

# SCIENCE

## GRADE FOUR

### STANDARDS

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#### ***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.

##### **Energy**

- P2C Students know heat, light, and sound can be produced.

## SCIENCE GRADE FOUR (continued)

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- 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 are 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.
- L8B Students understand that living things are composed of cells, which are specialized in multi-cellular organisms to perform a variety of life functions.

## SCIENCE GRADE FOUR (continued)

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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

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### **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:*

(4)1.1 generate investigable questions based on observations and interactions with objects, organisms, and phenomena [N5A5]

(4)1.2 use science notebook entries to develop, communicate, and justify descriptions, explanations, and predictions [N5A1; N5A3; N5A4; N5A7]

(4)1.3 create and use labeled illustrations, graphs (number lines, pictographs, bar graphs, frequency tables), and charts to convey ideas, record observations, and make predictions [N5A1; N5A4; N5A7]

(4)1.4 conduct safe investigations with a partner and with a small group [N5A5; N5B3]

(4)1.5 identify, gather, and safely use tools (magnet, thermometer, lens) and materials needed in investigations [N5A5]

(4)1.6 compare a model with what it represents (Solar System, electrical circuit, human body models) [N5A6]

(4)1.7 identify observable patterns to organize items and ideas and make predictions [N5A7]

(4)1.8 explain that many people have contributed to scientific knowledge and invention [N5B1]

## SCIENCE GRADE FOUR (continued)

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- (4)1.9 compare the advantages and disadvantages of using technology (electricity, microscope, telescope) [N5B2]
- (4)1.10 cooperate and contribute ideas within a group [N5B3]

### PHYSICAL SCIENCE

*It is expected that students will:*

- (4)2.1 investigate and describe the way that magnets attract and repel each other and certain kinds of other materials [P5B3]
- (4)2.2 investigate and describe that electrically charged particles can attract or repel other electrically-charged material (static electricity) [P5B4]
- (4)2.3 describe light in terms of simple properties (color, brightness, reflection) [P5C1]
- (4)2.4 investigate and explain that light is usually associated with heat, and that heat is often a byproduct of energy conversion [P5C3]
- (4)2.5 describe how heat can move from one object to another by conduction, and some materials conduct heat better than others [P5A3; P5C4]
- (4)2.6 investigate, construct, and describe simple electrical circuits [P5C5]

### EARTH SCIENCE

*It is expected that students will:*

- (4)3.1 investigate and describe the properties of water [E5A2; E5A4; P5A3]
- (4)3.2 investigate and describe the water cycle, including the role of the sun [E5A2]
- (4)3.3 investigate and describe the factors that affect the processes of evaporation and condensation [E5A2]
- (4)3.4 investigate and explain that water can be a liquid, a gas, or a solid and can go back and forth from one form to another [E5A2; P5A1; P5A2]
- (4)3.5 investigate and describe how the earth is nearly spherical and covered with more water than land [E5A3]
- (4)3.6 investigate and describe how distance affects the brightness of a light source (stars) [E5B1; E5B3]
- (4)3.7 identify the sun as a star, and as the main source of energy for planet Earth [E5A1; E5B3]
- (4)3.8 describe how the stars in the sky are not scattered evenly, and they are not all the same in brightness or color [E5B1]
- (4)3.9 describe how the components of our Solar System (planets, moons, sun), as well as constellations, appear to move through the sky [E5B2; E5B4; E5B5]
- (4)3.10 explain that stars look small because they are extremely far away [E5B3]

### LIFE SCIENCE

*It is expected that students will:*

- (4)4.1 compare learned and inherited behaviors in animals [L5A1; L5A5]

## SCIENCE GRADE FOUR (continued)

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- (4)4.2 observe and describe variations among individuals within the human population [L5A3; L5A4]
- (4)4.3 explain that the human body is composed of systems of structures that work together so the body can grow, and survive [L5B1]