

Middle School Science Cycle Year 1
Physical Science

Month	Learner Outcomes / Standards	Content	Assessments	Resources
Sept/Oct	<p>6.2.2.1 The motion of an object can be described in terms of speed, direction and change of position.</p> <p>6.2.2.1.1 Measure and calculate the speed of an object that is traveling in a straight line</p> <p>6.2.2.1.2 For an object traveling in a straight line, graph the object's position as a function of time, and its speed as a function of time. Explain how these graphs describe the object's motion.</p> <p>6.2.2.2 Forces have magnitude and direction and govern the motion of objects.</p> <p>6.2.2.2.1 Recognize that when the forces acting on an object are balanced, the object remains at rest or continues to move at a constant speed in a straight line, and that unbalanced forces cause a change in the speed or direction of the motion of an object.</p> <p>6.2.2.2.2 Identify the forces acting on an object and describe how the sum of the forces affects the motion of the object. For example: Forces acting on a book on a table or a car on the road.</p> <p>6.2.2.2.3 Recognize that some forces between objects act when the objects are in direct contact and others, such as magnetic, electrical and gravitational forces can act from a distance.</p> <p>6.2.2.2.4 Distinguish between mass and weight. Measuring, graphing, describing, data collection, observation, calculating, explaining, hypothesizing, analyzing, concluding, prediction, identifying, modeling, testing, designing, evaluating, refining & inferring.</p>	<p>Motion - How does speed and velocity affect objects? How can you figure out speed? How can you affect motion? How does motion affect objects around you? How do forces affect motion?</p> <p>Force -What is a force? What factors can affect a force? How do forces affect your daily activities?</p>	<p>Labs, Quizzes, Tests, Group Discussions Worksheets Science Links</p> <p>Labs Quizzes Tests Group Discussions Worksheets Science Links</p>	<p>Websites, Textbooks, videos,</p>
Nov.- Dec	<p>6.1.2.1 Engineers create, develop and manufacture machines, structures, processes and systems that impact</p>	<p>The Practice of Engineering -</p>	<p>Labs Science Links Group Discussions Quizzes Tests</p>	<p>Websites, Textbooks, videos,</p>

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	<p>society and may make humans more productive.</p> <p>6.1.2.1.1 Identify a common engineered system and evaluate its impact on the daily life of humans. For example: Refrigeration, cell phone or automobile.</p> <p>6.1.2.1.2 Recognize that there is no perfect design and that new technologies have consequences that may increase some risks and decrease others. For example: Seat belts and airbags.</p> <p>6.1.2.1.3 Describe the trade-offs in using manufactured products in terms of features, performance, durability and cost.</p> <p>6.1.2.1.4 Explain the importance of learning from past failures, in order to inform future designs of similar products or systems.</p> <p>6.2.2.2 Engineering design is the process of devising products, processes and systems that address a need, capitalize on an opportunity, or solve a specific problem.</p> <p>6.1.2.2.1 Apply and document an engineering design process that includes identifying criteria and constraints, making representations, testing and evaluation, and refining the design as needed to construct a product or system that solves a problem</p>	<p>What is a machine? What is the difference between work input and work output? What are different types of simple machines you use in your daily activities? How do machines affect your life?</p>	<p>Worksheets</p>	
<p>Jan.- Feb.</p>	<p>6.1.3.1 Designed and natural systems exist in the world. These systems consist of components that act within the system and interact with other systems.</p>	<p>Interactions Among Science, Technology, Engineering, Mathematics and</p>	<p>Labs Science Links Group Discussions Quizzes Tests Worksheets</p>	<p>Websites, Textbooks, videos,</p>

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<p>Feb.- March</p>	<p>6.1.3.1.1 Design a system in terms of its subsystems and parts, as well as its inputs, processes and outputs.</p> <p>6.1.3.1.2 Distinguish between open and closed systems. For example: Compare mass before and after a chemical reaction that releases a gas in sealed and open plastic bags.</p> <p>6.1.3.4.1 Determine and use appropriate safe procedures, tools, measurements, graphs and mathematical analyses to describe and investigate natural and designed systems in a physical science context.</p> <p>6.1.3.4.2 Demonstrate the conversion of units within the International System of Units (SI, or metric) and estimate the magnitude of common objects and quantities using metric units. Designing, modeling, hypothesizing, data collection, analyzing, concluding, prediction, identifying, evaluating & refining</p> <p>6.2.3.1 Waves involve the transfer of energy without the transfer of matter.</p> <p>6.2.3.1.1 Describe properties of waves, including speed, wavelength, frequency and amplitude.</p>	<p>Society</p> <p>What is work? When is work being done on an object? How are work and power related? How are work and power different? When are you doing work?</p> <p>Energy -</p> <p>What is energy? What is the difference between kinetic and potential energy?</p>	<p>Labs Science Links Group Discussions Quizzes Tests Worksheets</p>	<p>Websites, Textbooks, videos,</p>
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<p>April/ May</p>	<p>6.2.3.1.2 Explain how the vibration of particles in air and other materials results in the transfer of energy through sound waves</p> <p>6.2.3.1.3 Use wave properties of light to explain reflection, refraction and the color spectrum.</p> <p>6.2.3.2 Energy can be transformed within a system or transferred to other systems or the environment.</p> <p>6.2.3.2.1 Differentiate between kinetic and potential energy and analyze situations where kinetic energy is converted to potential energy and vice versa.</p> <p>6.2.3.2.2 Trace the changes of energy forms, including thermal, electrical, chemical, mechanical or others as energy is used in devices. For example: A bicycle, light bulb or automobile.</p> <p>6.2.3.2.3 Describe how heat energy is transferred Willmar Public Schools Curriculum Map in conduction, convection and radiation. Predicting, measuring, graphing, describing, data collection, observation, calculations, inferring, refining, testing, designing. concluding & evaluating.</p> <p>6.2.1.1 Pure substances can be identified by properties which are independent of the sample of the substance and the properties can be explained by a model of matter that is composed of small particles.</p> <p>6.2.1.1.1 Explain density, dissolving, compression,</p>	<p>What forms can energy be found in? What is the law of conservation? Where do we get energy from? Where does your body get its energy from?</p> <p>Matter - What is matter? What are the states of matter? What is the difference</p>	<p>Labs Science Links Group Discussions Quizzes Tests Worksheets</p>	<p>Websites, Textbooks, videos,</p>
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	<p>diffusion and thermal expansion using the particle model of matter.</p> <p>6.2.1.2.1 Identify evidence of physical changes, including changing phase or shape, and dissolving in other materials.</p> <p>6.2.1.2.2 Describe how mass is conserved during a physical change in a closed system. For example: The mass of an ice cube does not change when it melts.</p> <p>6.2.1.2.3 Use the relationship between heat and the motion and arrangement of particles in solids, liquids and gases to explain melting, freezing, condensation and evaporation. Measuring, calculating, predicting, testing, identifying, comparing & describing.</p>	<p>between an element, a compound and a mixture?</p> <p>What is an atom?</p> <p>What are some examples of the different states of matter that you come in contact with in your daily life?</p>		
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