

Earth Science Focus

Guiding Question:

How does the position of the Earth in the solar system affect the conditions on our planet?

Content Standards:

Gravity is the force that governs the motion of objects in the solar system.

The motion of the Earth and Moon relative to the sun causes daily, monthly and yearly cycles on Earth.

Benchmark/ Expected performance

Unit

Materials

Field trips/
Outdoor Ed

Students will:

1. Know the effect of gravity on the orbital movement of planets in the solar system. 2. Know how the regular motion of the Sun, Earth and Moon explains the seasons, phases, of the moon and eclipses.	Exploring the Universe	Books solar models	
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Physical Science Focus

Guiding Questions:

What is the role of energy in our world?

How do science and technology affect the quality of life?

Content Standards:

Light is a form of energy that travels in a straight line and can be reflected by a mirror, refracted by a lens, or absorbed by objects.

Sound is a form of energy that is transmitted by the vibration of air and objects.

Various optical tools can be used to measure, describe and compare different objects and organisms.

Advances in technology allow us to acquire new information about our world

Benchmark/ Expected performance	Unit	Materials	Field trips/ Outdoor Ed
<i>Students will:</i>			
1. Describe how light is absorbed and/or reflected by different surfaces.	Light, Optics and Lasers	Mirrors, lenses, lasers	
2. Compare and contrast the behavior of light using concave and convex mirrors and lenses.			
3. Describe the types and uses of various optical instruments that use lenses and mirrors.			
4. Describe the structure, behavior, and uses of lasers.	Sound Energy		
5. Describe how sound is transmitted, reflected and/or absorbed by different materials.			
6. Describe how changes in vibrations affect pitch and loudness.			

Physical Science Focus

Guiding Question:

What makes objects move the way they do?

How do science and technology affect the quality of our lives?

Content Standards:

Work is the process of making objects move through the applications of force.

Energy can be stored in many forms and can be transformed into the energy of motion.

The motion of an object can be described by its position, direction of motion and its speed.

An unbalanced force acting on an object changes its speed or direction of motion, or both.

Objects moving in circles must experience force acting toward the center.

Bridges can be designed in different ways to withstand certain loads, and potentially destructive forces.

Benchmark/ Expected performance	Unit	Materials	Field trips/ Outdoor Ed
<i>Students will:</i>			
1. Know the relationship between force, distance and work, 2. Use the relationship ($W = F \times D$) to calculate work done in lifting heavy objects. 3. Know how simple machines such as inclined planes, pulleys and levers are used to create mechanical advantage. 4. Know the difference between potential and kinetic energy. 5. Know how different types of stored (potential) energy can be used to make objects move.	Simple Machines	Simple Machines kits pulleys	
6. Calculate average speed of a moving object and illustrate the motion of objects in graphs of distance over time. 7. Know the qualitative relationships among force, mass and changes in motion.	Forces and Motion	Stop watches Force and Motion kits	
8. Describe the forces acting on an object moving in a circular path. 9. Explain how beam, truss and suspension bridges are designed to withstand the forces that act on them.	Structure Design	Bridge Kits	

Physical Science Focus

Guiding Question:

What is the role of energy in our world?

How do science and technology affect the quality of our lives?

Content Standards:

Friction produces static charges.

Electrical charges can be moved along circuits to do work.

Moving electrical charges produce magnetic forces, and moving magnets can produce electrical force.

Electrical current can be transformed into light through the excitation of electrons.

During the burning of fossil fuels stored chemical energy is converted to electrical energy through heat transfer processes.

In nuclear fission, matter is transformed directly into energy in a process that is several million times as energetic as chemical burning.

Benchmark/ Expected performance	Unit	Materials	Field trips/ Outdoor Ed
<i>Students will:</i>			
<ol style="list-style-type: none"> Describe how static charges are formed and how they interact Explain the nature of electric circuits and current Calculate the voltage, current and resistance in simple series circuit using Ohm's Law. Explain how electricity is used to produce heat and light in incandescent bulbs and heating elements. Describe the relationship between electrical current and magnetism. Explain how heat is used to generate electricity. Describe the availability of, current uses of and environmental issues related to the use of fossil and nuclear fuels to produce electricity. 	Static Electricity Current Electricity	Van de Graaff Generator friction kits	

