

CRM 3 Force, Motion and Energy

Pacing

- 20 days
- Oct. 15-Nov. 9
- Week 8-11

DESIRED RESULTS

Making Meaning

The study of force, motion, and energy leads students to discovering how objects interact with each other in the real world. Students are very familiar with force, motion, and energy if they play sports, push strollers, pull wagons, and ride bikes or skateboards. These concepts build a foundation for the secondary science in the study of Physics, Astronomy, and Engineering. The following make meaning valuable for learners and are investigated in this unit:

- Energy can cause a variety of effects as it moves from place to place including: motion, light, sound, electricity, magnetic fields, and heat.
- Energy is always conserved within a system and remains constant until it is transferred into or out of the system.
- The faster an object moves the more energy it possesses.
- When objects interact each one exerts a force on the other; these forces can transfer energy between the objects.
- The strengths of forces can be measured and compared.
- What happens when a force is applied to an object depends on the strength of the force itself, and the strength of the other forces acting upon it.
- If an object is at rest the forces acting on it are most likely equivalent.
- Forces that are imbalanced can cause changes in the speed or direction of an object.
- Gravity is a force that acts on matter.

Transfer: Students use critical thinking and problem solving to construct their own scientific understanding of forces and motion and develop their scientific process skills by asking scientific questions, designing and conducting investigations, constructing explanations from their observations, and discussing their explanations with others as they investigate energy, and forces and motion.

Enduring Understandings:

- Energy in its many forms is useful in our everyday lives.
- Energy causes change.
- Location and motion can be observed and described.

Essential Questions:

- What is energy, and how do we use it in our everyday life?
- How can location and motion be observed and described?

Essential Vocabulary

- above/hacia arriba
- attract/atraer
- back and forth / hacia atrás y hacia adelante
- behind/detrás de
- below/ por debajo de
- beside/ al lado
- change/cambio
- cooling/enfriar
- energy/energía
- fast / rápida
- form/forma
- heat / calor
- heating/calentiento
- in front of/en frente
- iron/hierro
- light / luz
- location/ ubicación
- loud/fuerte

- magnet / imán
- magnetic/magnético
- melt/derritir
- move/ mover
- nature/ naturaleza
- nonmagnetic/no magnético
- opposite/ opuesto
- pull / tirón
- push / empuje
- round and round/en círculo
- slow / lentamente
- soft/suave
- sound/sonido
- straight line / línea recta
- temperature/temperatura
- up and down/de arriba a abajo
- zigzag/zigzag

Supporting Vocabulary Link

- [Elementary School Supporting Vocabulary](#)

<p>Student Prerequisite Knowledge <i>Students should know:</i></p> <ul style="list-style-type: none"> • I can push something and it will move. • I can pull something and it will move. • I can stop something that is moving. • Magnets stick to other things like refrigerators. • Some things are hot, others are cold. 		
<p>Resources: Scott Foresman: Science, Discovery Streaming, STEMScopes, Scott Foresman, Science Online Text/Resource/SP</p>		
<p>ELPS: Mandated by Texas Administrative Code (19 TAC §74.4), click on the link for English Language Proficiency Standards (ELPS) to support English Language Learners.</p>		
<p>TEKS Knowledge & Skills</p>	<p>Acquisition</p>	
<p>STAAR: RC = Reporting Category; DC = Dual Coded Skills; Readiness Standard; Supporting Standard Concepts are addressed in another unit.</p>	<p>Students Will Know</p>	<p>Students Will Be Able To</p>
<p>K.6 Force, motion, and energy. The student knows that force, motion, and energy are related and are a part of everyday life.</p>		
<p>K.6A: Use the five senses to explore different forms of energy, such as light, heat, and sound.</p>	<ul style="list-style-type: none"> • Energy comes in many forms. • Senses are important to identifying forms of energy such as light, heat, and sound. • Energy can come from natural or man-made sources. 	<ul style="list-style-type: none"> • Internalize initial vocabulary by identifying examples of sound. • Differentiate sounds that come from nature and sounds that are man-made. • Identify soft and loud sounds. • Internalize initial vocabulary by identifying examples of light. • Differentiate between natural and man-made light sources.
<p>K.6B: Explore interactions between magnets and various materials.</p>	<ul style="list-style-type: none"> • Forces change or move objects. • Magnets have a force that can push or pull metal objects containing iron. • Magnets are part of everyday life. 	<ul style="list-style-type: none"> • Respond to identify materials that magnets attract. • Recognize that magnets can be different shapes. • Demonstrate that like poles of magnets push away from each other and opposite poles pull toward each other.
<p>K.6C: Observe and describe the location of an object in relation to another such as above, below, behind, in front of and beside.</p>	<ul style="list-style-type: none"> • Objects can change location. 	<ul style="list-style-type: none"> • Describe the location of an object in relation to another object. • Illustrate and describe the location of objects in relation to other objects.
<p>K.6D: Observe and describe the ways that objects can move such as in a straight line, zigzag, up and down, back and forth, round and round, and fast and slow.</p>	<ul style="list-style-type: none"> • Objects can move due to forces and energy. 	<ul style="list-style-type: none"> • Observe and identify, then describe with increasing specificity different ways that objects can move. • Determine whether objects are moving fast or slow.

The study of science is taught through the lens of [Scientific Processes \(TEKS K.1-K.4\)](#); therefore, these TEKS should be taught in conjunction with content throughout the year. Suggestions for TEKS to embed in each unit are provided in the Yearly Itinerary; however, the TEKS that can be addressed within a unit depends greatly on the learning activities in which students are engaged. Therefore, teachers must be deliberate in their choice of learning activities to ensure that all Scientific Processes TEKS are appropriately embedded within the course. In Kindergarten, districts are encouraged to facilitate laboratory and field investigations for at least 80% of instructional time.

ASSESSMENT EVIDENCE

Student Work Products/Assessment Evidence

Performance Tasks	Other Evidence (i.e. unit tests, open ended exams, quiz, essay, student work samples, observations, etc.)
<ul style="list-style-type: none"> • Sound Detective Investigation • Loud or Soft Investigation • Softer to Louder Investigation • What Makes Light Investigation • Show Do We Use Light? Investigation • What Makes Light? Activity • Magnetic Testing Investigation • Magnet Match • Location Observations • Where is it? Activity • Marble Challenge • Ball Challenge • Round and Round Challenge 	<ul style="list-style-type: none"> • Teacher Observations and Questioning • Science Notebook Entries • Think-Pair-Share • <i>Is it Loud or Soft?</i> Data Chart • Sound Maker Building Activity • <i>What Makes Light?</i> Card Activity • <i>How Do We Use Light?</i> Pictures • <i>Magnet Match</i> Pictures • <i>Magnetic Field Trip</i> Student Page • <i>Where is it?</i> Cards • <i>Straight or Zigzag</i> Student Page • Inspiration/Kidpix Products <p>Additional Suggestions for Assessment</p> <ul style="list-style-type: none"> • Teacher Observations: Use of safety rules and equipment. • Teacher Observations: Management and use of tools. • Tools foldable/web in Science Notebook • Students' use of evidence to support explanations and claims.

LESSON PLANNING TOOLS

In the course of lesson planning, it is the expectation that teachers will include whole child considerations when planning such as differentiation, special education, English language learning, dual language, gifted and talented, social emotional learning, physical activity, and wellness.

Model Lesson- [Investigating Sound and Exploring Light](#)

- Investigating Sound Energy
- Exploring Light

Suggested Pacing: (8 days)

TEKS:K.6A

Model Lesson- [Exploring Magnets](#)

- Exploring Magnets

Suggested Pacing: (5 days)

TEKS: K.6B

Model Lesson- [Exploring Location and Movement](#)

- Exploring Location
- Exploring Movement

Suggested Pacing: (7 days)

TEKS: K.6C, K.6D