

# 2

## Space, Time and Matter

### (Physical Science)

#### Essential Question: How does force affect motion?

Enduring Knowledge	Science Concepts	GE	Evidence of Understanding
<p><b>Motion:</b> Everything is constantly moving; motion is relative, but the motion of an object can be described and predicted by tracing and measuring its position over time.</p>	<p>a. The position and movement of an object can be described such as fast, slow, speeding up and slowing down, and movement in different directions.</p>	19	Investigating and describing how objects move in different ways
<p><b>Force:</b> Force is an influence that can change the motion of an object.</p>	<p>a. A force is a push or a pull. Force can change the motion of an object.</p>	21	Investigating and identifying how pushing or pulling moves or does not move an object
<p><b>Force:</b> Force is an influence that can change the motion of an object.</p>	<p>a. Objects fall to the ground unless something holds them.</p>	22	Observing and describing that different objects fall to the earth unless something is holding them up
<p><b>Energy:</b> Energy is necessary for change to occur. It is the ability of matter to bring about change.</p> <ul style="list-style-type: none"> <li>- There are many forms of energy.</li> <li>- The total energy in the universe is constant.</li> <li>- Energy can be transformed and transferred, but not destroyed. (Conservation of Energy)</li> <li>- Energy transfers and transformations exhibit the characteristics of systems with inputs, processes and outputs as well as connections to other systems.</li> </ul>	<p>a. Magnets can move some objects without touching them.</p>	25	Investigating, observing and describing how magnets can make some things move without touching (e.g., determining the distance needed for a magnet to attract an object)

<p><b>Energy:</b> Energy is necessary for change to occur. It is the ability of matter to bring about change.</p> <ul style="list-style-type: none"> <li>- There are many forms of energy.</li> <li>- The total energy in the universe is constant.</li> <li>- Energy can be transformed and transferred, but not destroyed.</li> </ul> <p><b>(Conservation of Energy)</b></p> <ul style="list-style-type: none"> <li>- Energy transfers and transformations exhibit the characteristics of systems with inputs, processes and outputs as well as connections to other systems.</li> </ul>	<p>a. Sound is caused by vibrating objects.</p>	<p>29</p>	<p>Investigating different objects, observing and describing the vibrations of those objects and the sounds that are made</p>
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Focusing Questions	Potential Inquiries/Activities	Resources/Notes
<p><b>How do objects move?</b></p> <ul style="list-style-type: none"> <li>- Directionality of an object can be described.</li> <li>- Movement can occur in a multitude of directions depending on where force is exerted.</li> <li>- Objects can move at varying measurable speeds.</li> <li>- Speed is not a constant.</li> <li>- The amount of force impacts the distance an object will travel.</li> </ul>	<p>What will happen if you put (1) _____ on different size/pitch ramp? (1) golf ball, ping pong ball, tennis ball, super ball.</p>	
<p><b>How does force influence an object?</b></p> <ul style="list-style-type: none"> <li>- Force can change the motion of an object.</li> <li>- In order for a motion to stop the force must stop.</li> <li>- A force is a push or a pull.</li> <li>- A force causes an object to move into a particular direction.</li> </ul>	<p>What happens when you have a tug of war?</p>	
<p><b>Why is gravity important?</b></p> <ul style="list-style-type: none"> <li>- Gravitational force comes from the earth.</li> <li>- The force of gravity is a constant.</li> </ul>	<p>What would happen if...</p> <ul style="list-style-type: none"> <li>- there was no desk under a book?</li> <li>- an egg fell out of a nest?</li> </ul>	
<p><b>Why do magnets affect a variety of objects?</b></p> <ul style="list-style-type: none"> <li>- A magnet is a force that attracts some objects.</li> <li>- Magnetic force does not require physical touch.</li> <li>- The force of the magnet's pull is relative to the object's distance from the magnet.</li> <li>- Magnetism can affect objects separated by a non-magnetic substance.</li> </ul>	<p>What happens when you... What did you observe? Record your observations.</p> <ul style="list-style-type: none"> <li>- put a magnet under and above a table holding objects that are attracted by magnets</li> <li>- put a magnet near/far from a paperclip?</li> <li>- explore magnets?</li> </ul>	

<p><b>What is the relationship between vibration and sound?</b></p> <ul style="list-style-type: none"><li>- Vibration is a rapidly repeating motion.</li><li>- Vibration is caused by a force.</li><li>- The speed of the vibration of the object determines the sound made.</li><li>- The composition of an object determines the sound made.</li></ul>	<p>What happens when you snap a rubber band (or pluck a guitar string, tap a drum, etc.)?</p>	<p>Tuning fork</p>
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