

<b>Select a Course:</b>	Science Grade 7
<b>Teacher:</b>	CORE Science Grade 7
<b>Course:</b>	Science Grade 7
<b>Year:</b>	2016-17
<b>Months:</b>	- All -

August	<b>Grade 7 Science Earth Systems</b>				
	<b>Enduring Understandings</b>	<b>Essential Questions</b>	<b>Standards</b>	<b>Knowledge &amp; Skills</b>	<b>Academic Language</b>
	<ul style="list-style-type: none"> <li> Weather systems are dynamic and ever changing.</li> <li> Energy drives weather in cycles and patterns</li> </ul>	<ul style="list-style-type: none"> <li> Why does our weather change?</li> <li> How can weather be predicted?</li> </ul>	<p>MS-ESS2.4 - Develop a model to describe the cycling of water through Earth's systems driven by energy from the sun and the force of gravity.</p> <p>MS-ESS2.5 - Collect data to provide evidence for how the motions and complex interactions of air masses results in changes in weather conditions.</p> <p>MS-ESS2.6 - Develop and use a model to describe how unequal heating and rotation of the Earth cause patterns of atmospheric and oceanic circulation that determine regional climates.</p> <p>MS-ETS1.1 - Define the criteria and constraints of a design problem with sufficient precision to ensure a successful solution, taking into account relevant scientific principles and potential impacts on people and the natural environment that may limit possible solutions.</p> <p>MS-ETS1.2 - Evaluate competing design solutions using a systematic process to determine how well they meet the criteria and constraints of the problem.</p> <p>MS-ETS1.3 - Analyze data from tests to determine similarities and differences among several design solutions to identify the best characteristics of each that can be combined into a new solution to better meet the criteria for success.</p> <p>RST.6-8.9 - Compare and contrast the information gained from experiments, simulations, video, or multimedia sources with that gained from reading a text on the same topic.</p> <p>RST.6-8.3 - Follow precisely a multistep procedure when carrying out experiments, taking measurements, or performing technical tasks.</p> <p>RST.6-8.6 - Analyze the author's purpose in providing an explanation, describing a</p>	<ul style="list-style-type: none"> <li> Formation &amp; Interaction of air masses</li> <li> Weather caused by fronts</li> <li> Factors affecting the creation of winds</li> <li> Interpret data &amp; make predictions</li> <li> Compare and contrast climate change over time</li> <li> Apply understanding to complete a model</li> <li> Construct explanations for climate change and the impact on living systems.</li> </ul>	<ul style="list-style-type: none"> <li> Air masses &amp; fronts</li> <li> Global winds</li> <li> Convection currents</li> <li> Heat transfer (3 types)</li> <li> Water cycle</li> </ul>

			<p>procedure, or discussing an experiment in a text.</p> <p>WHST.6-8.2.f - Provide a concluding statement or section that follows from and supports the information or explanation presented.</p>		
September	<p><b>Enduring Understandings</b> ✕</p>	<p><b>Essential Questions</b> ✕</p>	<p><b>Standards</b> ✕</p>	<p><b>Knowledge &amp; Skills</b> ✕</p>	<p><b>Academic Language</b> ✕</p>
October	<p><b>Grade 7 Science Earth and Human Activity</b></p>				
	<p><b>Enduring Understandings</b> ✕</p>	<p><b>Essential Questions</b> ✕</p>	<p><b>Standards</b> ✕</p>	<p><b>Knowledge &amp; Skills</b> ✕</p>	<p><b>Academic Language</b> ✕</p>
	<p><b>Human Activity impacts climate change</b></p> <p><b>Climate change impacts living</b></p>	<p><b>-How does human activity impact Climate Change?</b></p> <p><b>How does Climate change impacts living things?</b></p>	<p>MS-ESS3.2 - Analyze and interpret data on natural hazards to forecast future catastrophic events and inform the development of technologies to mitigate their effects.</p> <p>MS-ESS3.3 - Apply scientific principles to design a method for monitoring and minimizing a human impact on the environment.*</p> <p>MS-ESS3.5 - Ask questions to clarify evidence of the factors that have caused the rise in global temperatures over the past century.</p>	<p><b>Factors affecting climate</b></p> <p><b>Climate change over time</b></p> <p><b>- Interpret data &amp; make predictions.</b></p> <p><b>- Compare and contrast climate change over time</b></p> <p><b>Apply understanding to complete a model</b></p> <p><b>Construct explanations for climate change and the impact on living systems.</b></p>	<p><b>Climate</b></p> <p><b>Biome</b></p> <p><b>Ice Age</b></p> <p><b>Greenhouse Effect</b></p> <p><b>Global Warming</b></p> <p><b>Air pollution</b></p>
November	<p><b>Grade 7 Science Molecules to Organisms Part 1</b></p>				
	<p><b>Enduring Understandings</b> ✕</p>	<p><b>Essential Questions</b> ✕</p>	<p><b>Standards</b> ✕</p>	<p><b>Knowledge &amp; Skills</b> ✕</p>	<p><b>Academic Language</b> ✕</p>
	<p><b>-Cells are the basic unit of life</b></p> <p><b>There are differences between in plant and animal cells.</b></p>	<p><b>How do organelles work together as a cell system?</b></p>	<p>MS-LS1.1 - Conduct an investigation to provide evidence that living things are made of cells; either one cell or many different numbers and types of cells.</p> <p>MS-LS1.2 - Develop and use a model to describe the function of a cell as a whole and ways parts of cells contribute to the function.</p> <p>MS-LS1.4 - Use argument based on empirical evidence and scientific reasoning to support an explanation for how characteristic animal behaviors and</p>	<p><b>-Differences between Prokaryotic &amp; Eukaryotic cells</b></p> <p><b>- Differences between Plant and animal cells</b></p> <p><b>- How organelles work together to function</b></p> <p><b>-Gather &amp; interpret</b></p>	<p><b>Organism</b></p> <p><b>Unicellular</b></p> <p><b>Multicellular</b></p> <p><b>Prokaryotic</b></p> <p><b>Eukaryotic</b></p> <p><b>Nucleus</b></p>

		<p>specialized plant structures affect the probability of successful reproduction of animals and plants respectively.</p> <p>MS-LS1.7 - Develop a model to describe how food is rearranged through chemical reactions forming new molecules that support growth and/or release energy as this matter moves through an organism.</p> <p>MS-ETS1.1 - Define the criteria and constraints of a design problem with sufficient precision to ensure a successful solution, taking into account relevant scientific principles and potential impacts on people and the natural environment that may limit possible solutions.</p> <p>MS-ETS1.2 - Evaluate competing design solutions using a systematic process to determine how well they meet the criteria and constraints of the problem.</p> <p>MS-ETS1.3 - Analyze data from tests to determine similarities and differences among several design solutions to identify the best characteristics of each that can be combined into a new solution to better meet the criteria for success.</p> <p>MS-ETS1.4 - Develop a model to generate data for iterative testing and modification of a proposed object, tool, or process such that an optimal design can be achieved.</p>	<p>observations</p> <p> -Apply understanding to complete a model</p> <p> -Safely &amp; accurately use science tools &amp; integrate technology</p>	<p> Organelles</p>
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December	<p><b>Enduring Understandings</b> </p>	<p><b>Essential Questions</b> </p>	<p><b>Standards</b> </p>	<p><b>Knowledge &amp; Skills</b> </p>	<p><b>Academic Language</b> </p>
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January	<p> <b>Grade 7 Science Molecules to Organisms Part 2</b></p>				
	<p><b>Enduring Understandings</b> </p> <p> -Energy flows in and out of organisms</p> <p> Organisms utilize energy</p>	<p><b>Essential Questions</b> </p> <p> How do organisms transform energy through their bodies?</p>	<p><b>Standards</b> </p> <p>MS-LS1.1 - Conduct an investigation to provide evidence that living things are made of cells; either one cell or many different numbers and types of cells.</p> <p>MS-LS1.2 - Develop and use a model to describe the function of a cell as a whole and ways parts of cells contribute to the function.</p> <p>MS-LS1.4 - Use argument based on empirical evidence and scientific reasoning to support an explanation for how characteristic animal behaviors and specialized plant structures affect the probability of successful reproduction of animals and plants respectively.</p> <p>MS-LS1.6 - Construct a scientific explanation based on evidence for the</p>	<p><b>Knowledge &amp; Skills</b> </p> <p> Cells use energy to complete life functions.</p> <p> -Gather &amp; interpret observations</p> <p> -Apply understanding to complete a model</p> <p> -Safely &amp; accurately use science tools &amp; integrate technology</p>	<p><b>Academic Language</b> </p> <p> Nucleus</p> <p> Diffusion</p> <p> Osmosis</p> <p> Photosynthesis</p> <p> Chloroplast</p> <p> Cellular Respiration</p> <p> Mitochondria</p> <p> Cell Cycle</p>

		<p>role of photosynthesis in the cycling of matter and flow of energy into and out of organisms.</p> <p>MS-LS1.7 - Develop a model to describe how food is rearranged through chemical reactions forming new molecules that support growth and/or release energy as this matter moves through an organism.</p> <p>MS-PS1.4 - Develop a model that predicts and describes changes in particle motion, temperature, and state of a pure substance when thermal energy is added or removed.</p>	<ul style="list-style-type: none"> <li> Cell Membrane</li> <li> Mitosis</li> </ul>
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**February**  **Grade 7 Science Heredity & Biological Evolution**

Enduring Understandings	Essential Questions	Standards	Knowledge & Skills	Academic Language
<ul style="list-style-type: none"> <li> -Environmental and genetic factors affect the growth of organisms.</li> <li> -Humans influence the desired traits in organisms "- Genetic variations of traits in a population increase some individuals' probability of surviving and reproducing in a specific environment.</li> <li> Technologies have changed the way humans influence the inheritance of desired traits in organisms"</li> </ul>	<ul style="list-style-type: none"> <li> -How do humans influence the desired traits in organisms?</li> <li> -How do environmental and genetic factors affects the growth of organisms?</li> <li> "-How does Genetic variations of traits in a population increase some individuals' probability of surviving and reproducing in a specific environment?</li> <li> -How does Technologies have changed the way humans influence the inheritance of desired traits in organisms?"</li> </ul>	<p>MS-LS1.5 - Construct a scientific explanation based on evidence for how environmental and genetic factors influence the growth of organisms.</p> <p>MS-LS1.6 - Construct a scientific explanation based on evidence for the role of photosynthesis in the cycling of matter and flow of energy into and out of organisms.</p> <p>MS-LS3.1 - Develop and use a model to describe why structural changes to genes (mutations) located on chromosomes may affect proteins and may result in harmful, beneficial, or neutral effects to the structure and function of the organism.</p> <p>MS-LS4.4 - Construct an explanation based on evidence that describes how genetic variations of traits in a population increase some individuals' probability of surviving and reproducing in a specific environment.</p> <p>MS-LS4.5 - Gather and synthesize information about the technologies that have changed the way humans influence the inheritance of desired traits in organisms.</p> <p>MS-ETS1.1 - Define the criteria and constraints of a design problem with sufficient precision to ensure a successful solution, taking into account relevant scientific principles and potential impacts on people and the natural environment that may limit possible solutions.</p> <p>MS-ETS1.2 - Evaluate competing design solutions using a systematic process to determine how well they meet the criteria and constraints of the problem.</p> <p>MS-ETS1.3 - Analyze data from tests to determine similarities and differences among several design solutions to</p>	<ul style="list-style-type: none"> <li> -Interpret Punnett squares</li> <li> -Explain variation in offspring</li> <li> -Differences in sexual &amp; asexual reproduction</li> <li> -Interpret data &amp; make predictions</li> <li> - Construct explanations of how traits are carried from parents to offspring</li> <li> -Safely &amp; accurately use science tools &amp; integrate technology</li> </ul>	<ul style="list-style-type: none"> <li> Meiosis</li> <li> Genes</li> <li> Genotype</li> <li> Phenotype</li> <li> Punnett Square</li> <li> Chromosomes</li> <li> sexual reproduction</li> <li> asexual reproduction</li> <li> mutations</li> <li> nucleotides</li> <li> probability</li> <li> dominant</li> <li> recessive</li> </ul>

		<p>identify the best characteristics of each that can be combined into a new solution to better meet the criteria for success.</p> <p>RST.6-8.3 - Follow precisely a multistep procedure when carrying out experiments, taking measurements, or performing technical tasks.</p> <p>RST.6-8.6 - Analyze the author's purpose in providing an explanation, describing a procedure, or discussing an experiment in a text.</p> <p>RST.6-8.9 - Compare and contrast the information gained from experiments, simulations, video, or multimedia sources with that gained from reading a text on the same topic.</p> <p>WHST.6-8.2.f - Provide a concluding statement or section that follows from and supports the information or explanation presented.</p>		
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March	<p><b>Enduring Understandings</b> ✕</p>	<p><b>Essential Questions</b> ✕</p>	<p><b>Standards</b> ✕</p>	<p><b>Knowledge &amp; Skills</b> ✕</p>	<p><b>Academic Language</b> ✕</p>
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April	<p><b>🏠 Grade 7 Science Structure &amp; Function of Organisms</b></p>				
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April	<p><b>Enduring Understandings</b> ✕</p> <p>🏠 Plants and animals engage in behaviors that increases the odds of reproduction.</p>	<p><b>Essential Questions</b> ✕</p> <p>🏠 -How do Plants and animals engage in behaviors that increases the odds of reproduction?</p>	<p><b>Standards</b> ✕</p> <p>MS-ETS1.1 - Define the criteria and constraints of a design problem with sufficient precision to ensure a successful solution, taking into account relevant scientific principles and potential impacts on people and the natural environment that may limit possible solutions.</p> <p>MS-ETS1.2 - Evaluate competing design solutions using a systematic process to determine how well they meet the criteria and constraints of the problem.</p> <p>MS-LS1.1 - Conduct an investigation to provide evidence that living things are made of cells; either one cell or many different numbers and types of cells.</p> <p>MS-LS1.2 - Develop and use a model to describe the function of a cell as a whole and ways parts of cells contribute to the function.</p> <p>MS-LS1.3 - Use argument supported by evidence for how the body is a system of interacting subsystems composed of groups of cells.</p> <p>MS-LS1.4 - Use argument based on empirical evidence and scientific reasoning to support an explanation for how characteristic animal behaviors and specialized plant structures affect the probability of successful reproduction of</p>	<p><b>Knowledge &amp; Skills</b> ✕</p> <p>🏠 -How structure &amp; function work in frogs</p> <p>🏠 -Interpret data &amp; make predictions</p> <p>🏠 - Apply understanding to complete a model</p> <p>🏠 -Safely &amp; accurately use science tools &amp; integrate technology</p>	<p><b>Academic Language</b> ✕</p> <p>🏠 -Gross Anatomical vocabulary (dorsal, ventral, etc.)</p>
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			<p>animals and plants respectively.</p> <p>MS-LS4.5 - Gather and synthesize information about the technologies that have changed the way humans influence the inheritance of desired traits in organisms.</p> <p>6-8.LS4.C - Adaptation ~ Species can change over time in response to changes in environmental conditions through adaptation by natural selection acting over generations. Traits that support successful survival and reproduction in the new environment become more common.</p> <p>6-8.LS4.D - Biodiversity ~ Changes in biodiversity can influence humans' resources and ecosystem services they rely on.</p>		
May	Enduring Understandings ✕	Essential Questions ✕	Standards	✕ Knowledge & Skills ✕	Academic Language ✕
June	Enduring Understandings ✕	Essential Questions ✕	Standards	✕ Knowledge & Skills ✕	Academic Language ✕
July	Enduring Understandings ✕	Essential Questions ✕	Standards	✕ Knowledge & Skills ✕	Academic Language ✕