p>1) Describe chemical bonds</p> <p>2) Identify the difference between:</p> <ol style="list-style-type: none"> <li>Ionic Bonds</li> <li>Covalent Bonds</li> <li>Metallic Bonds</li> </ol> <p>3) Name and write formulas for ionic and covalent compounds</p>	<p>1) Unit 5 Study Guide</p> <p>2) Bonding Basic</p> <p>3) Ionic Bonding Lab</p> <p>4) Ionic Bonding Puzzle</p> <p>5) Flashcards - polyions</p> <p>6) Video - Corrosion and Decomposition</p> <p>7) Marshmallow Bond Lab</p>	<p>1) Unit 5 Vocab Quiz</p> <p>2) Open Note bonding Quiz</p> <p>3) Polyatomic Ion Quiz</p> <p>4) Unit 5 Test - Structure of Matter</p>	<p>9.2.1.2.1 Describe the role of valence electrons in the formation of chemical bonds.</p> <p>9.2.1.2.2 Explain how the rearrangement of atoms in a chemical reaction illustrates the law of conservation of mass.</p>
<p>Holt Physical Science</p> <ul style="list-style-type: none"> <li>Chapter 7</li> </ul>	<p>1) Describe chemical reactions</p> <p>2) Distinguish between endothermic and exothermic reactions</p> <p>3) Balance chemical reactions</p> <p>4) Identify reactions as:</p> <ol style="list-style-type: none"> <li>synthesis</li> <li>decomposition</li> <li>single replacement</li> <li>double replacement</li> <li>combustion</li> </ol>	<p>1) Unit 6 Study Guide</p> <p>2) Conserv of Mass Lab</p> <p>3) Balancing Act Wksht</p> <p>4) Catalyst Lab Activity</p> <p>5) Single replacement Lab</p> <p>6) Types of chemical reactions lab</p>	<p>1) Unit 6 Vocab Quiz</p> <p>2) Open Note reactions quiz</p> <p>3) Balancing Quiz</p> <p>4) Unit 5 Test - Structure of Matter</p>	<p>9.2.1.2.3 Describe a chemical reaction using words and symbolic equations.</p> <p>9.2.1.2.4 Relate exothermic and endothermic chemical reactions to temperature and energy changes.</p> <p>9.1.3.2.1 Provide examples of how diverse cultures, including natives from all of the Americas, have contributed scientific and mathematical ideas and technological inventions.</p>

### SCOPE AND SEQUENCE

#### LE: 9th Grade Physical Science (Trimester 2)

RESOURCES/ CHAPTERS	OBJECTIVES/ GOALS	ACTIVITIES/ HOW	ASSESSMENT	Standards
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n	Holt Physical Science • Chapter 11	<ol style="list-style-type: none"> <li>1) Describe speed and velocity</li> <li>2) Calculate speed, distance, time, acceleration and velocity</li> <li>3) Graph velocity and acceleration</li> <li>4) Describe the four fundamental forces</li> <li>5) Identify the different types of friction</li> </ol>	<ol style="list-style-type: none"> <li>1) Unit 7 Study Guide</li> <li>2) Speed Lab</li> <li>3) Velocity/accel ramp lab</li> <li>4) WHS velocity and accel worksheet</li> <li>5) Video: Speed/Decathlon</li> <li>6) Video: Friction - That Mu you do</li> </ol>	<ol style="list-style-type: none"> <li>1) Unit 7 Vocab Quiz</li> <li>2) Open Note motion quiz</li> <li>3) Velocity &amp; Acceler. Quiz</li> <li>4) Unit 7 Test - Struct of Matter</li> </ol>	9.1.3.4.4 Relate the reliability of data to consistency of results, identify sources of error, and suggest ways to improve data collection and analysis.
s	Holt Physical Science • Chapter 12	<ol style="list-style-type: none"> <li>1) Describe: <ol style="list-style-type: none"> <li>a) Newton's First Law</li> <li>b) Newton's Second Law</li> <li>c) Weight vs Mass</li> <li>d) Newton's Third Law</li> <li>e) Momentum</li> </ol> </li> <li>2) Calculate Force, Mass, Acceleration, and Weight</li> </ol>	<ol style="list-style-type: none"> <li>1) Unit 8 Study guide</li> <li>2) Calculating weight and forces worksheet</li> <li>3) Strength of paper Lab</li> <li>4) Video: Disney Newton's Law</li> </ol>	<ol style="list-style-type: none"> <li>1) Unit 8 Vocab Quiz</li> <li>2) Open Note Forces quiz</li> <li>3) Newton's Law Quiz</li> <li>4) Unit 8 Test - Forces &amp; Newton's Law</li> </ol>	<p>9.2.2.2.1 Recognize that inertia is the property of an object that causes it to resist changes in motion</p> <p>9.2.2.2.2 Explain and calculate the acceleration of an object subjected to a set of forces in one dimension (<math>F=ma</math>)</p> <p>9.2.2.2.3 Demonstrate that whenever one object exerts force on another, an equal and opposite force is exerted by the 2nd object.</p> <p>9.2.2.2.4 Use Newton's universal law of gravitation to describe and calculate the attraction between massive objects.</p>
	Holt Physical Science • Chapter 13	<ol style="list-style-type: none"> <li>1) Distinguish between work and energy</li> <li>2) Identify the 6 types of simple machines</li> <li>3) Describe the difference between potential and kinetic energy</li> <li>4) Calculate potential and kinetic energy</li> </ol>	<ol style="list-style-type: none"> <li>1) Unit 9 Study Guide</li> <li>2) Work and Power Lab</li> <li>3) Kinetic and Potential Energy Pendulum Lab</li> <li>4) Simple Machines Summary Poster</li> </ol>	<ol style="list-style-type: none"> <li>1) Unit 9 Vocab Quiz</li> <li>2) Open Note work quiz</li> <li>3) Energy Calc Quiz</li> <li>4) Unit 9 Test - Work and Energy</li> </ol>	<p>9.2.3.2.1 Identify the energy forms and explain the transfer of energy involved in the operation of common devices (e.g. light bulbs)</p> <p>9.2.3.2.2 Calculate and explain the energy, work, and power involved in energy transfers in a mechanical system.</p>
t	Holt Physical Science	<ol style="list-style-type: none"> <li>1) Identify methods of energy transfer</li> </ol>	<ol style="list-style-type: none"> <li>1) Unit 10 Study Guide</li> <li>2) Heat Transfer Activity</li> </ol>	<ol style="list-style-type: none"> <li>1) Unit 10 Vocab Quiz</li> <li>2) Open Note Heat quiz</li> </ol>	9.2.3.2.1 Identify the energy forms and explain the transfer of energy involved in the

	<ul style="list-style-type: none"> <li>Chapter 14</li> </ul>	2) Describe Conductors and Insulators 3) Describe specific heat 4) Use specific heat in calculations	3) Specific Heat Lab - Food Calories	3) Heat and Calories Quiz 4) Unit 10 Test - Heat and Temp	operation of common device (e.g. light bulbs)
es	Holt Physical Science <ul style="list-style-type: none"> <li>Chapter 15</li> </ul>	1) Describe: <ol style="list-style-type: none"> <li>Transverse waves</li> <li>Longitudinal waves</li> <li>Surface waves</li> <li>Wave Properties</li> <li>The Doppler Effect</li> <li>Reflection, Diffraction and Refraction</li> <li>Interference</li> </ol>	1) Unit 11 Study Guide 2) Creating Waves with a Pendulum Lab 3) Create surface waves Lab 4) Calculating frequency, period, waves speed wksht	1) Unit 11 Vocab Quiz 2) Open Note quiz - types of waves 3) Amplitude, freq Quiz 4) Unit 11 Test - Waves	9.1.3.4.1 Describe how technological problems and advances often create a demand for new scientific knowledge, improved mathematics and new technology.
	Holt Physical Science <ul style="list-style-type: none"> <li>Chapter 16</li> </ul>	1) Describe: <ol style="list-style-type: none"> <li>properties of sound</li> <li>Ultrasound and Sonar</li> </ol> 2) Identify how reflection of light produces images 3) Describe the process of refraction of light 4) Identify how light interacts with mirrors and lenses	1) Unit 12 Study Guide 2) Amplifying the Sound of a Tuning Fork Lab 3) Light and Mirrors Lab	1) Unit 12 Vocab Quiz 2) Open Note Sound and Light quiz 3) Unit 12 Test - Struct of Matter	9.2.3.2.3 Describe how energy is transferred through sound waves and how pitch and loudness are related to wave properties of frequency and amplitude. 9.2.3.2.4 Explain and calculate current, voltage and resistance and describe energy transfer in simple electric circuits. 9.2.3.2.5 Describe how an electric current produces a magnetic force, and how this interaction is used in motors and electromagnets to produce mechanical energy.

## SCOPE AND SEQUENCE

### LE: 10th Grade Biology (Trimester 1)

RESOURCES/ CHAPTERS	OBJECTIVES/ GOALS	ACTIVITIES/ HOW	ASSESSMENT	Standards
Chapter 1, Chapter 2	1) list the steps of the scientific process. 2) describe the characteristics of living things. 3) describe the levels of classification. 4) Describe what an element is and what it is composed of. 5) describe the types of bonds. 6) Describe how water is a polar molecule and how that affects living things. 7) Describe the different types of macromolecules.	1) Chapter 1 study guide 2) Chapter 1 Powerpoint notes 3) Scientific process lab. 4) Chapter 2 study guide 5) Chapter 2 Powerpoint Notes. 6) Oil/water lab	1) Open note chapter 1.1/1.2, 1.3, 1.4, 1.5 quizzes. 2) Chapter 1 test. 3) Open note chapter 2.1, 2.2, 2.3, 2.4/2.5 quizzes. 4) Chapter 2 test.	9.1.1.1.2 9.1.1.1.3 9.1.1.1.4 9.1.1.1.6 9.1.1.1.7 9.4.1.2.1 9.4.1.2.2 9.1.3.1.3 9.1.3.4.2
Chapter 3	1) Describe the Cell Theory. 2) Describe why cells are small. 3) Contrast between eukaryotic and prokaryotic cells. 4) Describe the plasma membrane. 5) Describe the process of	1) Chapter 3 Study Guide 2) Chapter 3 Powerpoint notes. 3) Diffusion/ osmosis lab. 4) Animal/plant cell coloring worksheet. 5) Cell model project. 6) Cell video.	1) Open note chapter 3.1, 3.2, 3.3/3.4, 3.5 quizzes. 2) Cell model project presentations. 3) Chapter 3 Test.	9.4.1.1.1 9.4.1.1.2 9.4.1.2.3 9.4.1.2.4 9.4.1.2.5 9.1.3.4.2

	diffusion, osmosis, facilitated diffusion and active transport. 6) Name and describe the organelles of a cell.			
Chapter 4.1-4.3	1) Describe how light travels both as a wave and particle. 2) Describe how pigments such as chlorophyll absorb light. 3) Describe the light dependent reaction. 4) Describe the calvin cycle.	1) Chapter 4 Study Guide 2) Chapter 4 Powerpoint notes. 3) Photosynthesis lab 4) Photosynthesis diagrams. 5. Photosynthesis video.	1) Open notes Chapter 4.1, 4.2, 4.3 quizzes. 2) Chapter 4.1-4.3 Test	9.4.1.2.4 9.4.2.2.1 9.1.3.1.2 9.1.3.1.1 9.1.1.2.1 9.1.1.2.2 9.1.3.4.2
Chapter 4.4-4.6	1) Describe how cells make ATP. 2) Describe what is made in glycolysis, Krebs's Cycle, and Electron transport chain. 3) Describe the difference between aerobic and anaerobic. 4) Name how much ATP is made in each step of cellular respiration. 5) Describe what happens during fermentation.	1) Chapter 5 Study Guide 2) Chapter 5 Powerpoint notes. 3) Cellular respiration lab. 4) Cellular respiration diagrams. 5) Cellular respiration video.	1) Open note chapter 4.4, 4.6, 4.7 quizzes. 2) Chapter 4.4-4.6 test.	9.4.1.2.4 9.4.2.2.1 9.1.3.1.2 9.1.3.1.1 9.1.3.4.2
Chapter 8	1) Describe what makes up a nucleotide.. 2) Describe the structure of DNA and RNA. 3) Describe what nucleotides pair with each other in DNA and RNA. 4) Describe how DNA replicates. 5) Describe how DNA and RNA produce proteins through transcription and translation..	1) Chapter 8 study guide 2) Powerpoint notes. 3) DNA sequences lab/worksheets. 4) DNA video. 5) Protein synthesis lab 6) Protein synthesis video	3) Open Notes 8.1/8.2, 8.3, 8.4/8.5 quizzes 4) Chapter 8 Test	9.4.1.2.4 9.4.3.1.1 9.4.3.1.3 9.4.3.2.1 9.1.3.2.1

Chapter 5	<ul style="list-style-type: none"> <li>1) Describe binary fission in prokaryotes.</li> <li>2) Describe the cell cycle in eukaryotes.</li> <li>3) Name and describe the stages of mitosis.</li> <li>4) Describe what crossing over and independent assortment are in meiosis.</li> <li>5) Describe why cells go through two divisions in meiosis.</li> <li>6) Describe the difference between a haploid and diploid cell.</li> </ul>	<ul style="list-style-type: none"> <li>1) Chapter 5 study guide</li> <li>2) Powerpoint notes</li> <li>3) Mitosis microscope lab.</li> <li>4) Mitosis video.</li> <li>5) Meiosis chromosome lab.</li> <li>6) Meiosis video.</li> </ul>	<ul style="list-style-type: none"> <li>1) Open Notes chapter 5.1, 5.2, 5.3/ 5.4, 5.5 quizzes.</li> <li>2) Chapter 5 Test</li> </ul>	<ul style="list-style-type: none"> <li>9.4.1.2.6</li> <li>9.4.3.2.2</li> <li>9.4.4.2.5</li> <li>9.1.1.2.1</li> <li>9.1.3.3.2</li> </ul>
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### SCOPE AND SEQUENCE

#### LE: 10th Grade Biology (Trimester 2)

RESOURCES/ CHAPTERS	OBJECTIVES/ GOALS	ACTIVITIES/ HOW	ASSESSMENT	
Chapter 19/20	<ul style="list-style-type: none"> <li>1) Understand the process Gregor Mendel went through to understand the genetics of the garden pea.</li> <li>2) Complete a monohybrid and dihybrid punnett square.</li> <li>3) describe what a phenotype and genotype are.</li> <li>4) Know the difference between homozygous and heterozygous is.</li> <li>5) Describe and complete punnett squares of sex linked traits.</li> <li>6) Complete and analyze pedigree charts.</li> <li>7) understand genetic</li> </ul>	<ul style="list-style-type: none"> <li>1) Genetics Study Guide</li> <li>2) Chapter Powerpoint notes.</li> <li>3) Punnett Square worksheet packet.</li> <li>4) Pedigree worksheets.</li> </ul>	<ul style="list-style-type: none"> <li>1) Genetics quizzes</li> <li>2) Genetics test</li> </ul>	<ul style="list-style-type: none"> <li>9.4.3.1.1</li> <li>9.4.3.1.2</li> <li>9.4.3.2.3</li> <li>9.4.4.2.1</li> <li>9.4.4.2.5</li> </ul>

	disorders and what causes them.			
Chapter 10	<p>1) Understand how Darwin Developed his theory.</p> <p>2) describe how the theory of natural selection.</p> <p>3) Describe how the finches on the Galapagos Islands show evidence of natural selection.</p> <p>4) Describe how the fossil record shows evidence of evolution through time.</p> <p>5) Describe how comparative anatomy and comparative embryology show common ancestry.</p> <p>6) Describe how evolutionary trees and cladograms show common ancestry.</p>	<p>1) Chapter 10 study guide</p> <p>2) Chapter 10 Powerpoint notes.</p> <p>3) Evolution/natural selection lab.</p> <p>4) Cladogram worksheet.</p> <p>5) Types of natural selection worksheet.</p>	<p>1) Open Notes 10.1/10.2, 10.3, 10.4, 10.5 quizzes.</p> <p>2) Chapter 10 Test.</p>	<p>9.4.3.3.1</p> <p>9.4.3.3.2</p> <p>9.4.3.3.3</p> <p>9.4.3.3.4</p> <p>9.4.3.3.5</p> <p>9.4.3.3.6</p>
Chapter 13, 14	<p>1) Understand what a population, community, ecosystem, and biosphere are.</p> <p>2) Describe what is necessary for populations to grow exponentially.</p> <p>3) Describe what affects carrying capacity and population numbers.</p> <p>4) Describe the three types of population dispersion, uniform, random, clumped.</p> <p>5) Draw and describe a survivorship curve showing the three types of survivorship.</p> <p>6) Describe how communities interact by competition, predation, commensalism, mutualism,</p>	<p>1) Chapter 13 &amp; 14 Study Guide</p> <p>2) Chapter 13 &amp; 14 Powerpoint notes.</p> <p>3) ecosystem/ food web project</p>	<p>1) Open notes 13.1/13.2, 13.3/13.4/13.5, 13.6/14.1/14.2, 14.3/14.4/14.5 quizzes</p> <p>2) Project presentations.</p> <p>3) Chapter 13 &amp; 14 test.</p>	<p>9.4.2.1.1</p> <p>9.4.2.1.2</p> <p>9.4.2.2.2</p> <p>9.1.3.1.1</p>



	<p>parasitism.</p> <p>7) Describe mutualism, commensalism, and parasitism.</p> <p>8) Describe how energy flows through an ecosystem.</p> <p>9) Produce a food web of an ecosystem.</p>			
No chapter-	<p>1) Describe an environmental problem caused by humans that affects ecosystems.</p> <p>2) Describe genetic engineering in terms of gene transfer using restriction enzymes and plasmids.</p> <p>3) Describe contributions from diverse cultures, including Minnesota American Indian tribes and communities, to the understanding of interactions among humans and living systems.</p>	<p>1) Human interactions project</p> <p>2) Genetic Engineering Powerpoint notes.</p> <p>3) Human Interactions Powerpoint notes.</p>	<p>1) Genetic engineer quiz.</p> <p>2) Human Interactions project presentations.</p> <p>3) Human Interactions test.</p>	<p>9.4.4.1.1</p> <p>9.4.4.1.2</p> <p>9.4.4.1.3</p>
No Chapter	<p>1) Restate and describe the standards studied throughout the year.</p> <p>2) Cover the immune system</p>	<p>1) MCA study packet</p> <p>2) Computer practice test</p> <p>3) PowerPoint notes</p>	<p>1) informal discussion of standards.</p> <p>2) Practice test</p>	<p>9.4.4.2.2</p> <p>9.4.4.2.3</p>
No Chapter	<p>1) Name the structures of a clam, perch, frog, and fetal pig.</p> <p>2) collect or report insects and group them into their correct order.</p>	<p>1) Fill-in worksheets for each of the dissected organisms.</p> <p>2) presentation on insect orders found in the area.</p>	<p>1) Lab test on dissections.</p> <p>2) Insect presentations.</p>	<p>9.1.3.1.1</p> <p>9.1.3.4.2</p>

## SCOPE AND SEQUENCE

### LE: 10th Grade Honors Biology (Trimester 1)

RESOURCES/ CHAPTERS	OBJECTIVES/ GOALS	ACTIVITIES/ HOW	ASSESSMENT	
Chapter 1, Chapter 2	1) list the steps of the scientific process. 2) describe the characteristics of living things. 3) describe the levels of classification. 4) Describe what an element is and what it is composed of. 5) describe the types of bonds. 6) Describe how water is a polar molecule and how that affects living things. 7) Describe the different types of macromolecules.	1) Chapter 1 terms and sentences. 2) Chapter 1 Powerpoint notes 3) Scientific process lab. 4) Chapter 2 terms and sentences. 5) Chapter 2 Powerpoint Notes. 6) Oil/water lab	1) Open note chapter 1-1, 1-2, 1-3 quizzes. 2) Chapter 1 test. 3) Open note chapter 2-1, 2-2, 2-3 quizzes. 4) Chapter 2 test.	9.1.1.1.2 9.1.1.1.3 9.1.1.1.4 9.1.1.1.6 9.1.1.1.7 9.4.1.2.1 9.4.1.2.2 9.1.3.1.3 9.1.3.4.2
Chapter 3	1) Describe the Cell Theory. 2) Describe why cells are small. 3) Contrast between eukaryotic and prokaryotic cells. 4) Describe the plasma membrane. 5) Describe the process of diffusion, osmosis, facilitated diffusion and active transport. 6) Name and describe the organelles of a cell.	1) Chapter 3 terms and sentences. 2) Chapter 3 Powerpoint notes. 3) Diffusion/ osmosis lab. 4) Animal/plant cell coloring worksheet. 5) Cell model project. 6) Cell video.	1) Open note chapter 3-1, 3-2, 3-3 quizzes. 2) Cell model project presentations. 3) Chapter 3 Test.	9.4.1.1.1 9.4.1.1.2 9.4.1.2.3 9.4.1.2.4 9.4.1.2.5 9.1.3.4.2

Chapter 5	<p>1) Describe how cells make ATP.</p> <p>2) Describe what is made in glycolysis, Krebs's Cycle, and Electron transport chain.</p> <p>3) Describe the difference between aerobic and anaerobic.</p> <p>4) Name how much ATP is made in each step of cellular respiration.</p> <p>5) Describe what happens during fermentation.</p>	<p>1) Chapter 5 terms and sentences.</p> <p>2) Chapter 5 Powerpoint notes.</p> <p>3) Cellular respiration lab.</p> <p>4) Cellular respiration diagrams.</p> <p>5) Cellular respiration video.</p>	<p>1) Open note chapter 5-1, 5-2, 5-3 quizzes.</p> <p>2) Chapter 5 test.</p>	<p>9.4.1.2.4</p> <p>9.4.2.2.1</p> <p>9.1.3.1.2</p> <p>9.1.3.1.1</p> <p>9.1.3.4.2</p>
Chapter 6	<p>1) Describe how light travels both as a wave and particle.</p> <p>2) Describe how pigments such as chlorophyll absorb light.</p> <p>3) Describe the light dependent reaction.</p> <p>4) Describe the calvin cycle.</p>	<p>1) Chapter 6 Terms and Sentences.</p> <p>2) Chapter 6 Powerpoint notes.</p> <p>3) Photosynthesis lab</p> <p>4) Photosynthesis diagrams.</p> <p>5. Photosynthesis video.</p>	<p>1) Open notes Chapter 6-1, 6-2/3, 6-4 quizzes.</p> <p>2) Chapter 6 Test</p>	<p>9.4.1.2.4</p> <p>9.4.2.2.1</p> <p>9.1.3.1.2</p> <p>9.1.3.1.1</p> <p>9.1.1.2.1</p> <p>9.1.1.2.2</p> <p>9.1.3.4.2</p>
Chapter 18	<p>1) Describe what makes up a nucleotide..</p> <p>2) Describe the structure of DNA and RNA.</p> <p>3) Describe what nucleotides pair with each other in DNA and RNA.</p> <p>4) Describe how DNA replicates.</p> <p>5) Describe how DNA and RNA produce proteins through transcription and translation..</p>	<p>1) Protein synthesis/DNA terms and sentences.</p> <p>2) Powerpoint notes.</p> <p>3) DNA sequences lab/worksheets.</p> <p>4) DNA video.</p> <p>5) Protein synthesis lab</p> <p>6) Protein synthesis video</p>	<p>1) Open Notes chapter 18-1, 18-2 quizzes.</p> <p>2) DNA/ protein synthesis test.</p>	<p>9.4.1.2.4</p> <p>9.4.3.1.1</p> <p>9.4.3.1.3</p> <p>9.4.3.2.1</p> <p>9.1.3.2.1</p>
Chapter 18	<p>1) Describe binary fission in prokaryotes.</p> <p>2) Describe the cell cycle in eukaryotes.</p> <p>3) Name and describe the stages of mitosis.</p> <p>4) Describe what crossing</p>	<p>1) Mitosis/Meiosis terms and sentences.</p> <p>2) Powerpoint notes</p> <p>3) Mitosis microscope lab.</p> <p>4) Mitosis video.</p> <p>5) Meiosis chromosome lab.</p> <p>6) Meiosis video.</p>	<p>1) Open Notes Chapter 18-3, 18-4 quizzes.</p> <p>2) Mitosis/ Meiosis test.</p>	<p>9.4.1.2.6</p> <p>9.4.3.2.2</p> <p>9.4.4.2.5</p> <p>9.1.1.2.1</p> <p>9.1.3.3.2</p>

	<p>over and independent assortment are in meiosis.</p> <p>5) Describe why cells go through two divisions in meiosis.</p> <p>6) Describe the difference between a haploid and diploid cell.</p>			
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### SCOPE AND SEQUENCE

#### LE: 10th Grade Honors Biology (Trimester 2)

RESOURCES / CHAPTERS	OBJECTIVES/ GOALS	ACTIVITIES/ HOW	ASSESSMENT	
Chapter 19/20	<p>1) Understand the process Gregor Mendel went through to understand the genetics of the garden pea.</p> <p>2) Complete a monohybrid and dihybrid punnett square.</p> <p>3) describe wheat a phenotype and genotype are.</p> <p>4) Know the difference between homozygous and heterozygous is.</p> <p>5) Describe and complete punnett squares of sex linked traits.</p> <p>6) Complete and analyze pedigree charts.</p> <p>7) understand genetic disorders and what causes them.</p>	<p>1) Chapter 19/20 terms and sentences.</p> <p>2) Chapter 19/20 Powerpoint notes.</p> <p>3) Punnett Square worksheet packet.</p> <p>4) Pedigree worksheets.</p>	<p>1) Chapter 19, 20 quizzes.</p> <p>2) Chapter 19/20 test</p>	<p>9.4.3.1.1</p> <p>9.4.3.1.2</p> <p>9.4.3.2.3</p> <p>9.4.4.2.1</p> <p>9.4.4.2.5</p>
Chapter 23	<p>1) Understand how Darwin Developed his theory.</p> <p>2) describe how the theory of natural selection.</p> <p>3) Describe how the finches on the Galapagos Islands show evidence of natural selection.</p> <p>4) Describe how the fossil record shows evidence of evolution</p>	<p>1) Chapter 23 terms and sentences.</p> <p>2) Chapter 23 Powerpoint notes.</p> <p>3) Evolution/natural selection lab.</p> <p>4) Cladogram worksheet.</p> <p>5) Types of natural selection worksheet.</p>	<p>1) Open Notes 23-1, 23-2/3 , 23-4/5 quizzes.</p> <p>2) Chapter 23 Test.</p>	<p>9.4.3.3.1</p> <p>9.4.3.3.2</p> <p>9.4.3.3.3</p> <p>9.4.3.3.4</p> <p>9.4.3.3.5</p> <p>9.4.3.3.6</p>

	<p>through time.</p> <p>5) Describe how comparative anatomy and comparative embryology show common ancestry.</p> <p>6) Describe how evolutionary trees and cladograms show common ancestry.</p>			
Chapter 34, 35, 36	<p>1) Understand what a population, community, ecosystem, and biosphere are.</p> <p>2) Describe what is necessary for populations to grow exponentially.</p> <p>3) Describe what affects carrying capacity and population numbers.</p> <p>4) Describe the three types of population dispersion, uniform, random, clumped.</p> <p>5) Draw and describe a survivorship curve showing the three types of survivorship.</p> <p>6) Describe how communities interact by competition, predation, commensalism, mutualism, parasitism.</p> <p>7) Describe mutualism, commensalism, and parasitism.</p> <p>8) Describe how energy flows through an ecosystem.</p> <p>9) Produce a food web of an ecosystem.</p>	<p>1) Chapter 34, 35, and 36 terms and sentences.</p> <p>2) Chapter 34, 35, and 36 Powerpoint notes.</p> <p>3) ecosystem/ food web project</p>	<p>1) Open notes 34, 35 quizzes.</p> <p>2) Project presentations.</p> <p>3) Chapter 34, 35, 36 test.</p>	<p>9.4.2.1.1</p> <p>9.4.2.1.2</p> <p>9.4.2.2.2</p> <p>9.1.3.1.1</p>
No chapter-	<p>1) Describe an environmental problem caused by humans that affects ecosystems.</p> <p>2) Describe genetic engineering in terms of gene transfer using restriction enzymes and plasmids.</p> <p>3) Describe contributions from diverse cultures, including Minnesota American Indian tribes and communities, to the understanding of interactions</p>	<p>1) Human interactions project</p> <p>2) Genetic Engineering Powerpoint notes.</p> <p>3) Human Interactions Powerpoint notes.</p>	<p>1) Genetic engineer quiz.</p> <p>2) Human Interactions project presentations.</p> <p>3) Human Interactions test.</p>	<p>9.4.4.1.1</p> <p>9.4.4.1.2</p> <p>9.4.4.1.3</p>

	among humans and living systems.			
No Chapter	1) Restate and describe the standards studied throughout the year.	1) MCA study packet 2) Computer practice test	1) informal discussion of standards. 2) Practice test	9.4.4.2.2 9.4.4.2.3
No Chapter	1) Name the structures of a clam, perch, frog, and fetal pig. 2) collect or report insects and group them into their correct order.	1) Fill-in worksheets for each of the dissected organisms. 2) presentation on insect orders found in the area.	1) Lab test on dissections. 2) Insect presentations.	9.1.3.1.1 9.1.3.4.2

### SCOPE AND SEQUENCE

#### LE: Chemistry in the Community (Trimester 1)

	RESOURCES/ CHAPTERS	OBJECTIVES/ GOALS	ACTIVITIES/ HOW	ASSESSMENT	Standards
cs of	Chapter 1 ~ Section 1A	1) Describe chemical and physical properties. 2) Introduce the language of chemistry	1) 1A Study Guide 2) 1A Notes, Notes Guide 3) Labs :	1) Periodic Table Quiz 2) Open Note Quiz ~ properties	9.1.1.1.6 Describe how changes in scientific knowledge generally occur in incremental steps that included and build on earlier knowledge 9.1.1.2.1 Formulate a testable

		3) Compare the properties of metals and nonmetals	<ul style="list-style-type: none"> <li>a. Greener than Greenbacks</li> <li>b. Properties of Matter</li> </ul> 4) Video: Hunting the Elements	of Matter 3) Unit 1A Test	hypothesis, design and conduct an experiment to test the hypothesis 9.1.1.2.2 Evaluate the explanations proposed by others by examining and comparing evidence, identifying faulty reasoning, and suggesting alternatives. 9C.1.3.4.1 Use significant figures and an understanding of accuracy and precision in scientific measurements to determine and express the uncertainty of a result.
ds	Chapter 1 ~ Section 1B	1) Describe characteristics of subatomic particles: $p^+$ , $n^0$ , $e^-$ 2) Explain the history and organization of the periodic table 3) Describe periodic trends of groups of elements 4) Write the formula and name of an ionic compd	1) 1B Study Guide 2) 1B Notes, Notes Guide 3) Labs: <ul style="list-style-type: none"> <li>a. Activity B.1 - Arrangement of P.T.</li> <li>b. B.11 Activity - graphing trends on P.T.</li> <li>c. Investigating ionic compounds</li> </ul>	1) Polyatomic ion quiz 2) Unit 1B Test	9C.2.1.1.1 Explain the relationship of an element's position on the periodic table to its atomic number and electron configuration. 9C.2.1.1.2 Identify and compare trends on the periodic table, including reactivity and relative size of atoms and ions. 9C.2.1.2.1 Explain how elements combine to form compounds through ionic and covalent bonding. 9C.2.1.2.1 Use IUPAC nomenclature to write chemical formulas and name molecular and ionic compounds, including those that contain polyatomic ions.
erals	Chapter 1 ~ Section 1C	1) Describe Earth's atmosphere, hydrosphere, and lithosphere 2) Apply the mole concept to calculations 3) Find the molar mass of a compound 4) Calculate the percent composition by mass for compds 5) Describe oxidation-reduction reactions	1) Reading - Mining in MN 2) 1C Study Guide 3) 1C Notes, Notes Guide 4) Labs: <ul style="list-style-type: none"> <li>a. Examining metals and finding their density</li> <li>b. Extracting Zinc from pennies</li> <li>c. Modeling activity - % composition</li> </ul>	1) Molar mass quiz 2) Unit 1C Test	9C.2.1.2.4 Determine the molar mass of a compound from its chemical formula and a table of atomic masses; convert molar mass to moles, number of particles, or volume of gas at standard temperature and pressure. 9C.2.1.2.5 Determine percent composition, empirical formulas and molecular formulas of simple compounds.

			<p>and molar mass</p> <p>d. Electroplating lab</p> <p>5) Video: Decomposition</p>		
and is	Chapter 1 ~ Section 1D	<p>1) Describe the Law of Cons of Mass</p> <p>2) Balance chemical equations</p> <p>3) Write correct, balanced eqns</p> <p>4) Distinguish between renewable and nonrenewable resources</p>	<p>1) 1D Study Guide</p> <p>2) 1D Notes, Notes Guide</p> <p>3) Labs:</p> <p>a. LDS modeling</p> <p>b. Molecular Gas Lab</p> <p>c. Reactions Lab</p>	<p>1) LDS and Bohr model quiz</p> <p>2) Balancing Reactions quiz</p> <p>3) Unit 1D Test</p>	<p>9C.2.1.2.6 Describe the dynamic process by which solutes dissolve in solvents, and calculate concentrations, including percent concentration, molarity and parts per million.</p> <p>9C.2.1.3.1 Classify chemical reactions as double replacement, single replacement, synthesis, decomposition or combustion.</p> <p>9C.2.1.3.2 Use solubility and activity of ions to determine whether a double replacement or single replacement reaction will occur.</p> <p>9C.2.1.3.4 Balance chemical equations by applying the laws of conservation of mass and constant composition.</p> <p>9C.2.1.3.6 Describe the factors that affect the rate of a chemical reaction, including temperature, pressure, mixing, concentration, particle size, surface area and catalyst.</p>
Gases	Chapter 2 ~ Section 2A	<p>1) Define and apply the concept of pressure</p> <p>2) Describe and use P, V, n, T in gas law equations</p> <p>3) Describe and use Charles Law, Boyles Law, Combined Gas Law, Ideal Gas Law, and Gay-Lussac's Law</p>	<p>1) 2A Study Guide</p> <p>2) 2A Notes, Notes Guide</p> <p>3) Labs:</p> <p>a. Gas Law Lab activity</p> <p>b. Production of a Gas Lab</p> <p>c. Alka-seltzer lab</p> <p>4) Video: Colder than Cold</p>	<p>1) Gas Laws Quiz</p> <p>2) Unit 2A Test</p>	<p>9C.2.1.4.1 Use kinetic molecular theory to explain how changes in energy content affect the state of matter</p> <p>9C.2.1.4.2 Use kinetic molecular theory to explain the behavior of gases and the relationship among temperature, pressure, volume and the number of particles.</p>



## SCOPE AND SEQUENCE

### LE: Chemistry in the Community (Trimester 2)

RESOURCES / CHAPTERS	OBJECTIVES/ GOALS	ACTIVITIES/ HOW	ASSESSMENT	STANDARDS
Chapter 2 ~ Section 2D	1) Identify primary and secondary air pollutants 2) Describe personal and global strategies to reduce air pollution 3) Describe natural rain pH and acid rain 4) Describe the effects of acid rain	1) 2D Study Guide 2) 2D Notes, Notes Guide 3) Research: Air Pollution 4) Video Segment: Electric Dreams 5) Labs: a. Ozone detector lab b. Acid Rain Lab Activity	1) Unit 2D Vocab Quiz 2) Unit 2D Test	9C.2.1.2.7 Explain the role of solubility of solids, liquids and gases in natural and designed systems.
Chapter 3 ~ Section 3A	1) Describe the chemical make-up of petroleum and how it is refined 2) Describe the distillation process and fractional distillation 3) Identify, name, and write formulas for alkanes 4) Define and write formulas for isomers	1) 3A Study Guide 2) Notes, Notes Guide 3) Intro Activity: evaluate car ad 4) Research: Oil in ND 5) Video Segment: Drilling for Oil 6) Video: Oil 7) Labs: a. Viscosity Lab b. Distillation Lab	1) Unit 3A Vocab Quiz 2) Open Note Quiz 3) Unit 3A Test	9C.2.1.2.2 Compare and contrast the structure, properties and uses of organic compounds, such as hydrocarbons, alcohols, sugars, fats and proteins.
Chapter 3 ~ Section 3B	1) Describe the life cycle of a polymer and identify everyday items that are	1) 3B Study Guide 2) 3B Notes, Notes Guide	1. Open Note Quiz 2. Unit 3B Test	9C.1.3.3.1 Explain the political, societal, economic and environmental impact of chemical products and technologies.

	<p>made from polymers/plastics</p> <p>2) Name and draw alkene, alkynes, and branched hydrocarbons</p> <p>3) identify the following functional groups: alcohols, ketones, aldehydes, carboxylic acids, ethers, and esters</p> <p>4) Name compounds that contain alcohol, ketone, and carboxylic acids</p>	<p>3) Labs:</p> <p>a. Plastics Lab</p> <p>b. Modeling Lab</p> <p>c. Bouncy-Ball Polymer Lab</p>		
<p>Chapter 3 ~ Section 3B, Internet Research</p>	<p>Create a car commercial for an alternative vehicle that uses one of the following alternative fuels:</p> <p>Compressed Natural Gas, Liquefied Petroleum Gas, Biodiesel/flex fuel, Fuel Cell, Electric, and Hybrid/Plug-in</p>	<p>Use the animoto technology program to create a car commercial</p>	<p>Rubric-based assessment of Car commercial</p>	<p>9.1.2.1.2 Recognize that risk analysis is used to determine the potential positive and negative consequences of using a new technology or design, including the evaluation of causes and effects of failures.</p> <p>9.1.2.1.3 Explain and give examples of how, in the design of a device, engineers consider how it is to be manufactured, operated, maintained, replaced and disposed of.</p> <p>9.1.2.2.2 Develop possible solution to an engineering problem and evaluate them using conceptual, physical and mathematical models to determine the extent to which the solutions meet the design specifications.</p> <p>9.1.3.3.2 Communicate, justify and defend the procedures and result of a scientific inquiry or engineering design project using verbal, graphic, quantitative, virtual or written means.</p>
<p>Chapter 6 ~ Section 6B</p>	<p>1) Define and describe radioactivity</p> <p>2) Define isotope, radioisotope, and nuclear</p>	<p>1) 6 Study Guide</p> <p>2) 6 Notes, Notes Guide</p> <p>3) Video -</p>	<p>1. Open Note Quiz - Nuclear Energy</p> <p>2. Unit 6 Test</p>	<p>9.2.3.2.5 Describe how an electric current produces a magnetic force, and how this interaction is used in motors and electromagnets to produce</p>

	<p>symbols</p> <p>3) Describe effects of ionizing radiation on human tissue and identify factors that determine the extent of damage</p> <p>4) Write, complete, and balanced nuclear equations</p> <p>5) Describe the design of nuclear weapons</p> <p>6) Describe the design of nuclear power plants</p> <p>7) Calculate the age of substances using <math>\frac{1}{2}</math> life and decay</p>	<p>Manhattan Project</p> <p>4) Video segment - Three Mile Island</p> <p>5) Video - Japan's Nuclear disaster</p> <p>6) TED Talk- Nuclear Energy Debate</p>		<p>mechanical energy.</p> <p>9.2.3.2.6 Compare fission and fusion in terms of the reactants, the products and the conversion from matter into energy.</p> <p>9.2.3.2.7 Describe the properties and uses of forms of electromagnetic radiation from radio frequencies through gamma radiation.</p>
<p>Chapter 4 ~ Section 4C</p>	<p>1) Describe properties of acids and bases</p> <p>2) Identify strong acids/bases and weak acids/bases</p> <p>3) Identify monoprotic, diprotic, carboxylic, and amphoteric acids</p> <p>4) Label acid/base conjugate pairs</p> <p>5) Find pH, pOH, <math>[H_3O^+]</math>, <math>[OH^-]</math> for acids and bases</p> <p>6) Describe how acid/base indicators work</p>	<p>1) Unit 4 Study Guide</p> <p>2) Labs:</p> <p>a. pH of Consumer Products Lab</p> <p>b. Indicator Lab</p> <p>c. Distillation Lab</p>	<p>1. Naming Acids Quiz</p> <p>2. Open Note Quiz Acids and Bases</p> <p>3. Unit 4 Test</p>	<p>9C.2.1.3.3 Relate the properties of acids and bases to the ions they contain and predict the products of an acid-base reaction.</p>

## SCOPE AND SEQUENCE

### LE: CIHS Advanced Chemistry (Trimester 1)

RESOURCES/ CHAPTERS	OBJECTIVES/ GOALS	ACTIVITIES/ HOW	ASSESSMENT	Standards
Holt Chemistry: Chapter 1 & 2	1) Review basic chemistry terminology: elements, compounds, mixtures 2) Convert numbers between normal and scientific notations 3) Use significant figures rules with measurements 4) Use Dimensional Analysis to convert between various units	1) Unit 1 Study Guide 2) Unit 1 Objectives 3) Safety Inventory 4) Reaction in a Bag 5) Measurement Activity - lab equipment 6) Measurement Challenge	1) Elements Quiz 2) Significant Figure Quiz 3) Dimensional Analysis Quiz 4) Unit 1 Test - Measurement and Matter	9.1.1.1.6 Describe how changes in scientific knowledge generally occur in incremental steps that included and build on earlier knowledge 9.1.1.2.1 Formulate a testable hypothesis, design and conduct an experiment to test the hypothesis 9.1.1.2.2 Evaluate the explanations proposed by others by examining and comparing evidence, identifying faulty reasoning, and suggesting alternatives. 9C.1.3.4.1 Use significant figures and an understanding of accuracy and precision in scientific measurements to determine and express the uncertainty of a result. 9.1.3.4.2 Determine and use appropriate safety procedures, tools, computers and measurement instruments in science and engineering context. 9.1.3.4.4 Relate the reliability of data to consistency of results, identify sources of error, and suggest ways to improve data collection and analysis. 9.1.3.4.5 Demonstrate how unit

				consistency and dimensional analysis can guide the calculation of quantitative solutions and verification of results.
Holt Chemistry: Chapter 3	<p>1) Differentiate between atomic number, atomic mass, and mass number.</p> <p>2) Distinguish between various isotopes of an element and write the appropriate nuclear symbol for a given isotope.</p> <p>3) Trace the historical discoveries that led to the current atomic theory.</p> <p>4) Describe the general structure of an atom using quantum theory.</p> <p>5) Explain how light is produced by an electron; and use the electromagnetic spectrum to determine wavelength of light.</p>	<p>1) Unit 2 Study Guide</p> <p>2) Unit 2 Objectives</p> <p>3) Video: Then Next Big Bang</p> <p>4) Research: Quantum Theory</p> <p>5) % abundance worksheet</p> <p>6) Quantum Modeling Activity</p> <p>7) Flame Test Lab</p>	<p>1) Quiz on periodic table numbers</p> <p>2) Quiz on Quantum and Electron Config</p> <p>3) Unit test ~ Atomic Structure</p>	<p>9.1.3.4.3 Select and use appropriate numeric, symbolic, pictorial, or graphical representation to communicate scientific ideas, procedures and experimental results.</p> <p>9.2.1.1.1 Describe the relative charges, masses, and locations of the protons, neutrons, and electron in an atom of an element.</p> <p>9C.2.1.1.1 Explain the relationship of an element's position on the periodic table to its atomic number and electron configuration.</p> <p>9.2.1.1.4 Explain that isotopes of an element have different numbers of neutrons.</p>
Holt Chemistry: Chapter 4 & 5	<p>1) Explain the history of the periodic table</p> <p>2) Identify the information provided on the periodic table and the property by which the periodic table is organized.</p> <p>3) Identify Groups, Periods, Regions, and Families of the Periodic table.</p> <p>4) Describe the trend of atomic radius across a period and down a group and relate it to the structure of an atom.</p> <p>5) Determine the number of valence electrons in an atom of a representative element.</p>	<p>1) Unit 3 &amp; 4 Study guide</p> <p>2) Unit 3 &amp; 4 Objectives</p> <p>3) Reading Assignment - Periodic Table</p> <p>4) Video - Hunting the Elements</p> <p>5) Atomic Radius Activity</p> <p>6) Naming and Formula Writing Worksheet</p> <p>7) Lab Activity - Ionic compounds</p>	<p>1) Polyatomic Ion Quiz</p> <p>2) Unit 3 Quiz</p> <p>3) Unit 3 &amp; 4 Test</p>	<p>9C.2.1.1.2 Identify and compare trends on the periodic table, including reactivity and relative sizes of atoms and ions; use the trends to explain the properties of subgroups, including metals, non-metals, alkali metals, alkaline earth metals, halogens and noble gases.</p> <p>9C.2.1.2.1 Explain how elements combine to form compounds through ionic and covalent bonding</p> <p>9C.2.1.2.1 Use IUPAC nomenclature to write chemical formulas and name molecular and ionic compounds, including those that contain polyatomic ions.</p>

	<p>6) Describe how cations and anions form.</p> <p>7) Correctly name and write formulas for binary ionic compounds and ionic compounds containing polyatomic ions.</p>			
<p>Holt Chemistry: Chapter 6</p>	<p>1) Explain the difference in structure between an ionic compound and a covalent compound</p> <p>2) Distinguish between ionic, polar, and non-polar covalent bonds</p> <p>3) Name and write formulas for molecular compounds.</p> <p>4) Draw Lewis structures to show the arrangement of electron pairs and bonds in a molecule and polyatomic ions.</p> <p>5) Draw &amp; name the 3-D shape of a molecule from its Lewis structure using the VSEPR Theory</p> <p>6) Use the molecular shape to determine the polarity and Intermolecular forces of a molecule</p>	<p>1) Unit 5 Study Guide</p> <p>2) Unit 5 Objectives</p> <p>3) Chromatography lab</p> <p>4) Lewis Dot structure partner practice</p> <p>5) Lab Activity - molecular structure of H<sub>2</sub>, O<sub>2</sub>, and CO<sub>2</sub></p> <p>6) Molecular Model activity</p> <p>7) Intermolecular Force Activity</p>	<p>1) Lewis Dot Structure Quiz</p> <p>2) 3-D Shape Quiz</p> <p>3) Unit 5 Test</p>	<p>9C.2.1.2.1 Explain how elements combine to form compounds through ionic and covalent bonding</p> <p>9C.2.1.2.1 Use IUPAC nomenclature to write chemical formulas and name molecular and ionic compounds, including those that contain polyatomic ions.</p>
<p>Holt Chemistry: Chapter 7</p>	<p>1) Define "molar mass" and determine the molar mass of atoms and compounds.</p> <p>2) Define the unit "mole" and convert between moles, mass, and # particles.</p> <p>3) Calculate the percent composition of both ionic and covalent compounds.</p> <p>4) Determine the empirical and molecular formula for</p>	<p>1) Unit 6 Study Guide</p> <p>2) Unit 6 Objectives</p> <p>3) Reading Assignment on the mole.</p> <p>4) Lab activity - finding # of moles</p> <p>5) Empirical formula Lab</p>	<p>1) The Mole Quiz</p> <p>2) Unit 6 Test - The Moles</p>	<p>9C.2.1.2.4 Determine the molar mass of a compound from its chemical formula and a table of atomic masses; convert molar mass to moles, number of particles, or volume of gas at standard temperature and pressure.</p> <p>9C.2.1.2.5 Determine percent composition, empirical formulas and molecular formulas of simple compounds.</p> <p>9C.2.1.2.6 Describe the dynamic process by which solutes dissolve in solvents, and calculate</p>

	both ionic and covalent compounds.			concentrations, including percent concentration, molarity and parts per million.
Holt Chemistry: Chapter 8	<p>1) Define "chemical reaction" and describe what happens to the atoms and bonds in a chemical reaction</p> <p>2) Distinguish between reactants and products for a chemical reaction</p> <p>3) Distinguish between endothermic and exothermic reactions</p> <p>4) Explain the factors that determine the rate of a reaction</p> <p>5) Correctly identify and use symbols to define the conditions for a chemical reaction</p> <p>6) Write balanced chemical equations using coefficients and subscripts correctly</p> <p>7) Recognize and describe the following types of reactions:</p> <ol style="list-style-type: none"> <li>synthesis</li> <li>decomposition</li> <li>combustion</li> <li>single replacement</li> <li>double replacement <ul style="list-style-type: none"> <li>* precipitate reactions</li> </ul> </li> <li>acid/base</li> </ol> <p>8) Given the reactants, predict the products for each type of reaction.</p>	<p>1) Unit 7 Study Guide</p> <p>2) Unit 7 Objectives</p> <p>3) Alka-seltzer Lab activity</p> <p>4) Balancing Equations worksheet</p> <p>5) Types of Reactions Lab</p>	<p>1) Balancing Reactions Quiz</p> <p>2) Types of Reactions Quiz</p> <p>3) Unit 7 Test - Reactions</p>	<p>9C.2.1.3.1 Classify chemical reactions as double replacement, single replacement, synthesis, decomposition or combustion.</p> <p>9C.2.1.3.2 Use solubility and activity of ions to determine whether a double replacement or single replacement reaction will occur.</p> <p>9C.2.1.3.4 Balance chemical equations by applying the laws of conservation of mass and constant composition.</p> <p>9C.2.1.3.6 Describe the factors that affect the rate of a chemical reaction, including temperature, pressure, mixing, concentration, particle size, surface area and catalyst.</p> <p>9.1.3.4.3 Select and use appropriate numeric, symbolic, pictorial, or graphical representation to communicate scientific ideas, procedures and experimental results.</p> <p>9.2.1.1.1 Describe the relative charges, masses, and locations of the protons, neutrons, and electrons in an atom of an element.</p> <p>9.2.3.2.6 Compare fission and fusion in terms of the reactants and the products formed.</p>

## SCOPE AND SEQUENCE

### LE: CIHS Advanced Chemistry (Trimester 2)

RESOURCES/ CHAPTERS	OBJECTIVES/ GOALS	ACTIVITIES/ HOW	ASSESSMENT	
Holt Chemistry: Chpter 9	1) For a given balanced chemical equation, identify the mole ratio 2) Solve stoichiometry problems to predict the amount of product formed or reactant required for a given reaction 3) Define and solve calculations using Molarity 4) Determine the limiting and excess reactants for a given reaction 5) Given the actual yield, calculate the theoretical yield and percent yield for a reaction 6) Given the percent yield, calculate the theoretical and actual yields for a reaction	1) Unit 8 Study Guide 2) Unit 8 Objectives 3) Stoichiometry recipe activity 4) Molarity Activity - making a solution 5) Molarity Worksheet 6) Titration Lab 7) Stoichiometry lab (H <sub>2</sub> O <sub>2</sub> and bleach)	1) Mole/mass Quiz 2) Stoichiometry Quiz 3) Unit 8 Test - Stoichiometry	9C.2.1.3.5 Use the law of conservation of mass to describe and calculate relationships in a chemical reaction, including molarity, mole/mass relationships, mass/volume relations, limiting reactants and percent yield.
Holt Chemistry: Chpter 14	1) Explain what is meant by the rate of a chemical reaction. 2) Describe the collision theory and explain the importance of kinetic energy. 3) Model the energy changes that occur during a reaction. 4) Describe how the amounts of reactants and products change in a chemical system at	1) Unit 9 Study Guide 2) Unit 9 Objectives 3) Lab Activity - Reaction Rate of Steel Wool 4) Reading Assignment - Equilibrium 5) Le Chatelier Lab Activity 6) Algebra Review Assignment	1) Equilibrium Quiz 2) Unit 9 Test - Chemical Equilibrium	9C.2.1.3.7 Recognize that some chemical reactions are reversible and that not all chemical reactions go to completion.



	<p>equilibrium.</p> <p>5) Identify the three stresses that can change the equilibrium position of a chemical system.</p> <p>6) Predict and explain shifts in equilibrium using Le Chatelier's Principle</p> <p>7) Write equilibrium expressions (<math>K_{eq}</math> and <math>K_{sp}</math>) for reversible reactions and solve for <math>K_{eq}</math> or <math>K_{sp}</math>.</p>			
<p>Holt Chemistry: Chpter 15</p>	<p>1) Identify and distinguish between various types of acids and bases (e.g. Arrhenius, Bronsted, Monoprotic, etc)</p> <p>2) Write dissociation reactions for strong and weak acids &amp; bases</p> <p>3) Identify acids and bases and their conjugates</p> <p>4) Write balanced equations for acid/base neutralization reactions</p> <p>5) Calculate and solve problems with the acid and base dissociation constants (<math>K_a</math> and <math>K_b</math>) for weak acids and bases.</p> <p>6) Characterize a solution as acidic, basic, or neutral by calculating the pH, pOH, hydronium ion concentration and hydroxide ion concentration for acid/base solutions.</p> <p>7) Use Le Chatelier's Principle to explain the change in color (transition) of acid-base indicators.</p> <p>8) Distinguish between the endpoint and the</p>	<p>1) Unit 10 Study Guide</p> <p>2) Unit 10 Objectives</p> <p>3) Reading Assignment - Acids and bases</p> <p>4) Lab - pH of consumer products</p> <p>5) Indicator lab activity</p> <p>6) Sweet-tart titration Lab</p>	<p>1) Names of Acids - quiz</p> <p>2) Identification of types of acids- Quiz</p> <p>3) pH and pOH Quiz</p> <p>4) Unit 10 Test - Acids and Bases</p>	<p>9.1.1.6 Describe how changes in scientific knowledge generally occur in incremental steps that include and build on earlier knowledge.</p> <p>9.1.3.4.3 Select and use appropriate numeric, symbolic, pictorial, or graphical representation to communicate scientific ideas, procedures and experimental results.</p>

	equivalence point for a titration			
Holt Chemistry: Chapter 12	<p>1) Explain the key parts of the Kinetic Molecular Theory of Gases (KMT).</p> <p>2) List and explain the four variables that describe the properties of a gas.</p> <p>3) Define STP conditions (for all units) and correctly convert temperature and pressure measurements to various other units.</p> <p>4) Calculate T, V, P, and n using the gas laws (Charles, Boyles, Combined, and Ideal).</p> <p>5) Use Dalton's Law to calculate the total and partial pressure for a mixture of gases.</p> <p>6) Define diffusion and effusion and compare rate for different gases.</p> <p>7) Compare and contrast an ideal gas to a real gas.</p> <p>8) Use stoichiometry to solve for quantities of gases.</p>	<p>1) Unit 11 Study Guide</p> <p>2) Unit 11 Objectives</p> <p>3) Gas Laws Reading Assignment</p> <p>4) Gas Laws Lab Activity</p> <p>5) Hot Air Balloon Engineering Project</p> <ul style="list-style-type: none"> <li>Outdoor launch</li> </ul>	<p>1) Gas Laws Quiz</p> <p>2) Unit 11 - Gas Laws Test</p>	<p>9C.2.1.4.1 Use kinetic molecular theory to explain how changes in energy content affect the state of matter</p> <p>9C.2.1.4.2 Use kinetic molecular theory to explain the behavior of gases and the relationship among temperature, pressure, volume and the number of particles.</p> <p>9.1.2.1.2 Recognize that risk analysis is used to determine the potential positive and negative consequences of using a new technology or design, including the evaluation of causes and effects of failures.</p> <p>9.1.2.1.3 Explain and give example of how, in the design of a device, engineers consider how it is to be manufactured, operated, maintained, replaced and disposed of.</p> <p>9.1.2.2.2 Develop possible solution to an engineering problem and evaluate them using conceptual, physical and mathematical models to determine the extent to which the solutions meet the design specifications.</p> <p>9.1.3.3.2 Communicate, justify and defend the procedures and results of a scientific inquiry or engineering design project using verbal, graphical quantitative, virtual or written means.</p>
Holt Chemistry: Chapter 18	<p>1) Predict the stability of an atomic nucleus and relate stability to the energy released in nuclear reactions.</p> <p>2) Describe the particles and rays that make up radioactive emissions</p> <p>3) Describe the various</p>	<p>1) Unit 12 Study Guide</p> <p>2) Unit 12 Objectives</p> <p>3) Nuclear Reading Assignment</p> <p>4) Video: History Channel Manhattan Project</p> <p>5) Video Segments: Three Mile Island, Chernobyl, Fukushima Daiichi Japan</p>	<p>1) Nuclear chemistry Quiz</p> <p>2) Unit 12 Test - Nuclear Chemistry</p>	<p>9.2.3.2.6 Compare fission and fusion in terms of the reactants and the products formed.</p>

	<p>units of radiation and the three devices that are used to measure radiation.</p> <p>4) Analyze the political, social, and environmental climate at the time the first atomic bombs were created.</p> <p>5) Explain how a nuclear power plant produces electricity.</p> <p>6) Distinguish among nuclear decay, nuclear bombardment, nuclear fission and fusion reactions.</p> <p>7) Demonstrate how the half-life of radioactive isotopes is used to calculate ages of objects.</p>	6) $\frac{1}{2}$ life Lab Activity		
Holt Chemistry: Chpter 19	<p>1) Distinguish organic compounds from inorganic compounds.</p> <p>2) Differentiate between straight chain organic compounds and aromatic compounds.</p> <p>3) Define hydrocarbons and understanding their naming system.</p> <p>4) Draw and name simple alkanes, alkenes, and alkynes.</p> <p>5) Recognize and name organic functional groups.</p> <p>6) Draw and name organic compounds containing functional groups.</p> <p>7) Draw and name organic compound isomers.</p>	<p>1) Unit 13 Study Guide</p> <p>2) Unit 13 Objectives</p> <p>3) Molecular Modeling Activity</p> <p>4) Naming and drawing organic compounds - Worksheet</p> <p>5)</p>	<p>1) Organic compounds Quiz</p> <p>2) Unit 13 Test - Organic chemistry</p>	<p>9C.1.3.3.1 Explain the political, societal, economic and environmental impact of chemical products and technologies.</p> <p>9C.2.1.2.2 Compare and contrast the structure, properties and uses of organic compounds, such as hydrocarbons, alcohols, sugars, fat and proteins.</p>

### SCOPE AND SEQUENCE

#### LE: Human Anatomy and Physiology (Trimester 1)

RESOURCES/ CHAPTERS	OBJECTIVES/ GOALS	ACTIVITIES/ HOW	ASSESSMENT	
Chapter 1, Chapter 2	1) Students will be able to explain the difference between anatomy and physiology. 2) Students will explain the characteristics of life in humans. 3) Students will know the	1) Powerpoint notes chapter 1-1, 1-2 2) Chapter 1 terms 3) anatomical terms worksheet 4) Notes chapter 2-1, 2-2, 2-3 5) Chapter 2 terms	1) Chapter 1 open notes quizzes chapter 1-1, 1-2, 1-3 2) Chapter 2 open notes quizzes chapter 2-1, 2-2, 2-3 notes quizzes 3) Test chapter 1-2	9.4.1.1.1 9.4.1.1.2 9.4.1.2.1 9.1.3.1.3 9.1.3.4.3 9.1.3.4.4

	<p>levels of organization.</p> <p>4) Students will identify the systems of the human body.</p> <p>5) Students will explain the two types of homeostasis and what they control in the body.</p> <p>6) Students will be able to describe what an atom is made of.</p> <p>7) Students will be able to describe the three types of bonds.</p> <p>8) Students will describe the properties of water.</p> <p>9) Students will describe a lipid, protein, carbohydrate, and nucleic acid.</p>			
Chapter 3, 4	<p>1) Students will describe the organelles of a cell.</p> <p>2) Students will describe the steps of cellular respiration.</p> <p>3) Students will describe DNA and protein synthesis.</p> <p>4) Students will describe mitosis and meiosis.</p> <p>5) Students will describe the cell theory.</p> <p>6) students will describe diffusion, osmosis, facilitated diffusion, and active transport.</p> <p>7) Students will describe endocytosis and exocytosis.</p>	<p>1) Powerpoint notes chapter 3</p> <p>2) Powerpoint notes chapter 4</p> <p>3) Chapter 3/4 terms</p> <p>4) Cell coloring worksheet</p> <p>5) Osmosis lab</p>	<p>1) Chapter 3 open notes quizzes.</p> <p>2) Chapter 4 open notes quizzes</p> <p>3) Test chapter 3/4</p>	<p>9.4.1.2.2</p> <p>9.4.1.2.4</p> <p>9.4.1.2.5</p> <p>9.4.1.2.6</p> <p>9.4.3.1.1</p> <p>9.4.3.1.3</p> <p>9.4.3.2.2</p> <p>9.1.3.4.2</p> <p>9.1.3.4.3</p> <p>9.1.3.4.4</p>
Chapter 5	<p>1) Students will describe and identify the different types of epithelial tissue.</p> <p>2) Students will be able to describe glandular</p>	<p>1) Powerpoint notes chapter 5</p> <p>2) Chapter 5 terms</p> <p>3) Tissue project</p> <p>4) Tissue coloring worksheet</p>	<p>1) Chapter 5 open notes quizzes</p> <p>2) Chapter 5 notes test</p> <p>3) Tissue</p>	<p>9.1.3.4.2</p>

	<p>epithelium.</p> <p>3) Students will be able to describe the functions and characteristics of connective tissue.</p> <p>4) Students will be able to identify the different types of connective tissue.</p> <p>5) Students will describe and identify the various types of muscle tissue.</p> <p>6) Students will be able to identify and describe nervous tissue.</p> <p>7) Students will be able to describe tissue repair.</p>		identification lab test	
Chapter 6	<p>1) Students will describe the layers of the epidermis.</p> <p>2) Students will describe growth and repair of skin.</p> <p>3) students will describe the layers of the dermis.</p> <p>4) Students will describe how skin color is made.</p> <p>5) Students will describe the functions of skin.</p> <p>6) Students will describe the varying levels of burns and how to estimate the area of burns.</p> <p>7) Students will be able to distinguish the differences of sweat, sebaceous, and ceruminous glands.</p>	<p>1) Powerpoint notes chapter 6</p> <p>2) Chapter 6 terms</p> <p>3) Skin coloring worksheet</p> <p>4) Skin disease/disorder brochure</p>	<p>1) Chapter 6 open notes quizzes</p> <p>2) Chapter 6 test</p>	<p>9.1.3.1.1</p> <p>9.1.3.1.2</p>
Chapter 7	<p>1) Students will be able to describe the four types of bones.</p> <p>2) Students will be able to name the parts of the long bone.</p> <p>3) Students will be able to describe what bone is</p>	<p>1) Powerpoint notes chapter 7</p> <p>2) Chapter 7 Terms</p> <p>3) Skeletal system coloring worksheet.</p>	<p>1) Chapter 7 open notes quizzes</p> <p>2) Chapter 7 notes test.</p>	<p>9.1.3.1.1</p> <p>9.1.3.1.2</p>

	<p>made out of.</p> <p>4) Students will be able to describe the different bone cells.</p> <p>5) Students will be able to describe the different functions of bone.</p> <p>6) Student will distinguish the different ways bones develop.</p> <p>7) Students will name the different types of bone breaks and describe how bone repairs.</p> <p>8) Students will describe the different types of cartilage.</p> <p>9) Students will name skeletal diseases.</p>			
Chapter 7	1) Students will name bones and identify structures on the bones	1) Daily practice naming bones and structures	<p>1) Lab test of axial skeleton</p> <p>2) Lab test of appendicular skeleton</p>	<p>9.1.3.1.1</p> <p>9.1.3.1.2</p>

### SCOPE AND SEQUENCE

#### LE: Human Anatomy and Physiology (Trimester 2)

RESOURCES/ CHAPTERS	OBJECTIVES/ GOALS	ACTIVITIES/ HOW	ASSESSMENT	
Chapter 10/11	<p>1) Students will describe what the origin, insertion, agonist, and antagonist of muscles are.</p> <p>2) Students will name and</p>	<p>1) Powerpoint notes chapter 10 &amp; 11.</p> <p>2) Chapter 10/11 terms</p> <p>3) Muscle diagram coloring</p> <p>4) Practice muscle naming</p>	<p>1) Chapter 10/11 open notes quizzes</p> <p>2) Chapter 10/11 Notes Test</p> <p>3) Muscle</p>	<p>9.1.3.1.1</p> <p>9.1.3.1.2</p>

	<p>describe the myofilaments.</p> <p>3) Students will be able to describe in detail the sliding filament theory of muscle contraction.</p> <p>4) Students will be able to describe ATP's role in muscle contraction.</p> <p>5) Students will be able to describe the difference between aerobic and anaerobic respiration.</p> <p>6) Students will compare fast-glycolytic and slow-oxidative muscles.</p> <p>7) Students will understand the types of muscle contraction.</p>	<p>with a large muscle diagram poster.</p> <p>5) Muscle project</p>	<p>identification quiz</p>	
<p>Chapters 12-14</p>	<p>1) Students will be able to describe the central and peripheral nervous system.</p> <p>2) Students will be able to describe the difference between the efferent/afferent divisions and somatic/autonomic divisions.</p> <p>3) Students will be able to describe the parts of a neuron and the different types of neurons.</p> <p>4) Students will be able to describe the steps to an action potential.</p> <p>5) Students will be able to describe the difference</p>	<p>1) Powerpoint notes chapter 12-14.</p> <p>2) Chapter 12-14 terms</p> <p>3) Brain coloring worksheet</p> <p>4) Brain dissection</p>	<p>1) Chapter 12-14 open notes quizzes.</p> <p>2) Chapter 12-14 notes test</p> <p>3) Brain lab test</p>	<p>9.1.3.1.1</p> <p>9.1.3.1.2</p> <p>9.1.3.4.2</p>



	<p>between a chemical and electrical synapse.</p> <p>6) Students will be able to describe the mechanisms of a synaptic transmission.</p> <p>7) Students will be able to describe what a neurotransmitter is and the different types.</p> <p>8) Students will be able to describe and label the different parts of the brain.</p> <p>9) students will be able to describe the different nerve plexuses.</p>			
Chapter 15	<p>1) Students will be able to describe what a sensory receptor is and the different kinds.</p> <p>2) Students will describe the structures and processes for sense of smell.</p> <p>3) Students will describe the structures and processes for sense of taste.</p> <p>4) Students will describe the structures and processes for sense of hearing.</p> <p>5) Students will be able to describe sense of balance.</p> <p>6) Students will be able to describe the structure and process of the sense of sight.</p>	<p>1) Powerpoint notes chapter 15</p> <p>2) Chapter 15 terms</p> <p>3) Senses coloring worksheet</p>	<p>1) Chapter 15 open notes quizzes</p> <p>2) Chapter 15 test</p>	<p>9.1.3.1.1</p> <p>9.1.3.1.2</p>

<p>Chapters 17-19</p>	<p>1) Students will be able to identify and describe the types of leukocytes.  2) Students will be able to describe erythrocyte formation.  3) Students will describe blood typing and the Rh system.  4) Students will be able to describe the heart.  5) Students will be able to describe blood flow through the heart.  6) Students will describe arteries, veins, and capillaries.  7) Students will be able to describe and label and EKG.  8) Students will be able to describe blood pressure.  9) Students will be able to list and describe areas a pulse can be taken.</p>	<p>1) Chapter 17-19 Powerpoint notes  2) Heart coloring worksheet  3) Chapter 17-19 terms  4) Leukocyte lab  5) Heart dissection</p>	<p>1) Chapter 17-19 open notes quizzes  2) Chapter 17-19 Test  3) Heart dissection test</p>	<p>9.1.3.1.1  9.1.3.1.2  9.1.3.4.2  9.1.3.4.3</p>
<p>Chapter 23/24</p>	<p>1) Students will be able to identify and describe the structures of the upper and lower respiratory system.  2) Students will be able to describe how the respiratory system stays clean.  3) Students will be able to describe the lungs.  4) Students will be able to describe how partial pressure allows breathing to occur.  5) Students will describe factors that influence gas exchange.  6) Students will describe</p>	<p>1) Chapter 23/24 Powerpoint notes  2) Chapter 23/24 terms  3) Respiratory system coloring worksheet</p>	<p>1) Chapter 23/24 open notes quizzes  2) Chapter 23/24 test</p>	<p>9.1.3.1.1  9.1.3.1.2</p>

	<p>what emphysema is.</p> <p>7) Students will describe how oxygen and carbon dioxide are transported in the blood.</p>			
Chapter 25/26	<p>1) Students will be able to identify the layers of the gastrointestinal tract.</p> <p>2) Students will be able to describe the oral cavity and salivary glands.</p> <p>3) Students will be able to identify and describe the organs of the digestive system.</p> <p>4) Students will be able to describe the mechanisms of digestion.</p> <p>5) Students will describe the digestive secretions.</p> <p>6) students will be able to describe the process of absorption.</p> <p>7) Students will be able to describe the process of elimination.</p> <p>8) Students will be able to identify the organs of a dissected mink.</p>	<p>1) Chapter 25/26 Powerpoint notes</p> <p>2) Chapter 25/26 terms</p> <p>3) Digestive system coloring worksheet</p> <p>4) Mink dissection</p>	<p>1) Chapter 25/26 open notes quizzes.</p> <p>2) Chapter 25/26 test</p> <p>3) Mink dissection test.</p>	<p>9.1.3.1.1</p> <p>9.1.3.1.2</p> <p>9.1.3.4.2</p>

### SCOPE AND SEQUENCE

#### LE: Environmental Science (Trimester 1)

RESOURCES/ CHAPTERS	OBJECTIVES/ GOALS	ACTIVITIES/ HOW	ASSESSMENT	
Chapter 1	<p>1) Students will understand what the goal of environmental science is.</p> <p>2) Students will understand</p>	<p>1) Powerpoint Notes chapter 1</p> <p>2) Chapter 1 worksheets</p> <p>3) Ecosystem Lab</p>	<p>1) Chapter 1 Test</p> <p>2) Chapter 1 notes quizzes</p>	<p>9.1.3.1.1</p> <p>9.1.3.1.2</p> <p>9.1.3.4.2</p> <p>9.1.3.4.3</p>

	<p>the basic units of an ecosystem.</p> <p>3) Students will understand what an ecological footprint is.</p> <p>4) Students will understand the impact the agricultural and industrial revolution have had.</p> <p>5) Students will understand the difference between a developed and undeveloped country.</p>			
Chapter 4	<p>1) Students will understand what evolution is and the theory of natural selection.</p> <p>2) Students will understand the levels of classification.</p>	<p>1) Powerpoint Notes Chapter 4</p> <p>2) Chapter 4 worksheets</p> <p>3) Natural Selection Lab</p>	<p>1) Chapter 4 test</p> <p>2) Chapter 4 notes quizzes</p>	<p>9.1.3.4.3</p> <p>9.4.3.3.1</p> <p>9.4.3.3.3</p> <p>9.4.3.3.4</p> <p>9.4.3.3.5</p>
Chapter 6	<p>1) Students will understand what a biome is.</p> <p>2) Students will understand how climate affects plant growth.</p> <p>3) Students will understand how latitude and longitude affect biomes.</p> <p>4) Students will identify the biomes of Minnesota.</p> <p>5) Students will identify the many world biomes.</p>	<p>1) Powerpoint notes chapter 6</p> <p>2) Chapter 6 worksheets</p> <p>3) Biome poster</p>	<p>1) Chapter 6 test</p> <p>2) Chapter 6 notes quizzes</p> <p>3) Biome poster presentation</p>	
Chapter 7	<p>1) Students will understand the difference between a freshwater and saltwater ecosystem.</p> <p>2) Students will understand the characteristics of an aquatic ecosystem.</p> <p>3) Students will understand</p>	<p>1) Powerpoint notes chapter 7</p> <p>2) Chapter 7 worksheets</p> <p>3) Ocean water lab</p> <p>4) Pond water lab</p>	<p>1) Chapter 7 test</p> <p>2) Chapter 6 notes quizzes</p>	<p>9.1.3.1.1</p> <p>9.1.3.1.2</p> <p>9.1.3.4.2</p> <p>9.1.3.4.3</p>

	<p>how nutrients affect a lake.</p> <p>4) Students will understand the human impact on wetlands.</p>			
Chapter 8 & 9	<p>1) Students will understand the properties of populations.</p> <p>2) Students will be able to calculate population growth.</p> <p>3) Students will understand the difference between exponential growth and logistic growth.</p> <p>4) Students will understand what a carrying capacity is.</p> <p>5) Students will be able to describe how species interact.</p> <p>6) Students will be able to describe how population size can be forecasted.</p> <p>7) Students will understand how changes in populations occur.</p> <p>8) Students will understand the size and growth of the human population.</p>	<p>1) Powerpoint notes chapter 8 &amp; 9</p> <p>2) Chapter 8 Worksheets</p> <p>3) Chapter 9 worksheets</p> <p>4) population trends lab</p>	<p>1) Chapter 8/9 Test</p> <p>2) Chapter 8 &amp; 9 notes quizzes</p>	<p>9.1.3.3.1</p> <p>9.1.3.4.3</p> <p>9.4.2.1.1</p> <p>9.4.2.1.2</p>
Chapter 10	<p>1) Students will be able to describe the diversity numbers of different organisms.</p> <p>2) Students will understand the levels of diversity.</p> <p>3) Students will understand how biodiversity is at risk.</p> <p>4) Students will understand the difference between an endangered and threatened species.</p> <p>5) Students will understand</p>	<p>1) Powerpoint notes chapter 10</p> <p>2) Chapter 10 Worksheets</p> <p>3) Biodiversity field guides worksheet</p> <p>4) Environment movie</p>	<p>1) Chapter 10 test</p> <p>2) Chapter 10 notes quizzes</p>	<p>9.1.3.4.3</p> <p>9.4.2.1.1</p> <p>9.4.2.1.2</p>

	<p>how humans cause extinction.</p> <p>6) Students will learn the areas of the world that are critical for biodiversity.</p> <p>7) Students will understand the ways humans are ensuring the preservation of biodiversity.</p>			
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**SCOPE AND SEQUENCE**

**: Environmental Science (Trimester 2)**

<b>RESOURCES/ CHAPTERS</b>	<b>OBJECTIVES/ GOALS</b>	<b>ACTIVITIES/ HOW</b>	<b>ASSESSMENT</b>	
Chapter 11	<p>1) Students will understand the parts of the water cycle.</p> <p>2) Students will understand the global water distribution.</p> <p>3) Students will understand how water is used globally.</p> <p>4) Students will learn why water conservation is important and how it is done.</p> <p>5) Students will understand the different types of pollution and how it affects water.</p> <p>6) Students will learn how water pollution is cleaned up.</p>	<p>1) Powerpoint notes chapter 11</p> <p>2) Chapter 11 Worksheets</p> <p>3) Oil Spill Lab</p>	<p>1) Chapter 11 Test</p> <p>2) Chapter 11 notes quizzes</p>	<p>9.1.3.4.1</p> <p>9.1.3.4.2</p> <p>9.1.3.4.3</p>
Chapter 12	<p>1) Students will understand what air pollution is and what causes it.</p> <p>2) Students will know what the Clean Air Act is.</p>	<p>1) Powerpoint notes chapter 12</p> <p>2) Chapter 12 Worksheets</p> <p>3) Chapter 12 Lab</p>	<p>1) Chapter 12 Test</p> <p>2) Chapter 12 notes quizzes</p>	<p>9.1.3.3.1</p> <p>9.1.3.4.1</p> <p>9.1.3.4.2</p> <p>9.1.3.4.3</p>

	<p>3) Students will understand the long term health effects of air pollution.</p> <p>4) Students will understand what indoor air pollution is.</p> <p>5) students will understand what radon and asbestos are and what they cause.</p> <p>6) Students will understand what acid precipitation is.</p>			
Chapter 13	<p>1) Students will understand the difference between weather and climate.</p> <p>2) Students will understand what factors on earth influence climate.</p> <p>3) Students will distinguish between el nino and la nina.</p> <p>4) Students will understand what the ozone shield is and how there is a hole in the ozone layer..</p> <p>5) Students will understand what global warming is and what causes it.</p> <p>6) Students will understand the effects of global warming throughout the world.</p>	<p>1) Powerpoint notes chapter 13</p> <p>2) Chapter 13 worksheets</p> <p>3) ozone lab</p>	<p>1) Chapter 13 Test</p> <p>2) Chapter 13 notes quizzes</p>	<p>9.1.3.3.1</p> <p>9.1.3.4.1</p> <p>9.1.3.4.2</p> <p>9.1.3.4.3</p>
Chapter 14	<p>1) Students will distinguish between rural and urban land.</p> <p>2) Students will understand the different categories of rural land.</p> <p>3) Students will understand what deforestation is.</p> <p>4) Students will understand what parks and preserves are and what they do for</p>	<p>1) Powerpoint notes chapter 14</p> <p>2) Chapter 14 worksheets</p> <p>3) land-use model lab</p>	<p>1) Chapter 14 Test</p> <p>2) Chapter 14 notes quizzes</p>	<p>9.1.3.4.1</p> <p>9.1.3.4.3</p>

	<p>the environment.</p> <p>5) students will know what the US Wilderness Act is.</p> <p>6) Students will understand the benefits and threats to protected wilderness areas.</p>			
Chapter 15	<p>1) Students will understand how modern agriculture provides most of the world's food.</p> <p>2) Students will understand how consuming large amounts of meat is bad for the environment.</p> <p>3) Students will understand the food problems in the world.</p> <p>4) Students will understand how the overuse of fertilizers has a negative impact on the environment.</p> <p>5) Students will distinguish the difference between fertile soil and land degradation.</p> <p>6) Students will understand what a pesticide is and the negative impact of overuse.</p> <p>7) Students will learn what genetic engineering is in terms of agriculture.</p> <p>8) Students will learn what the practice of organic farming is.</p>	<p>1) Powerpoint notes chapter 15</p> <p>2) Chapter 15 Worksheets</p> <p>3) Pesticide pollution lab</p>	<p>1) Chapter 15 Test</p> <p>2) Chapter 15 notes quizzes</p>	<p>9.1.3.4.1</p> <p>9.1.3.4.2</p> <p>9.1.3.4.3</p>
Chapter 17 & 18	<p>1) Students will understand the many types of renewable resources.</p> <p>2) Students will learn about alternative types of energy.</p> <p>3) Students will learn about</p>	<p>1) Powerpoint notes Chapters 17 &amp; 18</p> <p>2) Chapter 17 and 18 Worksheets</p> <p>3) Calories in sunlight lab.</p>	<p>1) Chapter 18/19 Test</p> <p>2) Chapter 18/19 notes quizzes</p>	<p>9.1.3.3.1</p> <p>9.1.3.4.3</p>



	<p>conservation of energy.</p> <p>4) Students will learn how to calculate energy efficiency.</p> <p>5) Students will understand what a fossil fuel is and the many types.</p> <p>6) Students will understand what fuels are used for.</p> <p>7) Students will understand the future of fossil fuels.</p> <p>8) Students will understand the production and use of nuclear energy.</p>			
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### SCOPE AND SEQUENCE

#### LE: CIHS Physics (Trimester 1)

RESOURCES/ CHAPTERS	OBJECTIVES/ GOALS	ACTIVITIES/ HOW	ASSESSMENT	


**SCOPE AND SEQUENCE**

**LE: CIHS Physics (Trimester 2)**

RESOURCES/ CHAPTERS	OBJECTIVES/ GOALS	ACTIVITIES/ HOW	ASSESSMENT	


### SCOPE AND SEQUENCE

#### LE: Forensic Science (Trimester 1)

RESOURCES/ CHAPTERS	OBJECTIVES/ GOALS	ACTIVITIES/ HOW	ASSESSMENT	Standards
Chapters 1 & 2 (time 3 weeks)	Students will understand: 1) How crime labs in U.S. are organized 2) History of forensics science 3) Federal rules of evidence, including Frye Standard and the Daubert ruling 4) Value of direct and indirect evidence in court	Let's Think Forensics Workbook (chapters 1 & 2)	Quizzes Unit 1 Test	1) Identify questions and concepts that guide scientific investigations 2) Design and conduct scientific investigations 3) Use technology and mathematics to improve investigations and communication

	<p>5) That eyewitness accounts have limitations</p> <p>6) That forensic scientist's main goal is to find a unique source for the evidence.</p>			<p>4) Formulate and revise scientific explanations and models using logic and evidence</p> <p>5) Communicate and defend a scientific argument.</p>
<p>Chapters 3 &amp; 4 (time ~ 3 weeks)</p>	<p>Students will understand:</p> <p>1) The steps to take when processing a crime scene</p> <p>2) That type of evidence determines what packaging should be used</p> <p>3) Why the chain of custody must be preserved</p> <p>4) Why fingerprints are individual evidence</p> <p>5) why there may be no fingerprinting evidence at a crime scene</p> <p>6) How computers have made personal identification easier</p>	<p>Let's Think Forensics Workbook (chapters 3 &amp; 4)</p>	<p>Quizzes Unit 2 Test</p>	
<p>Chapter 5 &amp; 6 (time ~ 2 weeks)</p>	<p>Students will understand:</p> <p>1) Hair and fibers are class evidence</p> <p>2) Hair can be used to back up circumstantial evidence</p> <p>3) Hair absorbs and adsorbs substances both from within the body and from the external environment</p> <p>4) How fibers can be used as circumstantial evidence to link the victim, suspect, and crime scene</p>	<p>Let's Think Forensics Workbook (chapters 5 &amp; 6)</p>	<p>Quizzes Unit 3 Test</p>	

	5) Why statistics are important in determining the value of evidence.			
Chapter 7 & 8	<p>Students will understand:</p> <ol style="list-style-type: none"> <li>1) How to apply deductive reasoning to a series of analytical data.</li> <li>2) The limitations of presumptive (screening) tests.</li> <li>3) The relationship between the electromagnetic spectrum and spectroscopic analysis.</li> <li>4) The difference between quantitative and qualitative analysis.</li> <li>5) The dangers of using prescription drugs, controlled substances, over-the-counter medications, and alcohol.</li> <li>6) Understand the vocabulary of poisons.</li> <li>7) The quantitative approach to toxicology.</li> </ol>	Let's Think Forensics Workbook (chapters 7 & 8)	Quizzes Unit 4 Test	9.2.3.2.7 Describe the properties and uses of forms of electromagnetic radiation from radi frequencies through gamma radiation.
Chapter 11 & 12	<p>Students will understand:</p> <ol style="list-style-type: none"> <li>1) That an antibody and an antigen of different types will agglutinate, or clump, when mixed together.</li> <li>2) That blood evidence's significance depends on a characteristic's relative occurrence in the population.</li> <li>3) That DNA is a long-chain polymer found in nucleated cells, which contain genetic information</li> <li>4) That DNA can be used</li> </ol>	Let's Think Forensics Workbook (chapters 11 & 12)	Quizzes Unit 5 Test	

	<p>to identify or clear potential suspects in crimes.</p> <p>5) How DNA is extracted and characterized.</p> <p>6) How to apply the concepts of RFLP, PCR, and STRs to characterize DNA.</p>			