

Grade Level Expectations for the Sunshine State Standards

Science Fifth Grade



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

The fifth grade student:

The Nature of Matter

- uses metric tools to determine the density and volume of materials.
- knows that matter is conserved during heating and cooling.
- knows that different materials can be physically combined to produce different substances.
- knows the differences and similarities between mixtures and solutions.
- knows that materials made by chemically combining two or more substances have properties that differ from the original materials.
- knows the difference between physical and chemical changes.
- knows that materials may be made of parts too small to be seen without magnification.

Energy

- knows how to trace the flow of energy in a system (for example, electricity in a circuit to produce heat, light, sound, or magnetic fields).
- knows that energy can be described as stored energy (potential) or energy of motion (kinetic).
- extends and refines use of a variety of tools to measure the gain or loss of energy.
- knows that some materials conduct heat better than others.
- understands that convection, radiation, and conduction are methods of heat transfer.
- knows that the limited supply of usable energy sources (for example, fuels such as coal or oil) places great significance on the development of renewable energy sources.

Force and Motion

- uses scientific tools (for example, stopwatch, meter stick, compass) to measure speed, distance, and direction of an object.
- knows that waves travel at different speeds through different materials.
- understands the relationship between force and distance as it relates to simple machines (for example, levers and fulcrums working to lift objects).
- knows that objects do not change their motion unless acted upon by an outside force.
- understands how friction affects an object in motion.

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- knows the relationship between the strength of a force and its effect on an object (for example, the greater the force, the greater the change in motion; the more massive the object, the smaller the effect of a given force).
- knows that motion in space is different from motion on Earth due to changes in gravitational force and friction.
- understands how inertia, gravity, friction, mass, and force affect motion.

Processes that Shape the Earth

- knows that rocks are constantly being formed and worn away.
- understands how atmospheric pressure affects the water cycle.
- understands how eroded materials are transported and deposited over time in new areas to form new features (for example, deltas, beaches, dunes).
- understands that geological features result from the movement of the crust of the Earth (for example, mountains, volcanic islands).
- understands how the surface of the Earth is shaped by both slow processes (for example, weathering, erosion, deposition) and rapid, cataclysmic events (for example, earthquakes, tsunamis, volcanoes).
- extends and refines knowledge of ways people can reuse, recycle, and reduce the use of resources to improve and protect the quality of life.

Earth and Space

- knows the orbit of the Earth is slightly elliptical and the Earth is closest to the Sun in the Northern Hemisphere in winter.
- knows that the angle that the rays of the Sun strike the surface of the Earth determines the amount of energy received and thus the season of the year.
- knows the effect of the tilt of the Earth on polar climates.
- knows the relative positions of the Moon, Earth, and Sun during each of the phases of the Moon.
- knows that the planets differ in size, characteristics, and composition and that they orbit the Sun in our Solar System.
- knows the arrangement of the planets and the asteroid belt in our Solar System.

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Processes of Life

- understands how body systems interact (for example, how bones and muscles work together for movement).
- uses magnifying tools to identify similar cells and different kinds of structures.
- knows the parts of plants and animal cells.
- understands how similar cells are organized to form structures (for example, tissue, organs) in plants and animals.
- knows that many characteristics of an organism are inherited from the genetic ancestors of the organism (for example, eye color, flower color).
- knows that some characteristics result from the organism's interactions with the environment (for example, flamingos eat a certain crustacean that causes their feathers to be pink).

How Living Things Interact with Their Environment

- understands the various roles of single-celled organisms in the environment.
- knows ways in which protists interact with plants and animals in the environment.
- understands how changes in the environment affect organisms (for example, some organisms move in, others move out; some organisms survive and reproduce, others die).
- knows that green plants use carbon dioxide, water, and sunlight energy to turn minerals and nutrients into food for growth, maintenance, and reproduction.
- knows that adaptations to their environment may increase the survival of a species.

The Nature of Science

- understands that although the same scientific investigation may give slightly different results when it is carried out by different persons or at different times or places, the general evidence collected from the investigation should be replicable by others.
- understands that scientists use different kinds of investigations (for example, observations of events in nature, controlled experiments) depending on the questions they are trying to answer.
- understands the importance of accuracy in conducting measurements, and uses estimation when exact measurements are not possible.

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- understands the importance of communication among scientists (for example, informing and becoming informed about scientific investigations in progress and the work of others; exposing ideas to the criticism of others).
- uses strategies to review, compare and contrast, and critique scientific investigations.
- knows that an experiment must be repeated many times and yield consistent results before the results are accepted.
- uses sketches and diagrams to propose scientific solutions to problems.
- constructs models to compare objects in science.
- makes a prediction for a new investigation using the data from a previous investigation.
- understands that change is constantly occurring and uses strategies to analyze different patterns of change.
- knows areas in which technology has improved human lives (for example, transportation, communication, nutrition, sanitation, health care, entertainment).
- knows that new inventions often lead to other new inventions and ways of doing things.
- selects appropriate graphical representations (for example, graphs, charts, diagrams) to collect, record, and report data.
- understands how a solution to one scientific problem can create another problem.
- extends and refines knowledge of ways that, through the use of science processes and knowledge, people can solve problems, make decisions, and form new ideas.



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