

I/R/M

Religious
Values

FOURTH GRADE

I. Life Science

A. Organisms and their Environments

1. Characteristics of animals

- R. a. Distinguish the major groups of organisms based on significant characteristics (body covering, number of legs, body parts).
- R. b. Explain how invertebrates and vertebrates change as they grow and develop (feeding habits, body structure, and life cycles).
- I. c. Analyze specific behaviors influenced by external cues in the environment (temperature and light).
- I. d. Analyze specific behaviors influenced by internal cues (hunger and thirst).
- I. e. Describe how animal sensory organs detect external cues.
- R. f. Observe and explain the role of animals as consumers in food chains and food webs.
- I. g. Identify and describe characteristics and learned behavior that enable organisms to survive.
- I. h. Identify and describe characteristics and behaviors that are inherited.

2. Interactions within the environment

- I. a. Identify characteristics of different environments (forest, wetland, grassland, etc.)
- R. b. Investigate relationship between the needs of organisms and whether the environment meets those needs.
- I. c. Describe how animals behave and interact within groups (schools, flocks, packs, herds).
- I. d. Describe how animals behave and interact within their environment (living and nonliving).
- I. e. Describe how organisms benefit their environment (i.e., earthworms improve soil quality).
- I. f. Describe changes in the environment caused by humans.
- I. g. Infer the impact of agricultural technology on society and the environment.
- I. h. Infer the impact of industrial technology on society and the environment.
- I. i. Relate how human population growth changes the environment.
- I. j. Define population as a group of organisms living and reproducing in one area.
- I. k. Predict and observe changes in population size due to production of offspring, changes in environment, feeding habits, and death.
- I. l. Explain how organisms interact with biotic factors and abiotic

Respect for life

factors in their environment to meet their basic needs.

- m. Identify and observe how animal adaptations help survive in their habitat.
- n. Classify endangered, protected, and extinct species and infer why they fall into these categories.
- o. Explain how natural factors and man-induced factors endanger species since they are not adapted to survive in an altered environment.

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II. Physical Science

A. Magnetism

1. Magnets

- R. a. Distinguish and describe objects that are magnetic and nonmagnetic.
- I. b. Investigate and describe the properties of different magnets.
- I. c. Observe and describe the magnetic fields of various types of magnets.
- R. d. Distinguish the lines of force between like and unlike poles.

2. Electromagnets

- I. a. Define electromagnetism.
- I. b. Analyze the factors that influence the strength of an electromagnet.
- I. c. Construct an electromagnet and determine the effect of variables on the strength of the electromagnet.
- I. d. Apply electromagnetism to real world situations.

B. Electricity

1. Electricity

- I. a. Recognize that electricity is a form of energy and can produce light and heat.
- I. b. Demonstrate and distinguish between static and current electricity.

2. Circuits

- I. a. Describe and illustrate with symbols the parts of an electric circuit.
- I. b. Predict and test various materials to identify conductors and insulators.
- I. c. Distinguish between open and closed circuits.
- I. d. Distinguish between parallel/series circuits and their everyday uses.
- I. e. Construct a buzzer, infer the path of electricity through the circuit, and conclude that a buzzer works on the principle of electromagnetism.
- I. f. Construct a simple series circuit, draw and interpret a circuit diagram and construct circuits from simple schematics.
- I. g. Determine the effect of variables (e.g., number and size of batteries, length or thickness of wire, and number of bulbs) on the brightness of bulbs in series and parallel circuits.
- I. h. Insert a switch into a simple circuit, trace the flow of electricity, and draw a circuit diagram that includes a switch.

3. Uses and Safety

- I. a. Describe how humans use electricity.
- I. b. Discuss the safe use of electricity.

C. Light

1. Light waves

- I. a. Observe and demonstrate that light waves travel in a straight line.
- I. b. Investigate and examine how light waves travel through various media (solids, liquids, and gases).

Awe and wonder

Respect for the proper use of physical elements

Awe and wonder

Respect for the proper use of physical elements

Awe and wonder

I.	c. Investigate and describe ways that light can be reflected, refracted, or absorbed by an object.	Respect for one's self
	2. Eyes / Optical tools	
I.	a. Identify the eye as an organ that sees light and state how to care for the eyes.	
I.	b. Identify the cornea, retina, iris, and pupil.	
I.	c. Describe how the human eye receives and transmits light from the environment.	
I.	d. Research, investigate and describe the development and use of optical tools, such as eyeglasses, magnifying lens, prisms, and mirrors.	
I.	e. Observe the effect of combining light of different colors and compare with other color mixing processes (pigments and filters).	
	D. Sound	
	1. Communication	Awe and wonder
R.	a. Observe and describe sounds (a form of energy) produced by vibrating objects.	
R.	b. Investigate and examine how various media (solids, liquids, and gases) transmit sound.	Respect for one's self
I.	c. Research and describe the development and use of communication tools (e.g., the Morse code, telephone, sonar, musical instruments).	
I.	d. Plan, design, and create a communication tool.	
	2. Pitch and Volume	
R.	a. Investigate and compare that different pitches of sound produced by changing the size, tension, or amount of the vibrating material.	
R.	b. Compare different types of sounds based on characteristics such as pitch and volume.	
	3. Ear	
R.	a. Describe how the human ear receives and transmits sound from the environment.	
I.	b. Identify parts of the human ear.	
	E. Motion	
	1. Force	God's unfolding plan
I.	a. Demonstrate that the motion of an object can be described and measured.	
I.	b. Define velocity as being a change in distance over time.	
I.	c. State that the motion of an object is determined by the overall effect of all the forces acting on the object.	
I.	d. Investigate and describe the relative positions and movements of objects using points of reference.	Natural wonders

- I. e. Record and graph in metric units the distance vs. time of moving objects.
- I. f. Investigate the variables that affect speed (e.g., ramp height/length/surface, and mass of object).
- I. g. Analyze a device with parts that move and determine the purpose of each moving part and the overall purpose of the device.
- I. h. Observe that an object may move in a straight line at constant speed, speed up, slow down, or change direction dependent upon net force acting on the object.
- I. i. Demonstrate that the more massive an object is, the less effect a given force has.
- I. j. Observe that distance affects the strength of force between objects.
- I. k. Design and construct a device that moves.

F. Gravity

- R. 1. Define gravity as being a force that pulls.
- R. 2. Investigate and describe how forces affect the motion of objects.

G. Friction

- I. 1. Distinguish among gravity, friction, magnetism, drag, lift, and thrust.

III. Earth Science

A. Rocks and Minerals

- I. 1. Minerals and crystals
 - a. Identify the earth's crust as being made of rocks.
 - I. b. Identify that all rocks are made of minerals.
 - I. c. State that minerals can be identified by the way they look and by testing their physical properties.
 - I. d. Identify that crystals are the characteristic three-dimensional shape of minerals.
 - I. e. Define minerals as being natural, nonliving solid crystals that make up rocks.
 - I. f. Examine various examples of minerals.
 - I. g. Describe the physical properties (i.e., luster, hardness, color streak, magnetism, and reaction to acid (vinegar)).
- R. 2. Types of Rocks
 - a. Observe and describe the unique physical characteristics of a variety of rock types.
 - R. b. Identify that sedimentary, igneous, and metamorphic rocks are made of many minerals.
 - R. c. Classify rocks as being sedimentary, igneous, and metamorphic.

B. Earthquakes and Volcanoes

- I. 1. Properties of volcanic rocks
 - a. Review the physical properties of basalt, obsidian, and pumice.
 - I. b. Explain that rocks that cool quickly are fine-grained and contain small mineral crystals and that rocks that cool slowly are coarse-grained and contain large crystals.
- I. 2. Parts of volcanoes
 - a. Name the parts of a volcano.
 - I. b. Explain the cooling processes that form pumice, obsidian, and basalt.
- I. 3. Relationship between volcanoes and earthquakes
 - a. Describe an earthquake and infer the relationship between volcanoes and earthquakes.
 - I. b. Outline indoor and outdoor safety procedures for earthquakes.
- I. 4. Parts and movement of waves
 - a. Diagram a series of waves.
 - I. b. Identify the crest, wavelength, and wave height.
 - I. c. Demonstrate wave movement.
 - I. d. Explain how waves move and design experiments to demonstrate which waves have more energy (waves with greater height, greater frequency) and which ones have less energy.
- I. 5. Layers of Earth
 - a. Name the layers of the earth (i.e., crust, mantle, inner core, outer core).
 - I. b. Draw and label a diagram of the layers of the earth.

Awe and wonder

Just distribution of resources

Awe and wonder

God's unfolding plan

C. Fossil Fuels

1. Definition of fossil fuels

- a. Define fossil fuel (e.g., coal, natural gas, and petroleum) as materials that can be used today to produce energy (heat or power).
- b. Explain that fossil fuels were created from plants and lived millions of years ago.

2. Location, formation, use, and conservation

- a. Explain where fossil fuels are found and how they are formed.
- b. State how fossil fuels are used today and how they can be conserved for future use.

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Stewardship

**Just
distribution of
resources**

Grade 4

I. Inquiry

Process skills and inquiries are not an isolated unit of instruction and should be embedded throughout the content areas. Safety issues should be addressed as developmentally appropriate.

A. Process Skills

1. Observe
 - a. Use the senses to gather information about objects or events such as size, shape, color, texture, sound, position, and change (qualitative observations).
2. Classify
 - a. Compare, sort, and group concrete objects according to two attributes.
 - b. Arrange objects in sequential order.
3. Measure
 - a. Use standard (U.S. customary and metric) to estimate and measure mass, length, area, perimeter, volume, and temperature to the nearest whole unit (quantitative observations).
4. Communicate
 - a. Use drawings, tables, graphs, written and oral language to describe objects and explain ideas and actions.
5. Infer
 - a. Explain or interpret an observation based on data and prior knowledge.
 - b. Discriminate between observations and inferences.
6. Predict
 - a. Use prior knowledge and observations to identify and explain in advance what will happen.
 - b. Discriminate between inferences and predictions.

B. Inquiry

1. Plan and conduct a simple investigation
 - a. Ask a question about objects, organisms, and events in the environment.
 - b. Plan and conduct a simple investigation that represents a fair test.
 - c. Select and use appropriate equipment and tools to gather data and extend the senses.
 - d. Use data to construct a reasonable explanation.
 - e. Communicate investigations and explanations.