

**Teacher: Core Science Grade 6**

**Year: 2008-2009**

**Course: Science Grade 6**

S E P T E M B E R	Nature of Science		
	Content	Skills	Standards
	Scientific Method	Design labs Conduct labs	6.NS.2.0 ~ Apply the skills necessary to conduct scientific investigations.  6.NS.2.1 ~ Students are able to pose questions that can be explored through scientific investigations.
	Equipment	Define uses of equipment demonstrate metric accurately	6.NS.2.1 ~ Students are able to pose questions that can be explored through scientific investigations.  6.NS.2.1.i.b ~ Describe and demonstrate various safety factors associated
Theories, laws & views of their generation	Role play theories vs laws - contrasting the 2 fields	6.NS.1.0 ~ Understand the nature and origin of scientific knowledge.  6.NS.2.0 ~ Apply the skills necessary to conduct scientific investigations.  6.NS.2.1 ~ Students are able to pose questions that can be explored through scientific investigations.  6.S.2.0 ~ Analyze the relationships/interactions among science, technology, environment, and society.	

<p>Contributions of different countries &amp; scientists</p>	<p>Discuss notable people in science</p>	<p>6.NS.1.1.i.a ~ Recognize scientific knowledge as not merely a set of static facts, but is dynamic and affords the best current explanations.</p> <p>6.NS.2.1 ~ Students are able to pose questions that can be explored through scientific investigations.</p>
<p>Graphing lab data</p>	<p>Developing graphs</p>	<p>6.NS.1.1.i.a ~ Recognize scientific knowledge as not merely a set of static facts, but is dynamic and affords the best current explanations.</p> <p>6.NS.2.1 ~ Students are able to pose questions that can be explored through scientific investigations.</p> <p>6.NS.2.1.i.a ~ Conduct systematic scientific investigations.</p>
<p>Lab safety</p>	<p>Discuss safe &amp; unsafe lab procedures</p>	<p>6.NS.2.0 ~ Apply the skills necessary to conduct scientific investigations.</p> <p>6.NS.2.1 ~ Students are able to pose questions that can be explored through scientific investigations.</p>
<p>Current Science magazine</p>	<p>Read and gather information from the magazine</p>	<p>6.L.2.0 ~ Analyze various patterns and products of natural and induced biological change.</p> <p>6.NS.1.1.i.b ~ Identify important contributions to the advancement of science from people of differing cultures, genders, and ethnicity.</p> <p>6.S.2.1 ~ Students are able, given a scenario, to identify the problem(s) of human activity on the local, regional, or global environment.</p>

## Life Science - Cellular

Content	Skills	Standards
Plant cells - organelles and their functions	Identify, draw and label a cell and its organelles Utilize a microscope	6.L.1.0 ~ Understand the fundamental structures, functions, classifications, and mechanisms found in living things.  6.L.1.1 ~ Students are able to illustrate the difference between plant and animal cells.  6.L.1.1.i.a ~ Identify basic cell organelles and their functions.
Animal Cells - organelles and their function	Identify, draw and label a cell and its organelles Utilize a microscope Create a model	6.L.1.1 ~ Students are able to illustrate the difference between plant and animal cells.  6.L.1.1.i.a ~ Identify basic cell organelles and their functions.
Classifications - Classes and Kingdoms	Create Mnemonic devices to remember levels Use of Dichotomous Keys	6.L.1.2 ~ Students are able to explain the importance and scientific use of a classification system.  6.L.1.2.i.a ~ Kingdom, phylum, class, order, family, genus, species
Organization of living things	Note taking	6.L.1.2 ~ Students are able to explain the importance and scientific use of a classification system.
Microscope	Demonstrate knowledge of parts of a microscope Use in the correct manner	6.L.1.1 ~ Students are able to illustrate the difference between plant and animal cells.

Biotic and Abiotic factors (what is living?)	List reasons as to why objects do/do not fall into category of living	6.L.1.2 ~ Students are able to explain the importance and scientific use of a classification system. 6.NS.2.1.i.a ~ Conduct systematic scientific investigations.
Photosynthesis	Build a model of light transfer in a cell	6.NS.2.0 ~ Apply the skills necessary to conduct scientific investigations. 6.P.3.1 ~ Students are able to identify types of energy transformations. 6.P.3.1.i.c ~ Illustrate sunlight to chemical (photosynthesis).

NOVEMBER	<b>Physical Science</b>		
	<b>Content</b>	<b>Skills</b>	<b>Standards</b>
	Atoms and their particles	Create a booklet of the first 18 elements Investigate uses of the elements	6.P.1.1 ~ Students are able to identify the subatomic particles that make up atoms. 6.P.1.2.i.b ~ Use the Periodic Table as a tool to describe elements.
	Classification of Matter	Chart differences in classifying (chemical / physical)	6.P.1.2 ~ Students are able to classify matter based on physical and chemical properties. 6.P.1.2.i.a ~ Compare and contrast compounds and elements.
	Dichotomous Key - use of physical traits	Classify chemical or physical	6.P.1.2 ~ Students are able to classify matter based on physical and chemical properties.

Periodic table of elements	Make a periodic table with all of the appropriate columns and rows	6.P.1.2 ~ Students are able to classify matter based on physical and chemical properties.  6.P.1.2.i.b ~ Use the Periodic Table as a tool to describe elements.
Changes in matter	Role play changes in matter as temp and pressure change	6.P.1.2.i.b ~ Use the Periodic Table as a tool to describe elements.  6.P.2.0 ~ Analyze forces, their forms, and their effects on motions.
Lab - Rubber band / Skipping lab	Observe the reaction of materials and relate to movement of particles	6.P.2.1.i.a ~ Demonstrate how all forces have magnitude and direction.
Metrics	Uniform use of metrics for measurements	

D E C E M B E R	<b>Energy - Physical and Chemical Properties</b>		
	<b>Content</b>	<b>Skills</b>	<b>Standards</b>
	Energy transformations	Research the changes of light /e to heat /e and its absorption	6.P.2.0 ~ Analyze forces, their forms, and their effects on motions.  6.P.3.1 ~ Students are able to identify types of energy transformations.
	Properties of Matter	Distinguish matters as a compound or mixture	6.P.1.0 ~ Describe structures and properties of, and changes in, matter.  6.P.1.2 ~ Students are able to classify matter based on physical and

		chemical properties.
Element Symbols - compound structure	Draw the locations and number of protons, electrons and atoms in compounds	6.P.1.2 ~ Students are able to classify matter based on physical and chemical properties. 6.P.1.2.i.b ~ Use the Periodic Table as a tool to describe elements.

J A N U A R Y	<b>Force and Motion</b>		
	<b>Content</b>	<b>Skills</b>	<b>Standards</b>
	Forces - gravity, friction, momentum, inertia	Labs to demonstrate forces Calculations Draw rollercoaster	6.NS.2.1.i.a ~ Conduct systematic scientific investigations. 6.P.2.1 ~ Students are able to describe how push/pull forces acting on an object produce motion. 6.P.3.0 ~ Analyze interactions of energy and matter.
	Newton Laws	Labs demonstrating Newton's Law Note taking	6.P.2.1 ~ Students are able to describe how push/pull forces acting on an object produce motion. 6.S.2.0 ~ Analyze the relationships/interactions among science, technology, environment, and society.
	Newton - the man	Discuss, read and take notes	6.NS.1.1.i.b ~ Identify important contributions to the advancement of science from people of differing cultures, genders, and ethnicity. 6.P.2.1.i.b ~ Newton's Laws of Motion

Use of technology - advancement Simple and compound machines	Read, discuss and draw technical advances	6.S.1.1 ~ Students are able to describe how science and technology have helped society to solve problems.  6.S.2.0 ~ Analyze the relationships/interactions among science, technology, environment, and society.
Monera/protista kingdoms	Read and discuss the positive/negative effects of these organisms	6.L.3.0 ~ Analyze how organisms are linked to one another and the environment.  6.P.1.1 ~ Students are able to identify the subatomic particles that make up atoms.  6.S.2.1 ~ Students are able, given a scenario, to identify the problem(s) of human activity on the local, regional, or global environment.
Science Fair projects	Hypothesis Planning Propose an experiment	6.NS.2.1 ~ Students are able to pose questions that can be explored through scientific investigations.

FEBRUARY	<b>Earth Science and Spheres</b>		
	<b>Content</b>	<b>Skills</b>	<b>Standards</b>
	Spheres of the Earth	Create models of the earth's spheres Interactive discussion on impacts to our world	6.E.1.1 ~ Students are able to describe how the spheres (lithosphere, hydrosphere, atmosphere, and biosphere) of the Earth interact.  6.E.2.1.i.a ~ Origins and age of the universe  6.L.3.1.i.b ~ Describe the relationship between characteristics of biomes and the organisms that live there.

Geology and Geological Engineering	Detecting geological wonders of our area Measuring atmospheric conditions	6.E.1.3 ~ Students are able to explain processes involved in the formation of the Earth's structure.
Museum of Geology	Collect information about the past of our area Processes of change	6.E.1.3 ~ Students are able to explain processes involved in the formation of the Earth's structure.  6.E.1.3.i.c ~ Use geospatial technologies to investigate natural phenomena.
Role of water	Draw a water cycle Reach chapter Act out the parts  Lab with water flow - thermals	6.E.1.2 ~ Students are able to examine the role of water on the Earth.  6.P.3.0 ~ Analyze interactions of energy and matter.
Earth's formation	Create play dough 3-D image	6.E.1.2 ~ Students are able to examine the role of water on the Earth.  6.L.3.1.i.a ~ Model cycles in ecosystems.
Science Fair projects	Completion of experiment analyzing data  Comparisons of products principals of labs	6.NS.2.1 ~ Students are able to pose questions that can be explored through scientific investigations.  6.S.1.0 ~ Analyze various implications/effects of scientific advancement within the environment and society.  6.S.1.1 ~ Students are able to describe how science and technology have helped society to solve problems.

Ergonomics - human factor	Note taking from the SDSM&T tour	6.S.1.0 ~ Analyze various implications/effects of scientific advancement within the environment and society.  6.S.2.1 ~ Students are able, given a scenario, to identify the problem(s) of human activity on the local, regional, or global environment.
Mechanical Engineering	Collect information from the SDSM&T tour	6.P.3.1 ~ Students are able to identify types of energy transformations.  6.S.1.0 ~ Analyze various implications/effects of scientific advancement within the environment and society.
Ph lab	Test the acidity of different mixtures	6.NS.2.1.i.a ~ Conduct systematic scientific investigations.  6.P.1.2 ~ Students are able to classify matter based on physical and chemical properties.
<b>Life Science Biomes</b>		
<b>Content</b>	<b>Skills</b>	<b>Standards</b>
Biomes	Classification and identification of different biomes	6.L.1.2 ~ Students are able to explain the importance and scientific use of a classification system.
Abiotic and Biotic organisms in the biomes	Classification and identification of organisms	6.L.1.2 ~ Students are able to explain the importance and scientific use of a classification system.

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<p>Traits and adaptations of organisms</p>	<p>Fill in punnet square Identify a purebred and hybrid trait</p>	<p>6.L.2.1.i.a ~ Investigate the lineage of organisms to predict traits and features.</p> <p>6.L.2.1.i.b ~ Describe the difference between a hybrid and a purebred trait.</p>
<p>Biomes of our area</p>	<p>Hike, observe and explore Participate in science overnight trip</p> <p>Mapping</p> <p>Vocabulary</p>	<p>6.E.1.1.i.a ~ Composition of spheres</p> <p>6.E.1.3 ~ Students are able to explain processes involved in the formation of the Earth's structure.</p> <p>6.L.1.2 ~ Students are able to explain the importance and scientific use of a classification system.</p> <p>6.L.3.1.i.a ~ Model cycles in ecosystems.</p> <p>6.L.3.1.i.c ~ Describe how organisms adapt to biotic and abiotic factors in a biome.</p>
<p>GPS and water treatment</p>	<p>Use GPS</p>	<p>6.S.1.1 ~ Students are able to describe how science and technology have helped society to solve problems.</p>
<p>Lab - density</p>	<p>Find density in different liquids and objects</p>	<p>6.P.1.2 ~ Students are able to classify matter based on physical and chemical properties.</p>
<p>Science Fair completion</p>	<p>Present project to class and parents</p>	<p>6.NS.2.1 ~ Students are able to pose questions that can be explored through scientific investigations.</p>

APRIL		
Space / Solar System		
Content	Skills	Standards
Solar System	Relate to the scale of our celestial bodies	6.E.2.1 ~ Students are able to identify the organization and relative scale of the solar system.  6.E.2.1.i.b ~ Explain the association of time measurement with celestial motions.
Origins of the universe	Contrast theories	6.E.2.1 ~ Students are able to identify the organization and relative scale of the solar system.  6.E.2.1.i.a ~ Origins and age of the universe
Movement of the planes and their location	Create a sticker poster  Make formations	6.E.1.0 ~ Analyze the various structures and processes of the Earth system.  6.E.1.3.i.a ~ Interpret topographic and digital imagery or remotely sensed data to identify surface features.  6.E.1.3.i.c ~ Use geospatial technologies to investigate natural phenomena.  6.E.2.0 ~ Analyze essential principles and ideas about the composition and structure of the universe.  6.E.2.1 ~ Students are able to identify the organization and relative scale of the solar system.
Impact of the forces at work on the celestial bodies	Note taking from speaker	6.E.1.1 ~ Students are able to describe how the spheres (lithosphere, hydrosphere, atmosphere, and biosphere) of the Earth interact.

	<p>Make formations</p> <p>Make clay structures</p>	<p>6.E.1.3.i.a ~ Interpret topographic and digital imagery or remotely sensed data to identify surface features.</p> <p>6.E.1.3.i.b ~ Explain the formation of different rock types and their characteristics.</p>
Time measurement - time zones	Use mathematical conversions to calculate	<p>6.E.2.1 ~ Students are able to identify the organization and relative scale of the solar system.</p> <p>6.E.2.1.i.b ~ Explain the association of time measurement with celestial motions.</p>

<b>M A Y</b>	<b>Energy Transformations</b>		
	<b>Content</b>	<b>Skills</b>	<b>Standards</b>
	Energy transformations	Demonstrate	<p>6.P.3.1 ~ Students are able to identify types of energy transformations.</p> <p>6.S.2.0 ~ Analyze the relationships/interactions among science, technology, environment, and society.</p>
	Properties of light	Note taking on light and it's makeup	<p>6.P.3.1 ~ Students are able to identify types of energy transformations.</p> <p>6.P.3.1.i.b ~ Investigate the properties of light (electromagnetic spectrum).</p>
Electricity and currents	<p>Draw circuitry</p> <p>Lab on static electricity</p>	<p>6.P.3.1 ~ Students are able to identify types of energy transformations.</p> <p>6.P.3.1.i.a ~ Explain basic principles of electricity and magnetism including static, current, circuits, and magnetic fields.</p>	

People involved in electricity and light	Research people who work with lens, light and electricity	6.NS.2.1 ~ Students are able to pose questions that can be explored through scientific investigations.
Forces of electricity	Research Describe what the world would be like without electricity	6.S.2.1 ~ Students are able, given a scenario, to identify the problem(s) of human activity on the local, regional, or global environment.

**Teacher: Core Science Grade 7**

**Year: 2008-2009**

**Course: Science Grade 7**

<b>A U G U S T</b>	<b>Nature of Science</b>		
	<b>Content</b>	<b>Skills</b>	
	<b>Standards</b>		
	Processes of science	Describe societal response to major scientific findings or theories	7.NS.1.0 ~ Understand the nature and origin of scientific knowledge.
	Origin of scientific knowledge	Investigate important contributions to the advancement of science	7.NS.1.1.i.b ~ Investigate important contributions to the advancement of science from people of differing cultures, genders, and ethnicity.
Scientists/inventors and their contributions	Analyze cultural, gender, and ethnicity effects on advancements	7.NS.2.0 ~ Apply the skills necessary to conduct scientific investigations.	
Scientific method  (done all through the year)	Design and use models	7.NS.2.1 ~ Students are able to conduct scientific investigations using given procedures.	

		<p>7.NS.2.1.i.a ~ Describe and demonstrate various safety factors associated with different types of scientific activity.</p> <p>7.NS.2.1.i.b ~ Analyze the benefits and potential of scientific investigations.</p> <p>7.S.1.0 ~ Analyze various implications/effects of scientific advancement within the environment and society.</p> <p>7.S.1.1 ~ Students are able to describe how science and technology are used to solve problems in different professions and businesses.</p> <p>7.S.2.1 ~ Students are able, given a scenario, to predict the consequence(s) of human activity on the local, regional, or global environment.</p>
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### Policy/Procedure

Content	Skills	Standards
Lab procedure	Experiment safely	7.NS.2.0 ~ Apply the skills necessary to conduct scientific investigations.
Binder set up/use	Organize and retrieve information	7.NS.2.1 ~ Students are able to conduct scientific investigations using given procedures.
Absent/makeup work	Recognize when absent work is due	7.NS.2.1.i.a ~ Describe and demonstrate various safety factors associated with different types of scientific activity.
General/classroom policy	Understand implications of late work to grade	7.NS.2.1.i.b ~ Analyze the benefits and potential of scientific investigations.
Equipment use	Demonstrate proper equipment use	

### Scientific Investigations

Content	Skills	Standards
Investigation design	Design a replicable scientific investigation	7.NS.1.0 ~ Understand the nature and origin of scientific knowledge.
Scientific problem solving	Demonstrate appropriate equipment use and handling	7.NS.2.0 ~ Apply the skills necessary to conduct scientific investigations.
SI units	Use safety procedures in lab setting	7.NS.2.1 ~ Students are able to conduct scientific investigations using given procedures.
Degrees of precision and accuracy	Use research methods to investigate problems and questions	7.NS.2.1.i.a ~ Describe and demonstrate various safety factors associated with different types of scientific activity.
Graphs, drawings, pictures, tables	Analyze benefits/potential of scientific investigations	7.NS.2.1.i.b ~ Analyze the benefits and potential of scientific investigations.
Measurement skills	Solve problems	
Equipment operation	Communicate discoveries	
Control variables	Measure/convert in SI units	
Make predictions/draw conclusions (done throughout the year)		

S E P T E M B E R	Classification/Kingdoms		
	Content	Skills	Standards
	Levels of organization	Identify Kingdoms characteristics	7.L.1.0 ~ Understand the fundamental structures, functions, classifications, and mechanisms found in living things.
	Historical to modern taxa	Use a taxonomic key to identify an organism	7.L.1.3 ~ Students are able to classify organisms by using the currently recognized kingdoms.
	Dichotomous keys	Describe levels of organization	
	Father of Taxonomy	Compare structure and function of	7.L.1.3.i.a ~ Identify and compare the basic structure and function of major taxa.

Virus dilemma	major taxa	7.L.1.3.i.b ~ Describe the levels of organization within organisms.
Classification system	Construct a dichotmous key	7.L.3.0 ~ Analyze how organisms are linked to one another and the environment.
Identification guides/keys		7.NS.1.1.i.b ~ Investigate important contributions to the advancement of science from people of differing cultures, genders, and ethnicity.

### Muscular System

Content	Skills	Standards
Voluntary/involuntary muscle	List functions of the muscle system	7.L.1.0 ~ Understand the fundamental structures, functions, classifications, and mechanisms found in living things.
Cardiac muscle	Compare and contrast the 3 types of muscles	7.L.1.1 ~ Students are able to identify basic cell organelles and their functions.
Skeletal muscle	Demonstrate muscle action/movement	7.L.1.2 ~ Students are able to identify and explain the function of the human systems and the organs within each system.
Smooth muscle	Identify and describe diseases of muscle system	7.L.1.3.i.b ~ Describe the levels of organization within organisms.
Muscle attachment/tendons	Describe difference in structure and function of muscle types	
Diseases of muscular system		
Function of muscles		
Muscle action/movement		

### Skeletal System

Content	Skills	Standards
Bone structure	Identify skeletal system function	7.L.1.0 ~ Understand the fundamental structures, functions, classifications, and mechanisms found in living things.

Cartilage	Label a bone model correctly	7.L.1.2 ~ Students are able to identify and explain the function of the human systems and the organs within each system.
Tendons/ligaments	Express the functions of cartilage	7.L.1.3.i.b ~ Describe the levels of organization within organisms.
Bone formation	Compare/contrast movable and immovable joints	7.L.3.0 ~ Analyze how organisms are linked to one another and the environment.
Types of joints	Name and give examples of each joint type	
Joint problems		
Bone identification	Describe differences in tendon/ligament location and function	
	Locate and identify major bones of the body	
	Explain bone formation	

<b>OCTOBER</b>	<b>Microscope</b>		
	<b>Content</b>	<b>Skills</b>	<b>Standards</b>
	Microscope history and development	Prepare a slide for viewing	7.L.1.0 ~ Understand the fundamental structures, functions, classifications, and mechanisms found in living things.
	Proper use of scope	Observe and draw cells with compound microscope	7.L.1.1 ~ Students are able to identify basic cell organelles and their functions.
	Types of scopes	Compare differences between compound light and electron microscopes	7.L.1.3.i.b ~ Describe the levels of organization within organisms.
	Slide preparation (wet and dry mount)	Summarize discoveries that led to the development of cell theory	7.L.3.0 ~ Analyze how organisms are linked to one another and the environment.
Parts and function of microscope parts	Relate cell theory to modern	7.NS.1.0 ~ Understand the nature and origin of scientific knowledge.	

Cell theory	biology	7.NS.2.0 ~ Apply the skills necessary to conduct scientific investigations.
Magnification	Calculate magnification of a given microscope	7.NS.2.1 ~ Students are able to conduct scientific investigations using given procedures.
	Label a diagram of the parts of the microscope	7.NS.2.1.i.a ~ Describe and demonstrate various safety factors associated with different types of scientific activity.
	State cell theory tenets	7.NS.2.1.i.b ~ Analyze the benefits and potential of scientific investigations.

### Cell Structure/Function

Content	Skills	Standards
Types of cells (prokaryotic or eukaryotic)	Relate type of cell to specialized structures	7.L.1.0 ~ Understand the fundamental structures, functions, classifications, and mechanisms found in living things.
Cell organelles (structure & function)	Compare and contrast plant/animal cells	7.L.1.1 ~ Students are able to identify basic cell organelles and their functions.
Active/passive transport	Locate and identify cell organelles	7.L.1.1.i.b ~ Protein synthesis (ribosomes)
Diffusion	Describe cell function	7.L.1.1.i.c ~ Transcription/translation
Osmosis	Compare tissue, organ, organ system	7.L.1.1.i.d ~ Endoplasmic reticulum
Cell theory	Explain chemical reactions in the body	7.L.1.1.i.e ~ Lysosomes
Endo/exocytosis		7.L.1.1.i.g ~ Mitochondria role in respiration
Selective permeability	Give examples of the 4 types of organic compounds	7.L.3.0 ~ Analyze how organisms are linked to one another and the environment.
Cell organization	Discuss how organic and inorganic	

Cellular metabolism	compounds differ	7.L.3.1.i.a ~ Describe processes by which matter and energy flow through an ecosystem.
Respiration/fermentation	Show importance of H <sub>2</sub> O	7.NS.1.1.i.a ~ Describe societal response to major scientific findings or theories.
Transport proteins/enzymes	Describe function of selectively permeable membranes	7.NS.1.1.i.b ~ Investigate important contributions to the advancement of science from people of differing cultures, genders, and ethnicity.
Equilibrium	Explain how processes of diffusion and osmosis move molecules	7.NS.2.1.i.b ~ Analyze the benefits and potential of scientific investigations.
	Describe how passive and active transport differ	7.S.1.0 ~ Analyze various implications/effects of scientific advancement within the environment and society.
	Describe energy transfer in cells	7.S.1.1 ~ Students are able to describe how science and technology are used to solve problems in different professions and businesses.
	Compare/contrast respiration/fermentation	7.S.2.1 ~ Students are able, given a scenario, to predict the consequence(s) of human activity on the local, regional, or global environment.

### Mitosis/Meiosis

Content	Skills	Standards
Cell cycle	Explain why mitosis is important	7.L.1.0 ~ Understand the fundamental structures, functions, classifications, and mechanisms found in living things.
Stages of mitosis	Examine the steps of mitosis	7.L.1.1 ~ Students are able to identify basic cell organelles and their functions.
Results of mitosis	Compare mitosis in plant and animal cells	7.L.1.1.i.a ~ DNA replication
Types of asexual reproduction	List examples of asexual reproduction	7.L.1.1.i.b ~ Protein synthesis (ribosomes)
Stages of meiosis		

Sex cell formation	Describe stages of meiosis and how sex cells are produced	7.L.1.1.i.c ~ Transcription/translation
Haploid/diploid cells		7.L.1.3.i.b ~ Describe the levels of organization within organisms.
Mistakes in meiosis	Explain why meiosis is needed for sexual reproduction	7.L.3.1.i.a ~ Describe processes by which matter and energy flow through an ecosystem.
Discovering DNA	Name the cells that are involved in fertilization	
DNA structure	Identify parts of a DNA molecule and its structure	
Mutation results	Explain how DNA copies itself	
	Describe structure and function of each kind of RNA	
	Identify cell mutations/causes	

<b>N O V E M B E R</b>	<b>Vascular/Non Vascular Plant Systems</b>		
	<b>Content</b>	<b>Skills</b>	<b>Standards</b>
	Flower structure	Describe and identify structures of vascular/nonvascular plants	7.L.1.0 ~ Understand the fundamental structures, functions, classifications, and mechanisms found in living things.
	Root types	Explain function of structures	7.L.1.1 ~ Students are able to identify basic cell organelles and their functions.
	Stem tissue	Compare and contrast photosynthesis and respiration	7.L.1.1.i.a ~ DNA replication
	Leaf construction	Explain how plants take in and give off gases	7.L.1.1.i.b ~ Protein synthesis (ribosomes)
	Photosynthesis	Trace movement of materials in plants	7.L.1.1.i.c ~ Transcription/translation
	Respiration cycle (aerobic vs anaerobic)		7.L.1.1.i.d ~ Endoplasmic reticulum

<p>Tropisms/stimulus</p> <p>Photo periods</p> <p>Plant hormones</p> <p>fermentation</p> <p>Seed (monocot and dicot) dispersal &amp; germination</p> <p>Gymnosperms, angiosperms, seedless</p> <p>Life cycle/stages</p>	<p>Identify how leaf structure determines function</p> <p>Label flower parts</p> <p>Determine causes of various plant responses</p> <p>List key plant hormones and effects</p> <p>Give examples of internal and external stimulus</p> <p>State differences in photoperiodism and phototropism</p> <p>Name 3 adaptations that help plants survive</p>	<p>7.L.1.1.i.f ~ Chloroplasts role in photosynthesis</p> <p>7.L.1.1.i.g ~ Mitochondria role in respiration</p> <p>7.L.1.3 ~ Students are able to classify organisms by using the currently recognized kingdoms.</p> <p>7.L.1.4 ~ Students are able to describe and identify the structure of vascular and non-vascular plants.</p> <p>7.L.3.0 ~ Analyze how organisms are linked to one another and the environment.</p> <p>7.L.3.1 ~ Students are able to predict the effects of biotic and abiotic factors on a species' survival.</p> <p>7.L.3.1.i.a ~ Describe processes by which matter and energy flow through an ecosystem.</p> <p>7.NS.1.1.i.b ~ Investigate important contributions to the advancement of science from people of differing cultures, genders, and ethnicity.</p> <p>7.NS.2.1 ~ Students are able to conduct scientific investigations using given procedures.</p> <p>7.NS.2.1.i.b ~ Analyze the benefits and potential of scientific investigations.</p> <p>7.S.1.1 ~ Students are able to describe how science and technology are used to solve problems in different professions and businesses.</p> <p>7.S.2.1 ~ Students are able, given a scenario, to predict the consequence(s) of human activity on the local, regional, or global environment.</p>
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## Sexual/Asexual Plant Reproduction

Content	Skills	Standards
Plant life cycles	Compare/contrast sexual and asexual reproduction in plants	7.L.1.0 ~ Understand the fundamental structures, functions, classifications, and mechanisms found in living things.
Types of plant reproduction	Distinguish between the two types of plant reproduction	7.L.1.1 ~ Students are able to identify basic cell organelles and their functions.
Plant reproductive organs		
Seedless/seed reproduction	Describe the two stages in a plant's life cycle	7.L.1.1.i.a ~ DNA replication
Germination	Identify special structures used in seedless reproduction	7.L.1.3 ~ Students are able to classify organisms by using the currently recognized kingdoms.
Flower structure		
Seed formation	Describe structure and function of flowers	7.L.1.3.i.a ~ Identify and compare the basic structure and function of major taxa.
Seed dispersal	List methods of seed dispersal	7.L.1.3.i.b ~ Describe the levels of organization within organisms.
Genetic engineering	Draw and label parts of a seed	7.L.1.4 ~ Students are able to describe and identify the structure of vascular and non-vascular plants.
Angiosperms/gymnosperms		7.L.2.0 ~ Analyze various patterns and products of natural and induced biological change.
		7.L.2.1 ~ Students are able to distinguish between processes involved in sexual and asexual reproduction.
		7.L.2.1.i.a ~ Identify the role of genetics in the transmission of traits and characteristics in organisms.
		7.L.3.0 ~ Analyze how organisms are linked to one another and the environment.
		7.L.3.1 ~ Students are able to predict the effects of biotic and abiotic factors on a species' survival.

		<p>7.L.3.1.i.a ~ Describe processes by which matter and energy flow through an ecosystem.</p> <p>7.L.3.1.i.b ~ Use geospatial technologies to investigate natural phenomena.</p> <p>7.NS.1.0 ~ Understand the nature and origin of scientific knowledge.</p> <p>7.NS.1.1.i.a ~ Describe societal response to major scientific findings or theories.</p> <p>7.NS.2.1.i.b ~ Analyze the benefits and potential of scientific investigations.</p> <p>7.S.1.0 ~ Analyze various implications/effects of scientific advancement within the environment and society.</p> <p>7.S.1.1 ~ Students are able to describe how science and technology are used to solve problems in different professions and businesses.</p> <p>7.S.2.1 ~ Students are able, given a scenario, to predict the consequence(s) of human activity on the local, regional, or global environment.</p>
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<b>DECEMBER</b>	<b>Science Fair Research</b>		
	<b>Content</b>	<b>Skills</b>	<b>Standards</b>
	Research skills	Collect background information/data	7.L.1.0 ~ Understand the fundamental structures, functions, classifications, and mechanisms found in living things.
	Experiment design and implementation	Control variables in experimental design	7.L.1.2 ~ Students are able to identify and explain the function of the human systems and the organs within each system.
	Data analysis	Analyze data and draw	

<p>Graph construction and interpretation</p> <p>Infer/conclude</p>	<p>conclusions</p> <p>Construct a graph of data/results</p> <p>Extend research to real world applications</p> <p>Communicating discoveries/data</p> <p>Evaluate scientific conclusions</p>	<p>7.L.2.0 ~ Analyze various patterns and products of natural and induced biological change.</p> <p>7.L.3.0 ~ Analyze how organisms are linked to one another and the environment.</p> <p>7.L.3.1 ~ Students are able to predict the effects of biotic and abiotic factors on a species' survival.</p> <p>7.L.3.1.i.a ~ Describe processes by which matter and energy flow through an ecosystem.</p> <p>7.NS.1.0 ~ Understand the nature and origin of scientific knowledge.</p> <p>7.NS.1.1.i.b ~ Investigate important contributions to the advancement of science from people of differing cultures, genders, and ethnicity.</p> <p>7.NS.2.0 ~ Apply the skills necessary to conduct scientific investigations.</p> <p>7.NS.2.1 ~ Students are able to conduct scientific investigations using given procedures.</p> <p>7.NS.2.1.i.a ~ Describe and demonstrate various safety factors associated with different types of scientific activity.</p> <p>7.NS.2.1.i.b ~ Analyze the benefits and potential of scientific investigations.</p> <p>7.S.1.0 ~ Analyze various implications/effects of scientific advancement within the environment and society.</p> <p>7.S.1.1 ~ Students are able to describe how science and technology are used to solve problems in different professions and businesses.</p>
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## Reproduction System

Content	Skills	Standards
Human stages of development	Identify function of the reproductive system	7.L.1.0 ~ Understand the fundamental structures, functions, classifications, and mechanisms found in living things.
Reproductive structure/system	Compare and contrast the major structures of the female and male reproductive systems	7.L.1.1.i.a ~ DNA replication
Fertilization		7.L.1.2 ~ Students are able to identify and explain the function of the human systems and the organs within each system.
Zygote, embryo, fetal development	Sequence the stages of development	7.L.1.2.i.a ~ Endocrine
Menstrual cycle	Sequence stages of menstrual cycle	7.L.2.0 ~ Analyze various patterns and products of natural and induced biological change.
Menopause		7.L.2.1 ~ Students are able to distinguish between processes involved in sexual and asexual reproduction.
Pregnancy	Describe major events of childbirth	7.L.2.1.i.a ~ Identify the role of genetics in the transmission of traits and characteristics in organisms.
Birth process		7.L.3.0 ~ Analyze how organisms are linked to one another and the environment.
Multiple births	Analyze differences in growth and development of adolescents	7.L.3.1 ~ Students are able to predict the effects of biotic and abiotic factors on a species' survival.
Human life spans	Make a flowchart for the stages of human development from zygote to fetus	7.L.3.1.i.a ~ Describe processes by which matter and energy flow through an ecosystem.
Technological advances		7.NS.1.0 ~ Understand the nature and origin of scientific knowledge.
	Construct a timeline of the major events of stages of development from the embryo to adulthood	7.NS.1.1.i.a ~ Describe societal response to major scientific findings or theories.
		7.NS.1.1.i.b ~ Investigate important contributions to the advancement

		<p>of science from people of differing cultures, genders, and ethnicity.</p> <p>7.NS.2.1.i.b ~ Analyze the benefits and potential of scientific investigations.</p> <p>7.S.1.0 ~ Analyze various implications/effects of scientific advancement within the environment and society.</p> <p>7.S.1.1 ~ Students are able to describe how science and technology are used to solve problems in different professions and businesses.</p> <p>7.S.2.1 ~ Students are able, given a scenario, to predict the consequence(s) of human activity on the local, regional, or global environment.</p>
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## Endocrine System

Content	Skills	Standards
Organs/function	Define how hormones function	7.L.1.0 ~ Understand the fundamental structures, functions, classifications, and mechanisms found in living things.
Hormones (chemical messengers)	Identify the different endocrine glands and the effects of the hormones they produce	7.L.1.2 ~ Students are able to identify and explain the function of the human systems and the organs within each system.
Glands negative feedback system	Describe how a negative feedback system works	7.L.1.2.i.a ~ Endocrine
Endocrine glands	Predict why circulatory system is a good mechanism for delivering hormones	7.L.2.0 ~ Analyze various patterns and products of natural and induced biological change.
Delivery system	Relate disorders to gland malfunction	7.L.2.1 ~ Students are able to distinguish between processes involved in sexual and asexual reproduction.
		7.L.3.0 ~ Analyze how organisms are linked to one another and the environment.

7.L.3.1 ~ Students are able to predict the effects of biotic and abiotic factors on a species' survival.

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**Genetics**

**Content**

**Skills**

**Standards**

History of Genetics

DNA structure/duplication

Chromosomes, genes, alleles

Traits/alleles

Dominant/recessive

Purebred/hybrid

Punnett squares

Mutation

Incomplete dominance

Sex linked traits

Multiple alleles/polygenic inheritance

Pedigrees

Genotype/phenotype

genetic disorders

Explain how traits are inherited

Identify Mendel's role in the history of genetics

Use a Punnett square to predict the results of crosses

Compare and contrast the difference between an individual's genotype and phenotype

Differentiate dominant and recessive factors

Use probability to make predictions

State principles of Heredity

Compare multiple alleles and polygenic inheritance and give examples of each

Describe examples of human genetic disorders and how they are inherited

Explain how sex-linked traits are

7.L.1.0 ~ Understand the fundamental structures, functions, classifications, and mechanisms found in living things.

7.L.1.1 ~ Students are able to identify basic cell organelles and their functions.

7.L.1.1.i.b ~ Protein synthesis (ribosomes)

7.L.1.3.i.b ~ Describe the levels of organization within organisms.

7.L.2.0 ~ Analyze various patterns and products of natural and induced biological change.

7.L.2.1.i.a ~ Identify the role of genetics in the transmission of traits and characteristics in organisms.

7.L.3.0 ~ Analyze how organisms are linked to one another and the environment.

7.L.3.1 ~ Students are able to predict the effects of biotic and abiotic factors on a species' survival.

7.L.3.1.i.a ~ Describe processes by which matter and energy flow through an ecosystem.

7.NS.1.1.i.a ~ Describe societal response to major scientific findings or theories.

Genetic research/engineering	<p>passed to offspring</p> <p>Give examples of environmental influences on genes</p> <p>Construct a family pedigree</p> <p>Evaluate the importance of advances in genetics</p> <p>Sequence the steps in making genetically engineered organisms</p> <p>Differentiate between genetic engineering and selective breeding</p> <p>Make an events chain of the steps in making recombinant DNA</p> <p>Predict how genetic advances might affect our lives</p> <p>Show relationship of chromosomes, genes, and DNA</p> <p>Discuss how mutation adds variation to populations</p>	<p>7.NS.1.1.i.b ~ Investigate important contributions to the advancement of science from people of differing cultures, genders, and ethnicity.</p> <p>7.S.1.0 ~ Analyze various implications/effects of scientific advancement within the environment and society.</p> <p>7.S.1.1 ~ Students are able to describe how science and technology are used to solve problems in different professions and businesses.</p> <p>7.S.2.1 ~ Students are able, given a scenario, to predict the consequence(s) of human activity on the local, regional, or global environment.</p>
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### Digestion System

Content	Skills	Standards
<p>Mechanical/chemical digestion</p> <p>Digestive organs/function</p>	<p>Identify organs and processes of digestion</p> <p>Describe differences in</p>	<p>7.L.1.0 ~ Understand the fundamental structures, functions, classifications, and mechanisms found in living things.</p> <p>7.L.1.1.i.g ~ Mitochondria role in respiration</p>

Classes of nutrients	chemical and mechanical digestion	7.L.1.2 ~ Students are able to identify and explain the function of the human systems and the organs within each system.
Food groups/pyramid	Differentiate between organic and inorganic nutrients	7.L.1.3.i.b ~ Describe the levels of organization within organisms.
Calories	Explain relationship between diet and health	7.L.2.0 ~ Analyze various patterns and products of natural and induced biological change.
Particle size/absorption	Draw a food pyramid	7.L.3.0 ~ Analyze how organisms are linked to one another and the environment.
Daily servings/food labels	Calculate % calories from fat to determine healthy choices	7.L.3.1 ~ Students are able to predict the effects of biotic and abiotic factors on a species' survival.
Enzymes in digestion	Articulate how homeostasis is maintained	7.L.3.1.i.a ~ Describe processes by which matter and energy flow through an ecosystem.
Peristalsis	Construct a flowchart to show passage of food through digestive system	
Villi		
Chyme		
Bacterial role		

<b>FEBRUARY</b>	<b>Excretion</b>		
	<b>Content</b>	<b>Skills</b>	<b>Standards</b>
	Excretion organs structure/function	Distinguish between the excretory and urinary systems	7.L.1.0 ~ Understand the fundamental structures, functions, classifications, and mechanisms found in living things.
	Urinary system	Describe how the kidneys work	7.L.1.1 ~ Students are able to identify basic cell organelles and their functions.
	Diseases/disorders	Explain what happens when urinary organs malfunction	7.L.1.1.i.g ~ Mitochondria role in respiration
	Regulation of fluid levels	Compare/contrast excretory/urinary systems	7.L.1.2 ~ Students are able to identify and explain the function of the human systems and the organs within each system.
	Kidney filtration/processes	Identify components and processes	7.L.1.2.i.d ~ Excretory

Disease detection	of both systems	7.L.1.3.i.b ~ Describe the levels of organization within organisms.
Differences between excretory and urinary system	Relate urinary disease symptoms and treatments	7.L.2.0 ~ Analyze various patterns and products of natural and induced biological change.
Metabolic wastes	Research new treatment options	7.L.3.0 ~ Analyze how organisms are linked to one another and the environment.
Importance of H <sub>2</sub> O		7.L.3.1 ~ Students are able to predict the effects of biotic and abiotic factors on a species' survival.
Medical advancements		7.L.3.1.i.a ~ Describe processes by which matter and energy flow through an ecosystem.

## Respiration System

Content	Skills	Standards
Organs (structure/function)	Describe function of respiratory system	7.L.1.0 ~ Understand the fundamental structures, functions, classifications, and mechanisms found in living things.
Oxygen/carbon dioxide exchange	Explain how oxygen and carbon dioxide are exchanged in lungs and tissue	7.L.1.1 ~ Students are able to identify basic cell organelles and their functions.
System pathways	Identify pathway of air in and out of the lungs	7.L.1.1.i.g ~ Mitochondria role in respiration
Diseases/disorders	Explain impact of smoking on the lungs	7.L.1.2 ~ Students are able to identify and explain the function of the human systems and the organs within each system.
Breathing/respiration	Compare/contrast breathing and respiration	7.L.2.0 ~ Analyze various patterns and products of natural and induced biological change.
	Summarize chemical reactions of	7.L.3.0 ~ Analyze how organisms are linked to one another and the environment.

	<p>respiration</p> <p>Clarify differences if inhaling and exhaling</p> <p>Develop mnemonic device for steps to abdominal thrust first aid</p> <p>Analyze relationship of surface area to gas exchange</p> <p>Recognize diseases and disorders of the respiratory system</p>	<p>7.L.3.1 ~ Students are able to predict the effects of biotic and abiotic factors on a species' survival.</p> <p>7.L.3.1.i.a ~ Describe processes by which matter and energy flow through an ecosystem.</p>
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## Circulation

Content	Skills	Standards
Coronary circulation	Identify differences in coronary and pulmonary circulation	7.L.1.0 ~ Understand the fundamental structures, functions, classifications, and mechanisms found in living things.
Pulmonary systems	Label chambers of heart	7.L.1.1 ~ Students are able to identify basic cell organelles and their functions.
Systemic circulation system	Explain the pathway blood takes through the heart and circulatory system	7.L.1.1.i.g ~ Mitochondria role in respiration
Heart function	Explain how exercise can help prevent heart disease	7.L.1.2 ~ Students are able to identify and explain the function of the human systems and the organs within each system.
Ventricles/atrium	Compare/contrast arteries, veins, capillaries	7.L.1.3.i.b ~ Describe the levels of organization within organisms.
Arteries, veins, capillaries	Describe cardiovascular disease causes/treatment	7.L.2.0 ~ Analyze various patterns and products of natural and induced biological change.
Lymphatic system		7.L.3.0 ~ Analyze how organisms are linked to one another and the environment.
Blood pressure		
Cardiovascular disease		

Gas exchanges Cholesterol		7.L.3.1 ~ Students are able to predict the effects of biotic and abiotic factors on a species' survival.  7.L.3.1.i.a ~ Describe processes by which matter and energy flow through an ecosystem.
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**MARCH** **Integumentary System**

<b>MARCH</b>	<b>Content</b>	<b>Skills</b>	<b>Standards</b>
	Skin structure	Distinguish differences between dermis and epidermis	7.L.1.0 ~ Understand the fundamental structures, functions, classifications, and mechanisms found in living things.
	Function of skin	Explain functions of sweat glands	7.L.1.1 ~ Students are able to identify basic cell organelles and their functions.
	Heat/waste exchange	List functions of skin	
	Vitamin D formation	Map heat/waste exchange pathways	7.L.1.2 ~ Students are able to identify and explain the function of the human systems and the organs within each system.
	Skin injury/repair	Explain Vitamin D formation and use	7.L.1.2.i.e ~ Integumentary
	Skin disorders		7.L.1.3.i.b ~ Describe the levels of organization within organisms.
	Touch/pain/pressure	Give steps and mechanisms of clotting and skin repair	7.L.2.0 ~ Analyze various patterns and products of natural and induced biological change.
	Skin sensitivity	Relate skin disorder cause, symptom and treatments	7.L.3.0 ~ Analyze how organisms are linked to one another and the environment.
		Describe skin sensitivity differences cause and effect	7.L.3.1 ~ Students are able to predict the effects of biotic and abiotic factors on a species' survival.
			7.L.3.1.i.a ~ Describe processes by which matter and energy flow through an ecosystem.

7.L.3.1.i.b ~ Use geospatial technologies to investigate natural phenomena.

## Blood/Immune System

Content	Skills	Standards
Parts/function of blood	Identify parts and function of blood	7.L.1.0 ~ Understand the fundamental structures, functions, classifications, and mechanisms found in living things.
Blood types (ABO)	Explain why blood types are checked before a transfusion	7.L.1.1 ~ Students are able to identify basic cell organelles and their functions.
Blood diseases/disorders	Give examples of blood diseases	7.L.1.2 ~ Students are able to identify and explain the function of the human systems and the organs within each system.
Lymph system	Describe functions of the lymphatic system	7.L.1.2.i.b ~ Immune
Clotting/scab formation	Identify where lymph comes from	7.L.1.3.i.b ~ Describe the levels of organization within organisms.
RH factor	Explain how lymph organs help fight infection	7.L.2.0 ~ Analyze various patterns and products of natural and induced biological change.
Lines of defense	Describe natural defenses	7.L.2.1.i.a ~ Identify the role of genetics in the transmission of traits and characteristics in organisms.
Antigen/pathogen	Explain differences between antigen and antibody	7.L.3.0 ~ Analyze how organisms are linked to one another and the environment.
Antibodies/inflammation	Compare and contrast active and passive immunity	7.L.3.1 ~ Students are able to predict the effects of biotic and abiotic factors on a species' survival.
Active and passive immunity	Define and list biological vectors	7.L.3.1.i.a ~ Describe processes by which matter and energy flow through an ecosystem.
Vaccination	Articulate what happens during an allergic reaction	
Antibiotics		
Pasteurization		
Kochs rules		

Agents of infectious disease	List basic characteristics of cancer	7.L.3.1.i.b ~ Use geospatial technologies to investigate natural phenomena.
STD's	Show how vaccines work in the body	
Non-infectious disease	Relate reaction of body to antigens step by step	7.NS.1.1.i.b ~ Investigate important contributions to the advancement of science from people of differing cultures, genders, and ethnicity.
World disease concerns		
Germ theory	Identify infectious diseases caused by bacteria and viruses	7.NS.2.1.i.b ~ Analyze the benefits and potential of scientific investigations.
Antiseptics		
CDC	Give examples of STD's contraction and treatment	7.S.1.0 ~ Analyze various implications/effects of scientific advancement within the environment and society.
chronic diseases		7.S.1.1 ~ Students are able to describe how science and technology are used to solve problems in different professions and businesses.
Allergies	Recognize cause and effect relationship between cleanliness and disease spread	7.S.2.1 ~ Students are able, given a scenario, to predict the consequence(s) of human activity on the local, regional, or global environment.
Environmental health hazards	Graph and analyze disease data of previous epidemics and pandemics	
	Identify noninfectious diseases and list causes	
	Discuss toxic environmental substances effects/illness	
	Research common allergens	
	Describe the work of Pasteur, Koch and Lister in the discovery and prevention of disease	
	Explain how HIV affects the immune system	

## Brain/Nervous System

Content	Skills	Standards
Brain structure/function	Describe the basic structure of a neuron and how an impulse moves across a synapse	7.L.1.0 ~ Understand the fundamental structures, functions, classifications, and mechanisms found in living things.
Types of nerve cell		7.L.1.1 ~ Students are able to identify basic cell organelles and their functions.
Structure of neurons	Compare/contrast the central and peripheral nervous system	7.L.1.1.i.b ~ Protein synthesis (ribosomes)
Stimulus/response/reflex	List sensory receptors in each sense organ	7.L.1.2 ~ Students are able to identify and explain the function of the human systems and the organs within each system.
Central nervous system	Explain stimulus and response of each sense organ	7.L.1.2.i.c ~ Nervous
Peripheral nervous system	Identify types of nerve cells	7.L.1.3.i.b ~ Describe the levels of organization within organisms.
Somatic/autonomic systems	Recognize signs of homeostasis	7.L.2.0 ~ Analyze various patterns and products of natural and induced biological change.
Reaction time	Label major areas of the brain	7.L.3.0 ~ Analyze how organisms are linked to one another and the environment.
Homeostasis	Link actions to appropriate system	7.L.3.1 ~ Students are able to predict the effects of biotic and abiotic factors on a species' survival.
Senses	Give examples of reflexes and their importance to safety	7.L.3.1.i.a ~ Describe processes by which matter and energy flow through an ecosystem.
Drug effects on system	Explain how drugs affect these systems	7.L.3.1.i.b ~ Use geospatial technologies to investigate natural phenomena.
		7.NS.2.1.i.b ~ Analyze the benefits and potential of scientific investigations.

7.S.1.0 ~ Analyze various implications/effects of scientific advancement within the environment and society.

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**Biotic/Abiotic Factors**

**Content**

**Skills**

**Standards**

Adaptation

Describe factors that determine species

7.L.1.0 ~ Understand the fundamental structures, functions, classifications, and mechanisms found in living things.

Natural selection

Identify limiting factors

7.L.1.3.i.b ~ Describe the levels of organization within organisms.

limiting factors

Describe processes of matter and energy flow

7.L.2.0 ~ Analyze various patterns and products of natural and induced biological change.

Matter and energy flow in an ecosystem

Isolate factors that threaten/enhance species survival

7.L.3.0 ~ Analyze how organisms are linked to one another and the environment.

Natural/induced changes

Correlate dynamic equilibrium and environmental change

7.L.3.1 ~ Students are able to predict the effects of biotic and abiotic factors on a species' survival.

Producers/consumers

State relationships of organisms benefits/hazards

7.L.3.1.i.a ~ Describe processes by which matter and energy flow through an ecosystem.

Ecosystems/habitats

Abiotic/biotic factors

Give examples of food chains/food webs

7.L.3.1.i.b ~ Use geospatial technologies to investigate natural phenomena.

Carrying capacity

Water, carbon, nitrogen cycles

Model cycles in ecosystems

7.NS.1.1.i.a ~ Describe societal response to major scientific findings or theories.

Symbiotic/producer/consumer relationships

Investigate interactions among populations

7.NS.1.1.i.b ~ Investigate important contributions to the advancement of science from people of differing cultures, genders, and ethnicity.

Air components

Ecology principles

7.NS.2.1.i.b ~ Analyze the benefits and potential of scientific investigations.

Climate affect and influence

Endangered/extinct species		<p>7.S.1.0 ~ Analyze various implications/effects of scientific advancement within the environment and society.</p> <p>7.S.1.1 ~ Students are able to describe how science and technology are used to solve problems in different professions and businesses.</p> <p>7.S.2.1 ~ Students are able, given a scenario, to predict the consequence(s) of human activity on the local, regional, or global environment.</p>
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### Earth Week

Content	Skills	Standards
<p>Ecology principles</p> <p>Environmental factors</p>	<p>Recognize current earth environmental issues</p> <p>Offer solutions to global problems</p> <p>Devise plan for individual contribution and effort to solve problems</p>	<p>7.L.1.0 ~ Understand the fundamental structures, functions, classifications, and mechanisms found in living things.</p> <p>7.L.2.0 ~ Analyze various patterns and products of natural and induced biological change.</p> <p>7.L.3.0 ~ Analyze how organisms are linked to one another and the environment.</p> <p>7.L.3.1 ~ Students are able to predict the effects of biotic and abiotic factors on a species' survival.</p> <p>7.L.3.1.i.a ~ Describe processes by which matter and energy flow through an ecosystem.</p> <p>7.L.3.1.i.b ~ Use geospatial technologies to investigate natural phenomena.</p> <p>7.NS.1.1.i.a ~ Describe societal response to major scientific findings or theories.</p>

7.NS.2.1.i.b ~ Analyze the benefits and potential of scientific investigations.

7.S.1.0 ~ Analyze various implications/effects of scientific advancement within the environment and society.

7.S.1.1 ~ Students are able to describe how science and technology are used to solve problems in different professions and businesses.

7.S.2.1 ~ Students are able, given a scenario, to predict the consequence(s) of human activity on the local, regional, or global environment.

### Implications/Effects of Scientific Advancement

Content	Skills	Standards
Cloning	Identify advancements and their impact	7.L.1.0 ~ Understand the fundamental structures, functions, classifications, and mechanisms found in living things.
Stem cell research	Analyze current issues and concerns	7.L.2.0 ~ Analyze various patterns and products of natural and induced biological change.
Genome mapping		
Medical advancements	Research issues and developments	7.L.2.1 ~ Students are able to distinguish between processes involved in sexual and asexual reproduction.
Environmental issues	Evaluate conclusions to scientific investigation	7.L.2.1.i.a ~ Identify the role of genetics in the transmission of traits and characteristics in organisms.
Space research		
Agriculture	Analyze how society and need affect direction of research	7.L.3.0 ~ Analyze how organisms are linked to one another and the environment.
Food industry		
(this is content worked on all year long)		7.L.3.1 ~ Students are able to predict the effects of biotic and abiotic factors on a species' survival.
		7.L.3.1.i.a ~ Describe processes by which matter and energy flow

		<p>through an ecosystem.</p> <p>7.L.3.1.i.b ~ Use geospatial technologies to investigate natural phenomena.</p> <p>7.NS.1.1.i.a ~ Describe societal response to major scientific findings or theories.</p> <p>7.NS.1.1.i.b ~ Investigate important contributions to the advancement of science from people of differing cultures, genders, and ethnicity.</p> <p>7.S.1.0 ~ Analyze various implications/effects of scientific advancement within the environment and society.</p> <p>7.S.1.1 ~ Students are able to describe how science and technology are used to solve problems in different professions and businesses.</p> <p>7.S.2.1 ~ Students are able, given a scenario, to predict the consequence(s) of human activity on the local, regional, or global environment.</p>
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<b>M A Y</b>	<b>Relationships/Interactions in Science</b>		
	<b>Content</b>	<b>Skills</b>	<b>Standards</b>
<p>Research techniques</p> <p>Debate strategy</p> <p>Thinking/problem solving techniques</p> <p>Brainstorming</p> <p>Action plans</p>	<p>Predict from a given scenario the consequences of human activity on local, regional, or global environment</p> <p>Develop solutions to problems, issues</p> <p>Ask pertinent questions related to science topics</p>	<p>7.L.2.0 ~ Analyze various patterns and products of natural and induced biological change.</p> <p>7.L.3.1.i.b ~ Use geospatial technologies to investigate natural phenomena.</p> <p>7.NS.1.0 ~ Understand the nature and origin of scientific knowledge.</p> <p>7.NS.1.1.i.a ~ Describe societal response to major scientific findings or theories.</p>	

<p>(these areas are worked on all year long)</p>	<p>Identify scientific problems</p> <p>Offer a reasonable solution to a given issue</p> <p>Develop skills of communicating data</p>	<p>7.NS.1.1.i.b ~ Investigate important contributions to the advancement of science from people of differing cultures, genders, and ethnicity.</p> <p>7.NS.2.0 ~ Apply the skills necessary to conduct scientific investigations.</p> <p>7.NS.2.1 ~ Students are able to conduct scientific investigations using given procedures.</p> <p>7.NS.2.1.i.a ~ Describe and demonstrate various safety factors associated with different types of scientific activity.</p> <p>7.NS.2.1.i.b ~ Analyze the benefits and potential of scientific investigations.</p> <p>7.S.1.0 ~ Analyze various implications/effects of scientific advancement within the environment and society.</p> <p>7.S.1.1 ~ Students are able to describe how science and technology are used to solve problems in different professions and businesses.</p> <p>7.S.2.1 ~ Students are able, given a scenario, to predict the consequence(s) of human activity on the local, regional, or global environment.</p>
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**Teacher:** Core Science Grade 8  
**Year:** 2008-2009  
**Course:** Science Grade 8

**AUGUST**

**Nature of Science**

<b>Content</b>	<b>Skills</b>	<b>Standards</b>
Fact, predictions, hypothesis, theory Law/principle Contributions (culture, gender, ethnicity) (these are all done throughout the year)	Differentiate among facts and predictions and theory Interpret data to justify predictions/conclusions Explain how hypothesis generation, theory, and experimentation are inter-related Relate laws to theory and principles Describe how knowledge and processes have evolved Analyze contributions of men and women within specific fields of science	8.NS.1.0 ~ Understand the nature and origin of scientific knowledge. 8.NS.1.1 ~ Students are able to differentiate among facts, predictions, theory, and law/principles in scientific investigations. 8.NS.1.1.i.a ~ Evaluate important contributions to the advancement of science from people of differing cultures, genders, and ethnicity. 8.NS.2.0 ~ Apply the skills necessary to conduct scientific investigations. 8.NS.2.1 ~ Students are able to design a replicable scientific investigation. 8.NS.2.1.i.a ~ Evaluate the benefits and potential of scientific investigations. 8.S.1.0 ~ Analyze various implications/effects of scientific advancement within the environment and society. 8.S.2.1 ~ Students are able, given a scenario, to offer solutions to problems created by human activity on the local, regional, or global environment.

**Scientific Investigations**

<b>Content</b>	<b>Skills</b>	<b>Standards</b>
Variables	Control variables in an experiment	8.NS.1.0 ~ Understand the nature and origin of scientific knowledge.
Data interpretation	Justify predictions/conclusions	8.NS.1.1 ~ Students are able to differentiate among facts, predictions, theory, and law/principles in scientific investigations.

Scientific research methods	Design/investigate scientific ?'s	8.NS.1.1.i.a ~ Evaluate important contributions to the advancement of science from people of differing cultures, genders, and ethnicity.  8.NS.2.0 ~ Apply the skills necessary to conduct scientific investigations.  8.NS.2.1 ~ Students are able to design a replicable scientific investigation.  8.NS.2.1.i.a ~ Evaluate the benefits and potential of scientific investigations.  8.S.1.0 ~ Analyze various implications/effects of scientific advancement within the environment and society.  8.S.1.1 ~ Students are able to describe how science and technology have been influenced by social needs, attitudes, and values.
Appropriate equipment use	Select and properly use equipment	
Safety procedures	Demonstrate safety skills in all lab investigations	
Technology support selection	Identify sources of experimental error	
Accuracy limitations	Analyze impact of discoveries	
Potential benefits	Evaluate benefits and potential of scientific inventions	
(these are all done throughout the year)	Describe how science and technology have been influenced by social needs, attitudes, and values	

**Policy/procedure**

Content	Skills	Standards
Lab procedure	Experiment safely	8.NS.1.0 ~ Understand the nature and origin of scientific knowledge.
Binder set up/use	Organize and retrieve information	8.NS.1.1 ~ Students are able to differentiate among facts, predictions, theory, and law/principles in scientific investigations.
Absent/makeup work	Recognize when absent work is due	8.NS.2.0 ~ Apply the skills necessary to conduct scientific investigations.
General/classroom policy	Understand implications of late work to grade	8.NS.2.1 ~ Students are able to design a replicable scientific investigation.
Equipment use	Demonstrate proper equipment use	8.NS.2.1.i.a ~ Evaluate the benefits and potential of scientific investigations.

<b>Minerals</b>		
<b>Content</b>	<b>Skills</b>	<b>Standards</b>
Mineral definition	Describe the structure and properties of minerals	8.E.1.0 ~ Analyze the various structures and processes of the Earth system.
Mineral formation	Relate differences in the 6 mineral groups	8.E.1.1 ~ Students are able to identify and classify minerals and rocks.
Crystal structures/systems	Use appropriate tests/equipment to determine the identity of minerals	8.E.1.1.i.a ~ Law of Conservation of Energy and Matter
Physical properties of minerals	Identify and classify minerals	8.E.1.1.i.b ~ Minerals as oxides, sulfides, halides, sulfates
Six mineral groups/characteristics	Identify and classify minerals	8.E.1.2 ~ Students are able to explain the role of plate tectonics in shaping Earth.
Identifying minerals	Explain how minerals form	8.E.1.5 ~ Students are able to explain the impact of weathering and erosion on the Earth.
Identification tests (luster, streak, fracture, cleavage, color, magnetism, acid test, flame, fluorescence, specific gravity)	Distinguish the environments in which minerals form	8.E.2.0 ~ Analyze essential principles and ideas about the composition and structure of the universe.
Mohs hardness scale	Explain special properties of minerals	8.NS.1.0 ~ Understand the nature and origin of scientific knowledge.
Gems	Recognize valuable mineral resources	8.NS.1.1 ~ Students are able to differentiate among facts, predictions, theory, and law/principles in scientific investigations.
Ores	Identify useful elements contained in minerals	8.NS.1.1.i.a ~ Evaluate important contributions to the advancement of science from people of differing cultures, genders, and ethnicity.
Vein minerals	Describe characteristics of gems that make them valuable	8.NS.2.0 ~ Apply the skills necessary to conduct scientific investigations.
Law of Conservation of Matter		8.NS.2.1 ~ Students are able to design a replicable scientific

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investigation.

### Rock Cycle

Content	Skills	Standards
<p>Sedimentary, igneous, metamorphic identification and formation</p> <p>The rock cycle</p> <p>Law of Conservation of Matter</p>	<p>Describe the rock cycle</p> <p>List characteristics of different types of rocks</p> <p>Explain the differences between the formation of each type of rock</p> <p>Describe the origin of each type of rock</p> <p>Explain the Law of Conservation of Matter in relation to the rock cycle</p> <p>Describe how each type of rock changes into another type as it moves through the rock cycle</p> <p>Relate characteristics and examples of each group</p>	<p>8.E.1.0 ~ Analyze the various structures and processes of the Earth system.</p> <p>8.E.1.1 ~ Students are able to identify and classify minerals and rocks.</p> <p>8.E.1.1.i.a ~ Law of Conservation of Energy and Matter</p> <p>8.E.1.5 ~ Students are able to explain the impact of weathering and erosion on the Earth.</p> <p>8.E.2.0 ~ Analyze essential principles and ideas about the composition and structure of the universe.</p> <p>8.P.1.1 ~ Students are able to classify matter as elements, compounds, or mixtures.</p>

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### Geologic Time

Content	Skills	Standards
<p>Eras, epochs etc.</p> <p>Fossil formation</p>	<p>Construct a timeline in historical order</p>	<p>8.E.1.0 ~ Analyze the various structures and processes of the Earth system.</p> <p>8.E.1.1 ~ Students are able to identify and classify minerals and rocks.</p>

Keybeds/index fossils/fossil record	Identify different types of fossils	8.E.1.1.i.a ~ Law of Conservation of Energy and Matter
Geologic principles	Interpret evidence from the fossil record	8.E.1.2 ~ Students are able to explain the role of plate tectonics in shaping Earth.
Relative/absolute dating	Use geologic principles to date a geologic column	8.E.1.5 ~ Students are able to explain the impact of weathering and erosion on the Earth.
Extinction/species	Demonstrate proper excavation techniques	8.E.1.5.i.a ~ Use geospatial technologies to investigate natural phenomena.
Extinction theories	Explain differences in absolute/relative dating	8.E.2.0 ~ Analyze essential principles and ideas about the composition and structure of the universe.
Variation/adaptation	Apply geologic principles to date rock layers	8.NS.1.1 ~ Students are able to differentiate among facts, predictions, theory, and law/principles in scientific investigations.
Geologic columns		8.NS.1.1.i.a ~ Evaluate important contributions to the advancement of science from people of differing cultures, genders, and ethnicity.
Excavation techniques		8.NS.2.1 ~ Students are able to design a replicable scientific investigation.
		8.NS.2.1.i.a ~ Evaluate the benefits and potential of scientific investigations.

## Plate Tectonics

### Content

### Skills

### Standards

Theories (continental drift, seafloor spreading)

Relate theory to geologic formation

8.E.1.0 ~ Analyze the various structures and processes of the Earth system.

Plate structure

Identify type of boundary, fault, force, and feature

8.E.1.1.i.a ~ Law of Conservation of Energy and Matter

Boundaries/forces	Explain mechanism of plate movements	8.E.1.2 ~ Students are able to explain the role of plate tectonics in shaping Earth.  8.E.1.5 ~ Students are able to explain the impact of weathering and erosion on the Earth.  8.E.2.0 ~ Analyze essential principles and ideas about the composition and structure of the universe.  8.P.1.3 ~ Students are able to compare properties of matter resulting from physical and chemical changes.
Mountain building	Distinguish 3 types of volcano formation	
Convection currents	Illustrate layers and structures of the earth	
Volcanoes (formation/types)	Give examples of 3 types of seismic waves	
Earthquakes/seismic waves	Recognize examples of effects of plate tectonics	
Earth's interior structure		
Change over time		

<b>N O V E M B E R</b>	<b>Weathering and Erosion</b>		
	<b>Content</b>	<b>Skills</b>	<b>Standards</b>
	Soil formation	Identify components and types of soil	8.E.1.0 ~ Analyze the various structures and processes of the Earth system.
	Deposition/delta	Describe variables that affect deposition	8.E.1.1.i.a ~ Law of Conservation of Energy and Matter
	Land transformations (i.e. Grand Canyon)	Explain impact of weathering and erosion on earth	8.E.1.2 ~ Students are able to explain the role of plate tectonics in shaping Earth.
	Glaciation	Identify feature changes	8.E.1.5 ~ Students are able to explain the impact of weathering and erosion on the Earth.
	Soil types	Assess effects on climate	8.E.2.0 ~ Analyze essential principles and ideas about the composition and structure of the universe.
	Agents of erosion	Use geospatial technology to investigate	8.P.1.0 ~ Describe structures and properties of, and changes in, matter.
Soil profile			

8.P.1.1 ~ Students are able to classify matter as elements, compounds, or mixtures.

8.P.1.3 ~ Students are able to compare properties of matter resulting from physical and chemical changes.

## Oceans

Content	Skills	Standards
Chemical/physical properties	Determine cause and effect of currents and waves	8.E.1.0 ~ Analyze the various structures and processes of the Earth system.
Density/salinity/temperature	List and explain zones and importance of each	8.E.1.1.i.a ~ Law of Conservation of Energy and Matter
Currents/waves formation	Identify ocean floor geographic features	8.E.1.3.i.a ~ Effects of the ocean on weather
Zones/levels	Relate feature formation to plate tectonics	8.E.1.3.i.b ~ Condensation
Ocean geographic features	Evaluate effects on weather and organisms	8.E.1.3.i.c ~ Evaporation
El Nino/El Nina	Explain salinity balance	8.E.1.4 ~ Students are able to examine the chemical and physical properties of the ocean to determine causes and effects of currents and waves.
Parts of a wave	Examine chemical and physical properties of ocean	8.E.1.4.i.a ~ El Niño
Energy transfer	Analyze density difference and energy transfer	8.E.1.4.i.b ~ Ocean zones
Effects on weather		8.E.1.4.i.c ~ Ocean floor features
		8.E.2.0 ~ Analyze essential principles and ideas about the composition and structure of the universe.

## Natural Resources

Content	Skills	Standards
Renewable/nonrenewable	Recognize renewable versus nonrenewable resource	8.E.1.0 ~ Analyze the various structures and processes of the Earth system.
Hydroelectric	State advantages/disadvantages of energy sources	8.E.1.1.i.a ~ Law of Conservation of Energy and Matter
Wind power		
Nuclear power	Investigate contributing factors/causes of pollution issues	8.E.2.0 ~ Analyze essential principles and ideas about the composition and structure of the universe.
Fossil fuels	Predict outcomes of continued fossil fuel use	8.NS.2.1.i.a ~ Evaluate the benefits and potential of scientific investigations.
Geothermal		
Biomass	Develop a solution for a model communities energy needs	8.S.1.0 ~ Analyze various implications/effects of scientific advancement within the environment and society.
Alternative fuels	Brainstorm energy reduction possibilities	8.S.1.1 ~ Students are able to describe how science and technology have been influenced by social needs, attitudes, and values.
Pollution causes/cures		
Conservation		8.S.2.1 ~ Students are able, given a scenario, to offer solutions to problems created by human activity on the local, regional, or global environment.
Recycling		

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## Science Fair Research

Content	Skills	Standards
Research skills	Collect background information/data	8.NS.2.0 ~ Apply the skills necessary to conduct scientific investigations.
Experiment design and implementation	Control variables in experimental design	8.NS.2.1 ~ Students are able to design a replicable scientific investigation.

Data analysis Graphing results Infer/conclude	Analyze data and draw conclusions  Construct a graph  Extend research to real world applications	8.NS.2.1.i.a ~ Evaluate the benefits and potential of scientific investigations.  8.S.1.0 ~ Analyze various implications/effects of scientific advancement within the environment and society.  8.S.2.1 ~ Students are able, given a scenario, to offer solutions to problems created by human activity on the local, regional, or global environment.
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### Structure of Matter

Content	Skills	Standards
Atomic theory Atomic models (past and present) Periodic table Metals, non-metals, metalloids Element families, columns	Compare/contrast atomic models  Use the Bohr model to show the arrangement of subatomic particles  Describe relationship between the organization and the predictive nature of the periodic table  Classify elements as metals, metalloids, or non-metals  Use periodic table to compare and contrast families of elements	8.E.1.0 ~ Analyze the various structures and processes of the Earth system.  8.E.1.1.i.a ~ Law of Conservation of Energy and Matter  8.E.2.0 ~ Analyze essential principles and ideas about the composition and structure of the universe.  8.NS.1.0 ~ Understand the nature and origin of scientific knowledge.  8.NS.1.1 ~ Students are able to differentiate among facts, predictions, theory, and law/principles in scientific investigations.  8.NS.1.1.i.a ~ Evaluate important contributions to the advancement of science from people of differing cultures, genders, and ethnicity.  8.P.1.0 ~ Describe structures and properties of, and changes in, matter.  8.P.1.1 ~ Students are able to classify matter as elements, compounds, or mixtures.

		<p>8.P.1.2 ~ Students are able to use the Periodic Table to compare and contrast families of elements and to classify elements as metals, metalloids, or non-metals.</p> <p>8.P.1.2.i.a ~ Compare and contrast other atomic models.</p>
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J A N U A R Y	Elements, Mixtures, Compounds		
	Content	Skills	Standards
	Physical/chemical properties	Classify matter as element, compound, mixture	8.E.1.0 ~ Analyze the various structures and processes of the Earth system.
	Periodic table design/use	Compare properties of matter resulting from physical and chemical change	8.E.1.1.i.a ~ Law of Conservation of Energy and Matter
	Characteristics of elements, mixtures, compounds	Observe and describe factors that affect rates of reaction	8.E.2.0 ~ Analyze essential principles and ideas about the composition and structure of the universe.
	Elements, compounds, mixtures	Analyze characteristics of types of matter based on physical/chemical properties	8.P.1.0 ~ Describe structures and properties of, and changes in, matter.
	Rates or reaction	Classify types of elements using properties and electron configuration	8.P.1.1 ~ Students are able to classify matter as elements, compounds, or mixtures.
	Four types of reactions		8.P.1.1.i.a ~ Formulas
	Catalysts/inhibitors		8.P.1.2 ~ Students are able to use the Periodic Table to compare and contrast families of elements and to classify elements as metals, metalloids, or non-metals.
			8.P.1.3 ~ Students are able to compare properties of matter resulting from physical and chemical changes.

F E B R U A R Y	Chemical Bonding		
	Content	Skills	Standards
	Ionic/covalent bonds	Differentiate between ionic and covalent bonds	8.E.1.0 ~ Analyze the various structures and processes of the Earth system.
	Formulas	Identify parts of a chemical formula	8.E.1.1.i.a ~ Law of Conservation of Energy and Matter
	Balancing chemical equations	Balance chemical equations	8.E.2.0 ~ Analyze essential principles and ideas about the composition and structure of the universe.
	Electron dot diagram	Create compounds and balance equations	8.P.1.0 ~ Describe structures and properties of, and changes in, matter.
	Naming compounds	Construct a dot diagram for a given element	8.P.1.1 ~ Students are able to classify matter as elements, compounds, or mixtures.
	Polyatomic ions	Investigate timeline and progression of atomic structure theory	8.P.1.1.i.a ~ Formulas
		Use models to show arrangement of sub-atomic particles	8.P.1.2 ~ Students are able to use the Periodic Table to compare and contrast families of elements and to classify elements as metals, metalloids, or non-metals.
		Create, balance, and name compounds	8.P.1.2.i.a ~ Compare and contrast other atomic models.
			8.P.1.3 ~ Students are able to compare properties of matter resulting from physical and chemical changes.
			8.P.1.3.i.a ~ Ionic/covalent bonding
M A R C	Composition/Structure of the Universe		
	Content	Skills	Standards

<p><b>H</b> Star formation/life cycle</p> <p>Constellations/galaxies</p> <p>Spectroscopic analysis</p> <p>Theories of the universe (origin and evolution)</p> <p>Measurement in space</p> <p>Doppler effect</p> <p>Asteroids/comets</p> <p>Black holes</p> <p>New discoveries</p> <p>planets</p> <p>Lunar/solar (phases and eclipses)</p> <p>Tides/seasons</p> <p>Laws of gravitation</p> <p>CME's, flares, sunspots</p> <p>Speed of light/distance relationships</p>	<p>List stages and causes of star development</p> <p>Use HR diagram to identify stars</p> <p>Identify characteristics of different galaxy types</p> <p>Name and explain current theories of the universe</p> <p>Demonstrate position location to create phases, eclipses, and seasons etc.</p> <p>Relate effects on tide/weather</p> <p>Describe composition, location, and relationship of celestial bodies</p> <p>Explain orbital motion</p> <p>Differentiate influence of relative positions of Earth, Moon, and Sun</p>	<p>8.E.1.0 ~ Analyze the various structures and processes of the Earth system.</p> <p>8.E.1.1.i.a ~ Law of Conservation of Energy and Matter</p> <p>8.E.1.5.i.a ~ Use geospatial technologies to investigate natural phenomena.</p> <p>8.E.2.0 ~ Analyze essential principles and ideas about the composition and structure of the universe.</p> <p>8.E.2.1 ~ Students are able to compare celestial bodies within the solar system using composition, size, and orbital motion.</p> <p>8.E.2.1.i.a ~ Use of spectroscopic analysis of celestial bodies</p> <p>8.E.2.1.i.b ~ Measurement in space</p> <p>8.E.2.1.i.c ~ Constellations</p> <p>8.E.2.1.i.d ~ Galaxies</p> <p>8.E.2.1.i.e ~ Life cycle of a star</p> <p>8.E.2.1.i.f ~ HR Diagram</p> <p>8.E.2.1.i.g ~ Laws of Gravitation</p> <p>8.E.2.1.i.h ~ Big Bang Theory</p> <p>8.E.2.1.i.i ~ Doppler Effect</p> <p>8.NS.1.1.i.a ~ Evaluate important contributions to the advancement of science from people of differing cultures, genders, and ethnicity.</p> <p>8.P.1.3 ~ Students are able to compare properties of matter resulting from physical and chemical changes.</p>
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		<p>8.S.1.0 ~ Analyze various implications/effects of scientific advancement within the environment and society.</p> <p>8.S.1.1 ~ Students are able to describe how science and technology have been influenced by social needs, attitudes, and values.</p> <p>8.S.2.1 ~ Students are able, given a scenario, to offer solutions to problems created by human activity on the local, regional, or global environment.</p>
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L** **Implications/Effects of Scientific Advancement**

<b>Content</b>	<b>Skills</b>	<b>Standards</b>
Environmental effects Social needs Cultural attitudes and values (these areas are worked on all year long)	Predict/defend consequences and alternatives  Discuss policy decision relating to environment  Determine how backgrounds affect scientific thinking  Analyze how society and need affect direction of science	8.NS.2.1.i.a ~ Evaluate the benefits and potential of scientific investigations.  8.S.1.0 ~ Analyze various implications/effects of scientific advancement within the environment and society.  8.S.1.1 ~ Students are able to describe how science and technology have been influenced by social needs, attitudes, and values.  8.S.2.1 ~ Students are able, given a scenario, to offer solutions to problems created by human activity on the local, regional, or global environment.

**Relationships/Interactions in Science**

<b>Content</b>	<b>Skills</b>	<b>Standards</b>
Global warming (theories, causes,	Identify advancements that have	8.E.1.3 ~ Students are able to explain the factors that create weather and the instruments and technologies that assess it.

and implications) Deforestation concerns Pollution/greenhouse effect/acid rain Theories/solutions to solving problems (these areas worked on all year long)	impacted environment  Compare and contrast risk and benefit of solutions  Consider how science helps drive research  Analyze current science issues and concerns  Explain importance of testing in controlled setting  identify limitations to current knowledge  Offer solutions to problems in the environment	8.E.1.5.i.a ~ Use geospatial technologies to investigate natural phenomena.  8.E.2.0 ~ Analyze essential principles and ideas about the composition and structure of the universe.  8.NS.2.1.i.a ~ Evaluate the benefits and potential of scientific investigations.  8.S.1.0 ~ Analyze various implications/effects of scientific advancement within the environment and society.  8.S.1.1 ~ Students are able to describe how science and technology have been influenced by social needs, attitudes, and values.  8.S.2.1 ~ Students are able, given a scenario, to offer solutions to problems created by human activity on the local, regional, or global environment.
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### Earth Week

Content	Skills	Standards
Principles of ecology Environmental factors	Recognize current earth/environmental concerns  Offer solutions to global problems  Devise plan for individual contribution and efforts to solve problems	8.E.1.0 ~ Analyze the various structures and processes of the Earth system.  8.E.1.1.i.a ~ Law of Conservation of Energy and Matter  8.S.1.0 ~ Analyze various implications/effects of scientific advancement within the environment and society.  8.S.1.1 ~ Students are able to describe how science and technology have been influenced by social needs, attitudes, and values.  8.S.2.1 ~ Students are able, given a scenario, to offer solutions to

		problems created by human activity on the local, regional, or global environment.
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<b>M A Y</b>	<b>Children's Science Book</b>	
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<b>Content</b>	<b>Skills</b>	<b>Standards</b>
Children's science book	Researching data Incorporate data into a story line Illustrate book to reinforce content Organize/publish science information Incorporate science and writing	8.E.1.0 ~ Analyze the various structures and processes of the Earth system. 8.E.1.1.i.a ~ Law of Conservation of Energy and Matter 8.E.2.0 ~ Analyze essential principles and ideas about the composition and structure of the universe. 8.NS.1.0 ~ Understand the nature and origin of scientific knowledge. 8.NS.1.1 ~ Students are able to differentiate among facts, predictions, theory, and law/principles in scientific investigations. 8.NS.2.0 ~ Apply the skills necessary to conduct scientific investigations. 8.NS.2.1 ~ Students are able to design a replicable scientific investigation. 8.NS.2.1.i.a ~ Evaluate the benefits and potential of scientific investigations. 8.P.1.0 ~ Describe structures and properties of, and changes in, matter. 8.S.1.0 ~ Analyze various implications/effects of scientific advancement within the environment and society.

8.S.1.1 ~ Students are able to describe how science and technology have been influenced by social needs, attitudes, and values.

8.S.2.1 ~ Students are able, given a scenario, to offer solutions to problems created by human activity on the local, regional, or global environment.

## Weather

Content	Skills	Standards
Atmosphere	Define basic weather vocabulary	8.E.1.0 ~ Analyze the various structures and processes of the Earth system.
Factors that create clouds	Explain factors that create weather and instruments that assess it	8.E.1.1.i.a ~ Law of Conservation of Energy and Matter
Types of clouds	Predict climate of a region by analyzing weather features	8.E.1.3 ~ Students are able to explain the factors that create weather and the instruments and technologies that assess it.
Water cycle	Analyze weather maps and make basic predictions	8.E.1.3.i.a ~ Effects of the ocean on weather
Air masses/fronts	Describe heat/energy transfer	8.E.1.3.i.b ~ Condensation
Pressure systems	Differentiate between climate and climate zone	8.E.1.3.i.c ~ Evaporation
Coriolis Effect		8.E.1.3.i.d ~ Cloud Formation
Hurricanes		8.E.1.5.i.a ~ Use geospatial technologies to investigate natural phenomena.
Tornadoes		8.E.2.0 ~ Analyze essential principles and ideas about the composition and structure of the universe.
Climate/zones		8.S.1.0 ~ Analyze various implications/effects of scientific advancement within the environment and society.
El Nino/El Nina		
Ocean effect on weather		
Weather technology		

		<p>8.S.2.1 ~ Students are able, given a scenario, to offer solutions to problems created by human activity on the local, regional, or global environment.</p>
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