

Grade Level Expectations for the Sunshine State Standards

Science Fourth Grade



FLORIDA DEPARTMENT OF EDUCATION

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**Sunshine State Standards
Grade Level Expectations
Science
Fourth Grade**

The Nature of Matter

- uses a variety of measurements to compare and contrast the physical properties of matter.
- understands that heating or cooling of matter will speed up or slow down, respectively, the motion of the small particles within matter and that this is what causes a phase change.
- uses a variety of tools (hand lens, microscope) to observe and study minute details of objects.

Energy

- knows that most living things use energy from the Sun to live and grow.
- knows how to trace the flow of energy in a system (for example, in an ecosystem).
- knows that there are a variety of sources for electricity (for example, hydroelectric, geothermal, windmills).
- knows the relationship between attributes of all waves (for example, wavelength, frequency) and attributes of sound waves (for example, pitch, intensity).
- knows that most objects that emit light also emit heat.
- knows ways that energy can be transformed (for example, electricity to light, light to heat, mechanical to heat).
- knows that moving electric charges produce magnetic forces and moving magnets produce electric currents.
- extends and refines use of a variety of tools to measure the gain or loss of energy.
- understands the reasons for energy conservation.
- knows the risk factors associated with the use of nonrenewable energy sources (for example, economic factors and health factors).
- understands the processes that created fossil fuels and why they are nonrenewable.

Force and Motion

- knows that velocity describes a change in distance over time
- understands that waves behave differently in different media (for example, water, a wall, the atmosphere, a vacuum).
- understands how simple machines are used to make tasks possible.
- uses tools to measure changes in position, direction, and speed of an object after a push or pull has been applied.

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Processes that Shape the Earth

- understands the stages of the rock cycle.
- knows the properties of different types of soil.
- understands how the water cycle is influenced by temperature and land features.
- understands how processes of weathering and erosion constantly change the surface of the Earth.
- knows ways in which people can conserve natural resources.
- knows ways misuse of natural resources affects the quality of life for all species.

Earth and Space

- knows that the tilt of the Earth causes the change of seasons, length of day, and the amount of energy available.
- understands the cause of the phases of the Moon (for example, the movement patterns of the Earth and Moon relative to the Sun).
- knows how the energy of the Sun can be captured as a source of heat and light on Earth (for example, plants, solar panels).
- knows characteristics of Jupiter, Saturn, Uranus, Neptune, and Pluto.
- knows that gravity is the one of the forces that keeps planets arranged in orbits around the Sun and the Moon in orbit around the Earth.
- understands that the Sun is a medium-sized star located near the edge of a galaxy containing billions of other stars, which in turn is one of innumerable galaxies in the Universe.

Processes of Life

- knows that complex animals have specialized organs to carry out life processes.
- knows the major organ systems of the human body.
- understands the functions of various body systems.
- knows that living things are composed of cells.
- knows that processes needed for life are carried out by the cells.

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How Living Things Interact with Their Environment

- knows how plants and animals interact with one another in an ecosystem (for example, organization of communities, flow of energy through food webs).
- understands the relationship among organisms in aquatic and terrestrial food chains (for example, the role of producers, consumers, and decomposers).
- knows organisms that act as decomposers.
- understands the need for nutrients and minerals for living organisms.
- understands the process of decay (for example, the stages of decay, the organisms that help the decay process, the nonliving factors that influence the rate of decay, the products of decay).
- knows that organisms are growing, dying, and decaying and that new organisms are being produced.
- knows that variations in light, water, temperature, and soil content are largely responsible for the existence of different kinds of organisms and population densities in an ecosystem.
- knows the kinds of organisms that lived in the past and compares them to existing species.
- knows characteristics that allow members within a species to survive and reproduce.
- understands patterns of interdependency in ecological systems.
- understands that what benefits one organism may be harmful to other organisms.
- understands that changes in an ecological system usually affect the whole system.

The Nature of Science

- knows that scientists make the results of their investigations public, and they describe the investigations in ways that enable others to repeat the investigation.
- plans and investigates experiments in which hypotheses are formulated based on cause and effect relationships; distinctions are made among observations, conclusions/inferences and predictions; a limited number of variables are controlled; and numerical data that are contradictory or unusual in experimental results are recognized.
- uses metric tools to measure, record, and interpret data.
- works collaboratively to collect, share, and record information for a scientific investigation.
- knows that comparisons between experiments can be made when conditions are the same.
- knows that a model of something is different from the real thing, but can be used to learn something about the real thing.

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- makes predictions based on data from picture graphs, bar graphs, and line graphs.
- knows basic patterns, sequences, and cycles occurring in nature.
- knows that technologies often have costs, as well as benefits, and can have an enormous effect on people and other living things.
- researches and reports on a science topic.
- constructs and analyzes graphs, tables, maps, and charts to organize, examine, and evaluate information.
- uses criteria to understand and analyze the impact of scientific discoveries (for example, determines whether or not scientific claims are backed by sufficient evidence and logical arguments).
- knows ways that, through the use of science processes and knowledge, people can solve problems, make decisions, and form new ideas.



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