

SCIENCE

GRADE FIVE

STANDARDS

Nevada Grades K-12 Content Standards

NATURE OF SCIENCE

Scientific Inquiry

- N2A Students understand that science is an active process of systematically examining the natural world.
- N5A Students understand that science involves asking and answering questions and comparing the answers to what scientists know about the world.
- N8A Students understand that scientific knowledge requires critical consideration of verifiable evidence obtained from inquiry and appropriate investigations.
- N12A Students understand that a variety of communication methods can be used to share scientific information.

Science, Technology, and Society

- N2B Students understand that many people contribute to the field of science.
- N5B Students understand that many people, from all cultures and levels of ability, contribute to the fields of science and technology.
- N8B Students understand the interactions of science and society in an ever-changing world.
- N12B Students understand the impacts of science and technology in terms of costs and benefits to society.

PHYSICAL SCIENCE

Matter

- P2A Students understand that matter has observable properties.
- P5A Students understand properties of objects and materials.
- P8A Students understand the properties and changes of properties in matter.
- P12A Students understand that atomic structure explains the properties and behavior of matter.

Forces and Motion

- P2B Students understand that position and motion of objects can be described.
- P5A Students understand that forces can change the position and motion of an object.
- P8A Students understand that position and motion of an object result from the net effect of the different forces acting on it.
- P12A Students understand the interactions between force and motion.

SCIENCE GRADE FIVE (continued)

Energy

- P2C Students know heat, light, and sound can be produced.
- P5C Students understand that energy exists in different forms.
- P8C Students understand transfer of energy.
- P12C Students understand that there are some interactions between matter and energy.

EARTH AND SPACE SCIENCE

Atmospheric Processes and the Water Cycle

- E2A Students understand that changes in weather often involve water changing from one state to another.
- E5A Students understand the water cycle's relationship to weather.
- E8A Students understand the relationship between the Earth's atmosphere, topography, weather, and climate.
- E12A Students understand heat and energy transfer in and out of the atmosphere and influence weather and climate.

Solar System and Universe

- E2B Students understand there are objects in the sky which display patterns.
- E5B Students understand that there are many components in the Solar System including Earth.
- E8B Students understand characteristics of our Solar System that is part of the Milky Way galaxy.
- E12B Students know scientific theories of origins and evolution of the universe.

Earth's Composition and Structure

- E2C Students understand that Earth materials include rocks, soils, and water.
- E5C Students understand that features on the Earth's surface are constantly changed by a combination of slow and rapid processes.
- E8C Students understand that landforms result from a combination of constructive and destructive processes.
- E12C Students understand evidence for processes that take place on a geologic time scale.

LIFE SCIENCE

Heredity

- L2A Students understand that offspring resemble their parents.
- L5A Students understand that some characteristics are inherited some are not.
- L8A Students understand the role of genetic information in the continuation of a species.
- L12A Students understand how genetic information is passed from one generation to another.

Structure of Life

- L2B Students understand that living things have identifiable characteristics.
- L5B Students understand that living things have specialized structures that perform a variety of life functions.

SCIENCE GRADE FIVE (continued)

- L8B Students understand that living things are composed of cells, which are specialized in multi-cellular organisms to perform a variety of life functions.
- L12B Students understand that all life forms, at all levels of organization, use specialized structure and similar processes to meet life's needs.

Organisms and Their Environment

- L2C Students understand that living things live in different places.
- L5C Students understand that there are a variety of ecosystems on Earth and organisms interact within their ecosystems.
- L8C Students understand how living and non-living components of ecosystems interact.
- L12C Students understand that ecosystems display patterns of organization, change, and stability as a result of the interactions and interdependencies between the living and non-living components of the Earth.

Diversity of Life

- L2D Students understand that there are many kinds of living things on Earth.
- L5D Students understand that living things can be classified according to physical characteristics, behaviors, and habitats.
- L8D Students understand that life forms change over time, contributing to the variety of organisms found on the Earth.
- L12D Students understand biological evolution and diversity of life.

ESSENTIAL CONCEPTS, SKILLS, AND EXPERIENCES _____

NATURE OF SCIENCE

(Nature and History of Science objectives should be embedded throughout the year in the contexts of life, earth, and physical science.)

It is expected that students will:

- (5)1.1 use evidence recorded in a science notebook to develop descriptions, models, explanations, and predictions [N5A1]
- (5)1.2 determine if an investigation was a fair test [N5A1; N5A3; N5A5]
- (5)1.3 replicate investigations conducted by others and compare results [N5A2; N5B3]
- (5)1.4 draw conclusions from scientific evidence [N5A3]
- (5)1.5 create and use labeled illustrations, graphs (tables, line plots, stem and leaf plots, scatter plots, histograms), and charts to convey ideas, record observations, and make predictions [N5A1; N5A4]
- (5)1.6 design and conduct safe investigations with a partner and with a small group, based on self-generated questions [N5A5; N5B3]
- (5)1.7 use models to explain how something works or how something is constructed (stream table, terrarium, map, globe) [N5A6]

SCIENCE GRADE FIVE (continued)

- (5)1.8 investigate observable patterns that can be used to organize items and ideas and to make predictions [N5A7]
- (5)1.9 explain that all people can contribute to scientific knowledge and discovery [N5B1]
- (5)1.10 cooperate and contribute ideas within a group [N5B3]

PHYSICAL SCIENCE

It is expected that students will:

- (5)2.1 investigate and describe how energy can be used to bring about changes in matter [P5A1; P5A2]
- (5)2.2 classify materials by their observable, physical, and chemical properties [P5A3]
- (5)2.3 investigate and describe that by combining two or more materials, the properties of the resulting material can be different from the original materials (vinegar and baking soda, drink mix, salt and water) [P5A4]
- (5)2.4 investigate and describe that the total mass of a material remains constant whether it is together, in parts, or in a different state [P5A5]
- (5)2.5 observe and describe that materials may be composed of parts that are too small to be seen without magnification [P5A6]
- (5)2.6 describe how unbalanced forces (push or pull) cause objects to change their motion (speed, direction, or both) [P5B1]
- (5)2.7 describe how the strength of a force and the mass of an object influence the amount of change in an object's motion [P5B2]
- (5)2.8 explain that objects move towards the Earth when they are released in the air or on ramps due to the force of gravity [P5B5]

EARTH AND SPACE SCIENCE

It is expected that students will:

- (5)3.1 explain that the Sun is the main source of the various kinds of energy used on Earth [E5A1]
- (5)3.2 differentiate between renewable and nonrenewable resources [N5B2]
- (5)3.3 investigate and describe various meteorological phenomena (flooding, snowstorms, thunderstorms, and drought) [E5A4]
- (5)3.4 describe air as a substance that surrounds us, takes up space, and moves around us as wind [E5A5]
- (5)3.5 investigate and describe how fossils are evidence of past life [E5C1; L5D2]
- (5)3.6 compare and contrast various kinds of landforms [E5C2; E5C3]
- (5)3.7 investigate and describe how change is an ongoing process that can be seen throughout the natural world [E5C2; E5C3]
- (5)3.8 investigate and describe how erosion and deposition rates can be affected by the slope of the land and by human activities [E5C2; E5C3]
- (5)3.9 describe the positive and negative impacts of technologies (dams, agriculture, using natural resources) on society and the environment [E5C3; L5C3; L5C4; N5B2]

SCIENCE GRADE FIVE (continued)

LIFE SCIENCE

It is expected that students will:

- (5)4.1 investigate, compare, and contrast the different structures of organisms that serve different functions for growth, reproduction, and survival [L5B1]
- (5)4.2 explain that reproduction is essential for continuation of every species [L5A2]
- (5)4.3 investigate and describe how plants and animals require food, water, air, and space [L5B1]
- (5)4.4 explain how the Sun's energy is the primary source of energy for most ecosystems and moves through food webs [L5C1]
- (5)4.5 explain that living things get what they need to survive from their environments [L5C1]
- (5)4.6 investigate and describe the interrelationships and interdependence of organisms with each other and with the non-living parts of their habitats [L5C2]
- (5)4.7 investigate and describe how some environmental conditions are more favorable than others to living things [L5C3]
- (5)4.8 investigate and describe how organisms, including humans, can cause changes in their environments [L5C4; N5B2]
- (5)4.9 investigate and describe how plants and animals have adaptations allowing them to survive in specific ecosystems [L5C5]
- (5)4.10 investigate and describe how environmental changes allow some plants and animals to survive and reproduce, but others may die [L5C5; L5C3]
- (5)4.11 explain how differences among individuals within a species give them advantages and/or disadvantages in surviving and reproducing [L5D3]