

**CARTERVILLE SCHOOL DISTRICT**  
**SCIENCE CURRICULUM**  
**GRADE 4**  
*Revised 2009*

\*All fourth grades will cover all the following Science units during the school year. The grading period that each unit will be taught may vary according to the availability of materials.

**FIRST NINE WEEKS**

Unit A—Life Science

- Identify and use scientific method or science process skills (questions/hypotheses, collect data, interpret data, investigate/experiment, identify/control variables, communicate).
- Identify and review science tools and how they are used to find the latest scientific information.
- Explore science safety rules.
- Uses a variety of tools to observe and study minute details of objects.
- Learn that living things are composed of cells.
- Finds out that processes needed for life are carried out by cells.
- Know that similar cells form different kinds of structures.
- Explore that living things are different but share similar structures.
- Examine characteristics that allow members within a species to survive and reproduce.
- Explore and compare the life cycle of various animals.
- Learn that all living things must compete for Earth's limited resources.
- Understand that organisms best adapted to compete for the available resources will be successful and pass their adaptations to their offspring.
- Construct and analyze graphs, tables, maps, and charts to organize, examine and evaluate information.
- Discover that most living things use energy from the Sun to live and grow.

- Examine how energy of the Sun can be captured as a source of heat and light on Earth.
- Explore that green plants use carbon dioxide, water and sunlight energy to turn minerals and nutrients into food for growth, maintenance and reproduction.
- Identify that plant structures serve different functions in growth, survival and reproduction.
- Work collaboratively to collect, share and record information for a scientific investigation.
- Describe basic characteristics of an ecosystem.
- Examine how plants and animals interact with on another in an ecosystem.
- Understand patterns of interdependency in ecological systems.
- Explore the relationship among organisms in aquatic and terrestrial food chains.
- Trace the flow of energy in a system.
- Recognize the need for nutrients and minerals for living organisms.
- Know basic patterns, sequences, and cycles occurring in nature.
- Examine that organisms are growing, dying, and decaying and that new organisms are being produced.
- Identify organisms that act as decomposers.
- Examine and describe the process of decay, stages of decay and products of decay.
- Recognize that the size of population is dependent upon the available resources within its community.
- Identify and describe characteristics that allow members within a species to survive and reproduce.
- Explore how what benefits one organism may be harmful to other organisms.
- Discover that changes in an ecological system usually affect the whole system.
- Compare and contrast organisms that lived in the past and organisms that live now.

- Recognize variations in light, water, temperature and soil content are largely responsible for the existence of different kinds of organisms.
- Explore ways that misuses of natural resources affect the quality of life for all species.
- Finds out that what benefits one organism may be harmful to other organisms.
- Understands that changes in an ecological system usually affect the whole system.
- Examine methods to explore the natural world through observation.
- Analyze, record and communicate results of observations about the natural world.
- Learn that complex animals have specialized organs to carry out life processes.
- Identify the major organ systems of the human body (skeletal, muscular, respiratory, circulatory, digestive and nervous).
- Examine the functions of various body systems.
- Discover that the human body defends itself against disease.
- Recognize that the model of something is different from the real thing but can be used to examine and learn about the real thing.

## **SECOND NINE WEEKS**

### Unit B—Earth Science

- Explores how mass and volume are different.
- Discover that 75 percent of the surface of the Earth is covered by water.
- Identify salt as the major difference between fresh and ocean waters.
- Explain why some oceans are more are more salty than others.
- Examine how the water cycle is influenced by temperature and land features.
- Study basic patterns, sequences, and cycles occurring in nature.
- Recognize that the water cycle is influenced by temperature, pressure, and the topography of the land.

- Describe how air masses form and how warm and cold fronts affect weather.
- Identify and describe clouds that form when air masses meet.
- Recognize weather patterns.
- Examine how meteorologist track and predict the weather.
- Interpret a weather map.
- Uses metric tools to measure, record, and interpret data.
- Make predictions based on data from a variety of graphs.
- Understand severe weather phenomena and related safety concerns.
- Study the effects of ocean on climate.
- Recognize that hurricanes may have positive or negative impacts on living things.
- Examine weather by measurable quantities such as wind direction, wind speed, precipitation, and barometric pressure.
- Construct and analyze graphs and tables to evaluate information.
- Examine the properties of earth materials.
- Learn that larger rocks can be broken down into smaller rocks, which in turn can be broken down to combine with organic material to form soil.
- Identify and examine the stages, patterns, and sequences of the rock cycle.
- Discover that some changes in the Earth's surface are due to slow processes and some changes are due to rapid processes.
- Recognize that processes of weathering and erosion constantly change the surface of the Earth.
- Examine how processes of weathering and erosion constantly change the surface of the Earth.
- Learn that the surface of the Earth is in a continuous state of change as waves, weather and shifts of land change and produce new features.
- Develop an understanding of properties of earth materials.
- Identify and examine properties of different types of soil.

- Explain that soil consists of weathered rocks and minerals, decaying plants and animals, as well as other living organisms.
- Review how the energy of the Sun can be captured as a source of heat and light on Earth.
- Understand risk factors associated with the use of nonrenewable energy sources.
- Examine processes that created fossil fuels and why they are nonrenewable.
- Recognize ways misuse of natural resources affects the quality of life for all species.
- Identify reasons for energy conservation.
- Identify and explore ways in which people can conserve natural resources.
- Discover that a successful method to explore the natural world is to observe and record, then analyze and communicate the results.

### **THIRD NINE WEEKS**

#### Unit C—Physical Science

- Explores what matter is and how matter is measured.
- Learns how mixtures are formed and types of mixtures.
- Investigates how matter changes and is changed (physically and chemically).
- Identifies the three physical states of matter.
- Investigates energy in matter, and its uses.
- Describes how energy is transformed and how it moves from object to object.
- Explains the various forms of energy.
- Explores how matter becomes charged.
- Studies the flow of electric charges through matter.
- Describes the similarities and differences between series and parallel electric circuits.
- Explains magnetism and magnetic fields.

- Discovers practical uses of magnetic force.
- Examines the relationship between magnetism and electricity.
- Explains the process in which magnetism is transformed into electricity.
- Learns how sound is produced, manipulated, and heard.
- Discovers the relationship between attributes of all waves and attributes of sound waves.
- Discovers where light comes from and how it travels.
- Investigates how light and matter interact.
- Examines the different ways in which light behaves when introduced to various media.
- Learns about the uses of optical tools, such as eyeglasses and magnifying lenses.
- Investigates how motion can be described and measured.
- Learns the relationship between speed and velocity.
- Explains how force affects movement in matter.
- Explores the effects of various forces acting simultaneously on objects.
- Investigates the relationships between force, mass, and energy.
- Discusses the effects of gravity.
- Learns the difference between potential and kinetic energy and how one changes into another.
- Discover the differences between simple, compound, and complex machines.
- Compares the uses of simple, compound, and complex machines.
- Identifies ways in which machines make work easier.
- Describes how and where machines are used in modern times.

## FOURTH NINE WEEKS

### Unit D—Space and Technology

- Investigates the reason for movement of objects across the sky.
- Learns the relationship between tilt of the earth, the seasons and the length of day.
- Explains basic patterns , sequences, and cycles occurring in nature.
- Understands the cause of the phases of the moon.
- Identifies the phases of the moon.
- Explores the positional relationship between the earth, sun, and moon.
- Learns what a constellation is and relationship between the north star and earth.
- Investigates the Milky Way galaxy, and the sun’s position in the Milky Way.
- Learns the relationship between gravity and orbiting bodies in our solar system.
- Identifies the inner planets of our solar system.
- Identifies the outer planets of our solar system.
- Explores characteristics of both inner and outer planets in our solar system.
- Identifies ways in which technology affects our lives.
- Investigates the costs, as well as the benefits of technology in our lives.
- Learns how technology has changed communication and transportation throughout history.
- Explores systems for transportation in society.