

Science

GRADE 6

Life Science	Physical Science	Earth and Space Science
<p>Human Biology and Body Systems:</p> <ul style="list-style-type: none"> • Skeletal, Muscular, Skin, Digestive, Circulatory, Respiratory and Nervous systems, • Reproductive System, Endocrine system (if time) • Cells, tissues, organs 	<p>Properties of Matter and Energy Properties and Changes</p> <ul style="list-style-type: none"> • physical and chemical properties and changes • atomic structure and the periodic table • formulas and chemical bonds 	<p>Changing Earth</p> <ul style="list-style-type: none"> • Landforms, soil • Weathering, erosion • Rock cycle • Rocks and minerals <p>Restless Earth</p> <ul style="list-style-type: none"> • Plate tectonics • Ocean Floor – 8th grade • Earthquakes, volcanoes • Prediction and preparation <p>Solar System</p> <ul style="list-style-type: none"> • Tilt of the earth's axis • Latitude, longitude • Planets, moons, and small bodies in the solar system

STANDARD 1

The student understands and uses scientific concepts and principles.

To meet this standard, the student will:

Benchmark 6.1.1: Use properties to identify, describe, and categorize substances, materials, and objects

Indicators:

PHYSICAL

- 6.1.1.1 Identify physical and chemical properties and behaviors of materials
- 6.1.1.2 Define mixtures and solutions
- 6.1.1.3 Identify the phases of matter

Benchmark 6.1.2: Identify, describe, and categorize living things based on their characteristics

Indicators:

Life

N/A

Benchmark 6.1.3: Measure properties and characteristics

Indicators:

- 6.1.3.1 Understand the goals of measurement and the usefulness of standard measurements
- 6.1.3.2 Develop estimation skills by estimating and then checking measurements

Key: 1. Grade 1.1 Standard 1.1.1 Benchmark 1.1.1.1 Indicator

SCS Curriculum, Science, Grade 6, Approved January, 2007, Revised June, 2010

Benchmark 6.1.4: Recognize the components, structure, and organization of systems and the interconnections within and among them

Indicators:

Physical

- 6.1.4.1 Define elements, compounds, and mixtures
- 6.1.4.2 Cite and understand evidence of the atomic structure of matter
- 6.1.4.3 Know that matter is composed of atoms which in turn are combined chemically to form elements, compounds, and molecules

Life

- 6.1.4.4 Explain the human organizational hierarchy from cells, tissues, organs, and systems, up to organisms
- 6.1.4.5 Understand that specialized systems such as digestion, respiration, circulation, and reproduction operate in an integrated, interdependent manner

Benchmark 6.1.5: Understand that interactions within and among systems cause changes in matter and energy

Indicators:

Physical

- 6.1.5.1 Distinguish between physical changes and chemical changes
- 6.1.5.2 Be able to state that matter and energy are conserved in physical and chemical changes
- 6.1.5.3 Describe states of matter (solids, liquids, and gases) using ideas of particles and energy

Earth

- 6.1.5.4 Explain how plate tectonics causes major changes in the earth's surface including its relation to volcanoes and earthquakes around the Pacific Rim

Benchmark 6.1.6: Explore current scientific views of the universe and how those views have changed

Indicators:

Earth

- 6.1.6.1 Describe our unique position of our solar system in the Milky Way galaxy and the universe
- 6.1.6.2 Compare and contrast the planets in terms of: size relative to the earth, surface and atmospheric features, relative distance from the sun, ability to support life
- 6.1.6.3 Explain that gravity is the force that governs the motion in the solar system

Benchmark 6.1.7: Understand the effects of the relative positions of the earth, moon, and sun

Indicators:

Earth

- 6.1.7.1 Demonstrate the phases of the moon by showing the alignment of the earth, moon, and sun
- 6.1.7.2 Explain the alignment of the earth, moon, and sun during solar and lunar eclipses
- 6.1.7.3 Relate the tilt of the earth to the distribution of sunlight throughout the year and its effect on climate.

Benchmark 6.1.8: Investigate and critique the scientific views of the formation of the earth.

Indicators:

Earth

- 6.1.8.1 Compare and contrast the earth's crust, mantle, and core including temperature, density, and composition
- 6.1.8.2 Compare and contrast the properties of rocks and minerals
- 6.1.8.3 Classify rocks by their formation (sedimentary, igneous, or metamorphic)
- 6.1.8.4 Describe processes that change rocks and the surface of the earth
- 6.1.8.5 Explain the effects of physical processes (theory of plate tectonics, erosion, deposition, volcanic eruptions, gravity) on geologic features including oceans (composition, currents, and tides)
- 6.1.8.6 Explain the effects of human activity on the erosion of the earth's surface

Key: 1. Grade 1.1 Standard 1.1.1 Benchmark 1.1.1.1 Indicator

Benchmark 6.1.9: Construct and use models to predict, test, and understand scientific phenomena

Indicators:

Life

- 6.1.9.1 Construct and interpret drawings of biological systems
- 6.1.9.2 Evaluate the strengths and limitations of models encountered in daily life

Earth

- 6.1.9.3 Construct a physical model related to the Earth and discuss the scale of the model
- 6.1.9.4 Construct a physical model related to the ocean floor showing characteristics & features to scale
- 6.1.9.5 Construct a model of the earth's crust to demonstrate the effects of fault movements

Science

GRADE 6

STANDARD 2

The student conducts scientific investigations to expand understanding of the natural world.

To meet this standard, the student will:

Benchmark 6.2.1: Plan and implement scientific investigations

Indicators:

- 6.2.1.1 Distinguish between an observation and an inference
- 6.2.1.2 Develop questions and testable hypotheses in response to observations
- 6.2.1.3 Use appropriate tools to collect data and safely test a hypothesis
- 6.2.1.4 Individually and collaboratively plan an experiment; analyze issues affecting the design
- 6.2.1.5 Conduct a safe, controlled experiment
- 6.2.1.6 Develop and communicate procedures, predictions, descriptions, results, and explanations
- 6.2.1.7 Understand and follow proper safety procedures

Benchmark 6.2.2: Think logically, analytically, and creatively

Indicators:

- 6.2.2.1 Approach questions and problems using several different strategies
- 6.2.2.2 Distinguish between evidence, explanation, and opinion
- 6.2.2.3 Make predictions and create explanations by drawing inferences and recognizing patterns and relationships (especially mathematical relationships)

Benchmark 6.2.3: Practice the principles of scientific inquiry

Indicators:

- 6.2.3.1 Accurately record and report a series of observations
- 6.2.3.2 Give proper credit to informative sources
- 6.2.3.3 Describe the importance of openness, honesty, and skepticism in science
- 6.2.3.4 Explain that scientific knowledge is always changing but is based on evidence
- 6.2.3.5 State how observations can be influenced by the beliefs of the observer

Benchmark 6.2.4: Understand the relationship between evidence and scientific explanation

Indicator:

- 6.2.4.1 Properly use terms such as hypothesis, law, principle, and theory to describe scientific explanations

Key: 1. Grade 1.1 Standard 1.1.1 Benchmark 1.1.1.1 Indicator

SCS Curriculum, Science, Grade 6, Approved January, 2007, Revised June, 2010

Science

GRADE 6

STANDARD 3

The student *applies science knowledge and skills to solve problems and meet challenges.*

To meet this standard, the student will:

Benchmark 6.3.1: Identify problems and challenges in which science knowledge and skills can be applied

Indicators:

- 6.3.1.1 Identify a relevant problem or challenge which is related to science or technology
- 6.3.1.2 Identify the components of the problem and predict possible outcomes
- 6.3.1.3 Write a hypothesis

Benchmark 6.3.2: Research, design, and test a variety of ways to address problems and/or challenges

Indicators:

- 6.3.2.1 Designate the steps to test the hypothesis
- 6.3.2.2 Identify and collect necessary equipment and materials
- 6.3.2.3 Use scientific tools and methods to individually and collaboratively research, design, test, and compare alternative solutions to a problem
- 6.3.2.4 Evaluate and explain solutions to a problem under various constraints

Key: 1. Grade 1.1 Standard 1.1.1 Benchmark 1.1.1.1 Indicator

SCS Curriculum, Science, Grade 6, Approved January, 2007, Revised June, 2010

Science

GRADE 6

STANDARD 4

The student uses effective communication skills and tools to build and demonstrate understanding of science.

To meet this standard, the student will:

Benchmark 6.4.1: Use listening, observing, and reading skills to obtain scientific information

Indicators:

- 6.4.1.1 Listen to and paraphrase someone describe his/her own observations
- 6.4.1.2 Ask questions to clarify
- 6.4.1.3 Read, understand, and summarize informative science text

Benchmark 6.4.3: Use effective communication strategies and tools to prepare and present science information

Indicators:

- 6.4.3.1 Use software programs and other technology to collect data, access and process information, and prepare reports
- 6.4.3.2 Clearly present information as evidence to support a conclusion

Key: 1. Grade 1.1 Standard 1.1.1 Benchmark 1.1.1.1 Indicator

SCS Curriculum, Science, Grade 6, Approved January, 2007, Revised June, 2010

Science

GRADE 6

STANDARD 5

The student understands how science knowledge and skills are connected to other subject areas and real-life situations.

To meet this standard, the student will:

Benchmark 6.5.2: Understand the relationship between science and technology

Indicators:

- 6.5.2.1 Investigate how scientific inquiry and technological design are used in various careers
- 6.5.2.2 Explain how scientific inquiry results in knowledge which can improve technological designs and vice versa

Benchmark 6.5.3: Examine the relationship between science and history

Indicator:

- 6.5.3.1 Research and report how individuals, societies, and cultures have influenced the development of science

Key: 1. Grade 1.1 Standard 1.1.1 Benchmark 1.1.1.1 Indicator

SCS Curriculum, Science, Grade 6, Approved January, 2007, Revised June, 2010

Science

GRADE 6

STANDARD 6

The student *understands how science knowledge carries with it responsibility for its application.*

To meet this standard, the student will:

Benchmark 6.6.1: Understand the ethical issues inherent in scientific research (Ethics)

Indicators:

- 6.6.1.1 Recognize personal and social responsibility when planning and conducting scientific research
- 6.6.1.2 Understand the importance of honesty and accuracy in scientific reporting
- 6.6.1.3 Recognize that science and technology applications cannot be isolated from other aspects of life (ethical, social, and economic)

Key: 1. Grade 1.1 Standard 1.1.1 Benchmark 1.1.1.1 Indicator

SCS Curriculum, Science, Grade 6, Approved January, 2007, Revised June, 2010

Science

GRADE 6

STANDARD 7

The student applies a Christian perspective to scientific concepts and principles.

To meet this standard, the student will:

Benchmark 6.7.1: Understand that the Bible and the findings of science do not conflict

Indicators:

Earth

- 6.7.1.1 Identify that the Bible tells us that God is the creator of our earth, including rocks and minerals
- 6.7.1.2 Explore the evidence and the theories of the biblical record of the creation of the earth (recent creation view (young earth), day-age view, analogical days view, flat days view, framework view)

Life

- 6.7.1.3 Use words and drawings to explain that God created the complex systems of our bodies

Benchmark 6.7.2: Understand that the Bible teaches us that God is the creator of everything

Indicators:

Earth

- 6.7.2.1 Identify God as the creator of different kinds of rocks and minerals
- 6.7.2.2 Analyze current views of the formation of the universe through a Christian worldview
- 6.7.2.3 Recognize God as the designer and Creator of every detail of the universe

Life

- 6.7.2.4 State that God created our complex bodies so that we can enjoy his world

Benchmark 6.7.3: Understand that God preserves and controls His creation, the world we study in science, so that it continues to function as He planned

Indicators:

Physical

- 6.7.3.1 Explain how the traits, properties, and patterns of energy, heat, and matter display God's orderliness

Earth

- 6.7.3.2 Identify patterns in God's restless earth that prove he is in control
- 6.7.3.3 Recognize God's purposeful and special placement of the earth, moon, and sun

Life

- 6.7.3.4 Explain that the consistent pattern of plants, animals, and human interdependence show God's control and plan
- 6.7.3.5 Use words and drawings to explain that God created our bodies in an orderly fashion

Benchmark 6.7.4: Understand that God created for His own purpose, and creation is meant to praise and glorify God

Indicators:

Physical

- 6.7.4.1 Identify that God created objects with different properties for us to use to honor Him

Life

- 6.7.4.2 Identify ways in which we can use our bodies to praise God

Key: 1. Grade 1.1 Standard 1.1.1 Benchmark 1.1.1.1 Indicator

SCS Curriculum, Science, Grade 6, Approved January, 2007, Revised June, 2010

Benchmark 6.7.5: Understand that God uses His creation to teach people eternal truth through the study of science

Indicators:

- 6.7.5.1 Credit God with the wonder of life and the world around us
- 6.7.5.2 Identify examples of patterns and order in science that point to God as the creator

Key: 1. Grade 1.1 Standard 1.1.1 Benchmark 1.1.1.1 Indicator

SCS Curriculum, Science, Grade 6, Approved January, 2007, Revised June, 2010