

# Mount Pleasant Central School District

## 4th Grade, Science



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How can noticing natural phenomena in the world drive student curiosity to learn and grow as scientists? Students will explore the topics of Life Science, Physical Science, Earth and Space Science, Scientific Inquiry and Practices and Engineering and Technology. Our goals are to plan and carry out investigations, analyze data, construct explanations and design solutions. We emphasize finding patterns, discovering cause and effect, making observations, investigating relationships between structure and function and recognizing the influence of science on society and the natural world. Assessment will be through CER (Claim- Evidence- Reasoning) responses, end of unit tasks and performance based assessments (labs, investigations) which enable students to apply their learning to real world situations.

Unit Title	Month	Content	Vocabulary	Standards	Skills	Big Ideas	Assessments
Organism Structures and Behavior	1st Trimester/ Classroom	-Plant and Animal Parts -Sense Receptors	- basic functions, behavior, external structures, function, growth, internal structure, plant, reproduction, survival  -brain, interactions, memories, sense receptors, senses, specialized,	-4-LS1-1 Construct an argument that plants and animals have internal and external structures that function to support survival, growth, behavior, and reproduction. -4-LS1-2 Use a model to describe that animals receive different types of information through their senses, process the information in their brain, and respond to the information in different ways. -3-5-ETS1-1 Define a simple design problem reflecting a need or a want that includes specified criteria for success and constraints on materials, time, or cost. -3-5-ETS1-2 Generate and compare	-Engaging in Argument from Evidence -Analyze systems and system models -Developing and using models	-Plants and animals have both internal and external structures that serve various functions in growth, survival, behavior and reproduction. -Different sense receptors are specialized for particular kinds of information, which may be then processed by the animal's brain. Animals are able to use their perceptions and memories to guide their actions.	-CERs, end of unit tasks

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				multiple possible solutions to a problem based on how well each is likely to meet the criteria and constraints of the problem.			
<b>Changes over Time to Earth's Surface and Resources</b>	All Trimesters/ Science Lab	-Rock Patterns -Changing Land -Plate Tectonics -Renewable and Nonrenewable Resources -Natural Processes	-earthquake, fossil, landscape, evidence, patterns, rock formations, rock layers  -erosion, gravity, living organisms, particle, region, sediment, soil, vegetation, weathering  -bands, continent, deep ocean trench, earthquake, map, mountain ranges,	-4-ESS1-1 Identify evidence from patterns in rock formations and fossils in rock layers to support an explanation for changes in a landscape over time. -4-ESS2-1 Make observations and/or measurements to provide evidence of the effects of weathering or the rate of erosion by water, ice, wind, or vegetation. -4-ESS2-2 Analyze and interpret data from maps to describe patterns of Earth's features.	-Constructing explanations and designing solutions -Identifying patterns -Planning and carrying out investigations -Identifying cause and effect -Analyzing and interpreting data -Obtaining, evaluating and communicating information	-The locations of mountain ranges, deep-ocean trenches, ocean-floor structures, earthquakes, and volcanos usually occur near the borders of Earth's tectonic plates. -Patterns of rock formations and fossils can tell us what changes to Earth's surface have occurred over time.	-CERs, end of unit tasks

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			surface feature  -derived, energy, environment, fuel, natural resources, nonrenewable resources, renewable resources  -earthquake, hazards, impact, natural processes, reduce, tsunami, volcanic eruption	-4-ESS3-1 Obtain and combine information to describe that energy and fuels are derived from natural resources and their uses affect the environment. -4-ESS3-2 Generate and compare multiple solutions to reduce the impacts of natural Earth processes on humans.		-Earth's surface also changes slowly over time due to forces from wind, water, and ice. -Renewable and nonrenewable resources exist in and on Earth's surface, and their use affects the environment. -Natural hazards such as earthquakes, volcanic eruptions, and tsunamis also cause changes to Earth's surface, but humans can take steps to reduce their	

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Unit Title	Month	Content	Vocabulary	Standards	Skills	Big Ideas	Assessments
						impacts.	
Using Energy Transformations	2nd Trimester/ Classroom	-Energy and Speed -Energy Transfer and Electric Currents -Transfer of Energy in Collision	-decrease, energy, energy transfer, increase, movement, speed  -absorb, electric current, electrical energy, energy, energy transfer, heat energy, light energy, motion, sound energy  -collision, contact, electric current, energy, energy transfer, force, heat energy, light energy,	-4-PS3-1 Use evidence to construct an explanation relating the speed of an object to the energy of that object. -4-PS3-2 Make observations to provide evidence that energy can be transferred from place to place by sound, light, heat, and electric currents. -4-PS3-3 Ask questions and predict outcomes about the changes in energy that occur when objects collide. -4-PS3-4 Apply scientific ideas to design, test, and refine a device that converts energy from one form to another.*	-Constructing explanations and designing solutions -Planning and carrying out investigations -Asking questions and defining problems	-Energy is present whenever there are moving objects, sound, light, or heat. -Energy can be transferred from one object to another and into different forms. -Energy can be transferred from place to place by moving objects or through sound, light, or electric currents. -The faster an object is moving, the more energy it has.	-CERs, end of unit tasks

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			motion, sound energy	-3-5-ETS1-1 Define a simple design problem reflecting a need or a want that includes specified criteria for success and constraints on materials, time, or cost. -3-5-ETS1-2 Generate and compare multiple possible solutions to a problem based on how well each is likely to meet the criteria and constraints of the problem.			
<b>Communicating Using Wave Energy</b>	3rd Trimester/ Classroom	- Motion of Waves -Wavelength and Amplitude -Light Reflection -Information Technologies	-model, motion, surface, wave  -amplitude, motion, pattern, wave, wavelength	-4-PS4-1 Develop a model of waves to describe patterns in terms of amplitude and wavelength and that waves can cause objects to move. -4-PS4-2 Develop a model to describe	- Developing and using models -Connecting to nature of science -Classifying natural phenomena using	-Waves are regular patterns of motion. -Waves differ in amplitude (height) and wavelength (distance between	-CERs, end of unit tasks

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Unit Title	Month	Content	Vocabulary	Standards	Skills	Big Ideas	Assessments
			<ul style="list-style-type: none"> <li>-eyes, light energy, model, reflection, surface</li> <li>-cell phone, computers, decode, digital signals, digitized information, high tech device, transmit</li> </ul>	<p>that light reflecting from objects and entering the eye allows objects to be seen.</p> <p><b>-4-PS4-3</b> Generate and compare multiple solutions that use patterns to transfer information.*</p> <p><b>-3-5-ETS1-1</b> Define a simple design problem reflecting a need or a want that includes specified criteria for success and constraints on materials, time, or cost.</p> <p><b>-3-5-ETS1-2</b> Generate and compare multiple possible solutions to a problem based on how well each is likely to meet the criteria and constraints of the problem.</p> <p><b>-3-5-ETS1-3</b> Plan and carry out fair tests in</p>	<p>patterns</p> <ul style="list-style-type: none"> <li>-Identify cause and effect relationships</li> <li>-Constructing explanations and designing solutions.</li> </ul>	<p>waves).</p> <ul style="list-style-type: none"> <li>-We see objects because light is reflected off the objects and enters our eyes.</li> <li>-Digitized information can travel over long distances by being converted from voice or text to digitized form and back to voice or text.</li> </ul>	

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				which variables are controlled and failure points are considered to identify aspects of a model or prototype that can be improved.			