

Grade Five Science

The fifth-grade standards emphasize the importance of selecting appropriate instruments for measuring and recording observations. The organization, analysis, and application of data continue to be an important focus of classroom inquiry. Science skills from preceding grades, including questioning, using and validating evidence, and systematic experimentation, are reinforced at this level. Students are introduced to more detailed concepts of sound and light and the tools used for studying them. Key concepts of matter include atoms, molecules, elements, and compounds, and the properties of matter are defined in greater detail. The cellular makeup of organisms and the distinguishing characteristics of groups of organisms are stressed. Students will learn about the characteristics of the oceans and the Earth's changing surface.

Scientific Investigation, Reasoning, and Logic

- 5.1 The student will plan and conduct investigations in which
- appropriate instruments are selected and used for making quantitative observations of length, mass, volume, and elapsed time;
 - rocks, minerals, and organisms are identified using a classification key;
 - data are collected, recorded, and reported using the appropriate graphical representation (graphs, charts, diagrams);
 - accurate measurements are made using basic tools (thermometer, meter stick, balance, graduated cylinder);
 - predictions are made using patterns, and simple graphical data are extrapolated; and
 - estimations of length, mass, and volume are made.

Force, Motion, and Energy

- 5.2 The student will investigate and understand how sound is transmitted and is used as a means of communication. Key concepts include
- frequency, waves, wavelength, resonance, vibration;
 - the ability of different media (solids, liquids, gases) to transmit sound; and
 - communication tools (voice, Morse code, sonar, animal sounds, musical instruments).
- 5.3 The student will investigate and understand basic characteristics of white light. Key concepts include
- the visible spectrum, light waves, reflection, refraction, diffraction, opaque, transparent, translucent;
 - optical tools (eyeglasses, lenses, flashlight, camera, kaleidoscope, binoculars, microscope, light boxes, telescope, prism, spectroscope, mirrors); and
 - historical contributions in understanding light.

Matter

- 5.4 The student will investigate and understand that matter is anything that has mass; takes up space; and occurs as a solid, liquid, or gas. Key concepts include
- atoms, molecules, elements, and compounds;
 - mixtures and solutions; and
 - effect of temperature on the states of matter.

Living Systems

- 5.5 The student will investigate and understand that organisms are made of cells and have distinguishing characteristics. Key concepts include
- parts of a cell;
 - five kingdoms of living things;
 - vascular and nonvascular plants; and
 - vertebrates and invertebrates.

Interrelationships in Earth/Space Systems

- 5.6 The student will investigate and understand characteristics of the ocean environment. Key concepts include
- geological characteristics (continental shelf, slope, rise);
 - physical characteristics (depth, salinity, major currents);
 - biological characteristics (ecosystems); and
 - public policy decisions related to the ocean environment (assessment of marine organism populations, pollution prevention).

Earth Patterns, Cycles, and Change

5.7 The student will investigate and understand how the Earth's surface is constantly changing. Key concepts include

- the rock cycle including the identification of rock types;
- Earth history and fossil evidence;
- the basic structure of the Earth's interior;
- plate tectonics (earthquakes and volcanoes);
- weathering and erosion; and
- human impact.