

Science

GRADE 4

Life Science	Physical Science	Earth and Space Science
Climates and Habitats Components of a Habitat <ul style="list-style-type: none">• Animals Adapt to their Environment• Interdependence Desert and Forests as climates and habitats <ul style="list-style-type: none">• Identify how a desert climate affects landscape• Identify different habitats within forest Take a Closer Look: Cells Scale and Magnification Cell Structure/Function Levels of Organization Plant and Animal Cells	Electricity and Magnetism: Electricity <ul style="list-style-type: none">• Static and current electricity• Circuits• Safety• Uses of electricity Magnetism <ul style="list-style-type: none">• Magnetic force• How magnetism and electricity are related	Protecting the Earth Pollution <ul style="list-style-type: none">• Water, air, land• Trash/Recycling• Human impact on the environment• Effects of pollution on organisms Conservation <ul style="list-style-type: none">• Water, air• Energy alternatives Endangered/Extinct Species

STANDARD 1

The student understands and uses scientific concepts and principles.

To meet this standard, the student will:

Benchmark 4.1.1: Use properties to identify, describe, and categorize substances, materials, and objects

Indicators:

Physical

- 4.1.1.1 Use properties to identify natural and manufactured materials
- 4.1.1.2 Describe and sort objects using sensory terms and properties including shape, size, color, texture, hardness, weight, length, and volume in metric units

Benchmark 4.1.2: Identify, describe, and categorize living things based on their characteristics

Indicators:

Life

- 4.1.2.1 Use characteristics to distinguish different organisms
- 4.1.2.2 Identify that characteristics of living things enable them to live in different habitats and climates
- 4.1.2.3 Distinguish between characteristics which can and cannot be inherited

Key: 1. Grade 1.1 Standard 1.1.1 Benchmark 1.1.1.1 Indicator

SCS Curriculum, Science, Grade 4, Approved January, 2007, Revised June, 2010

Benchmark 4.1.3: Measure properties and characteristics

Indicators:

- 4.1.3.1 Use instruments to measure time, temperature, length, weight, and volume in metric units
- 4.1.3.2 Identify and correct sources of error in measurements
- 4.1.3.3 Use basic time scales (seconds, minutes, hours, days, weeks, months, years)
- 4.1.3.4 Understand the goals of measurement and the usefulness of standard measurements

Benchmark 4.1.4: Recognize the components, structure, and organization of systems and the interconnections within and among them

Indicators:

Physical

- 4.1.4.1 Construct a complete electrical circuit and recognize it as an electrical system
- 4.1.4.2 Identify examples of the interdependence of structure and function in living and non-living systems

Earth

- 4.1.4.3 Demonstrate how humans and animals depend on the components of the earth and our usage of resources affects others
- 4.1.4.4 Describe ways in which humans impact the environment and give examples of ways we can impact it positively
- 4.1.4.5 Identify cause and effect relationships as related to pollution

Life

- 4.1.4.6 Investigate the interdependence of animals, plants, and decomposers
- 4.1.4.7 Recognize that each organism is suited for survival in a particular environment
- 4.1.4.8 Identify the basic needs of plants and animals
- 4.1.4.9 Recognize the interaction of components within simple systems

Benchmark 4.1.5: Understand that interactions within and among systems cause changes in matter and energy

Indicators:

Physical

- 4.1.5.1 Become familiar with forms and uses of electricity as a form of energy
- 4.1.5.2 Investigate the forces and phenomena that result from static electricity and magnetism

Earth

- 4.1.5.3 Recognize cyclic events
- 4.1.5.4 Recognize that some species of plants and animals have become extinct

Life

- 4.1.5.5 Recognize that living things (including humans) can affect the environment
- 4.1.5.6 Recognize the physical, chemical, and biological factors which can affect the environment
- 4.1.5.7 Investigate how energy from the sun can provide for the energy needs of living organisms
- 4.1.5.8 Understand how the equilibrium of biological systems can be altered by small and large changes
- 4.1.5.9 Understand why many species are threatened or endangered because of changes occurring in their natural habitats

Benchmark 4.1.6: Construct and use models to predict, test, and understand scientific phenomena

Indicators:

Life

- 4.1.6.1 Describe how models are similar to and different from the systems they represent
- 4.1.6.2 Construct and interpret a physical model related to the earth
- 4.1.6.3 Construct and interpret scale drawings of biological systems

Key: 1. Grade 1.1 Standard 1.1.1 Benchmark 1.1.1.1 Indicator

SCS Curriculum, Science, Grade 4, Approved January, 2007, Revised June, 2010

Science

GRADE 4

STANDARD 2

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

To meet this standard, the student will:

Benchmark 4.2.1: Plan and implement scientific investigations

Indicators:

- 4.2.1.1 Make accurate observations
- 4.2.1.2 Ask questions, identify conditions, and define problems in response to observations
- 4.2.1.3 Predict results
- 4.2.1.4 Use appropriate tools and research methods to collect data
- 4.2.1.5 Individually and collaboratively plan and conduct a safe, controlled experiment
- 4.2.1.6 Accurately and appropriately record and report methods, data, results, and logical explanations using evidence
- 4.2.1.7 Understand and follow proper safety procedures

Benchmark 4.2.2: Think logically, analytically, and creatively

Indicators:

- 4.2.2.1 Approach questions and problems using several different strategies
- 4.2.2.2 Examine evidence to verify a conclusion
- 4.2.2.3 Explain how a conclusion was reached
- 4.2.2.4 Collect, organize, and evaluate scientific information

Benchmark 4.2.3: Practice the principles of scientific inquiry

Indicators:

- 4.2.3.1 Recognize and demonstrate that science is one way of looking at the world
- 4.2.3.2 Interpret data correctly even when it contradicts predictions
- 4.2.3.3 Give proper credit for a discovery to the discoverer

Benchmark 4.2.4: Understand the relationship between evidence and scientific explanation

Indicator:

- 4.2.4.1 Recognize that scientific knowledge is always changing but is based on evidence

Key: 1. Grade 1.1 Standard 1.1.1 Benchmark 1.1.1.1 Indicator

SCS Curriculum, Science, Grade 4, Approved January, 2007, Revised June, 2010

Science

Grade 4

STANDARD 3

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

To meet this standard, the student will:

Benchmark 4.3.1: Identify problems and challenges in which science knowledge and skills can be applied

Indicators:

- 4.3.1.1 Generate a list of science-related problems to investigate
- 4.3.1.2 Identify a problem which science or technology might be used to solve
- 4.3.1.3 Define parts of a problem and factors which would make a suitable solution
- 4.3.1.4 Predict the probable outcome
- 4.3.1.5 Write a hypothesis

Benchmark 4.3.2: Research, design, and test a variety of ways to address problems and/or challenges

Indicators:

- 4.3.2.1 Work individually and collaboratively to research, design, test, and evaluate a solution to a problem
- 4.3.2.2 Record the steps to be used to test the hypothesis
- 4.3.2.3 Identify and collect necessary equipment and materials
- 4.3.2.4 Record data

Benchmark 4.3.3: Evaluate solutions and consequences

Indicators:

- 4.3.3.1 Discuss outcomes
- 4.3.3.2 Organize and transfer outcomes into narrative, pictorial, and/or graphic format

Key: 1. Grade 1.1 Standard 1.1.1 Benchmark 1.1.1.1 Indicator

SCS Curriculum, Science, Grade 4, Approved January, 2007, Revised June, 2010

Science

GRADE 4

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

Indicators:

- 4.4.1.1 Listen to someone describe his/her own observations
- 4.4.1.2 Ask questions to clarify key points and extend thinking
- 4.4.1.3 Read, understand, and summarize informative science texts

Benchmark 4.4.2: Use writing and speaking skills to organize and express science ideas

Indicators:

- 4.4.2.1 Write informative reports that make proper use of appropriate scientific terminology
- 4.4.2.2 Present information to an audience

Benchmark 4.4.3: Use effective communication strategies and tools to prepare and present science information

Indicators:

- 4.4.3.1 Use software programs and other technology to collect data and prepare reports
- 4.4.3.2 Clearly present information through drawings, models, role plays, lists, data tables, verbal and written explanations, and other media
- 4.4.3.3 Use age appropriate software to present information

Key: 1. Grade 1.1 Standard 1.1.1 Benchmark 1.1.1.1 Indicator

SCS Curriculum, Science, Grade 4, Approved January, 2007, Revised June, 2010

Science

GRADE 4

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 4.5.1: Use mathematics to enhance scientific understanding

Indicators:

- 4.5.1.1 Recognize the usefulness of patterns and numerical data in science
- 4.5.1.2 Use estimation skills, symbols, graphs, numbers, and tables to make predictions and describe and analyze results

Benchmark 4.5.2: Understand the relationship between science and technology

Indicators:

- 4.5.2.1 Use various technological tools to access and analyze information
- 4.5.2.2 Research how tools and techniques have been used to solve problems and help scientists make better observations and predictions

Benchmark 4.5.3: Examine the relationship between science and history

Indicators:

- 4.5.3.1 Research and report how individuals from the past have contributed to science
- 4.5.3.2 Listen to stories about significant contributions made by individuals from the past

Benchmark 4.5.4: Examine the relationship among science, society, and the workplace

Indicators:

- 4.5.4.1 Investigate examples of how science and technology influence everyday life
- 4.5.4.2 Describe how natural resources are used by people and how people can impact the environment
- 4.5.4.3 Examine how scientific and technological information can influence personal decisions
- 4.5.4.4 Investigate how science and mathematics skills are used in familiar workplace occupations

Key: 1. Grade 1.1 Standard 1.1.1 Benchmark 1.1.1.1 Indicator

SCS Curriculum, Science, Grade 4, Approved January, 2007, Revised June, 2010

Science

GRADE 4

STANDARD 6

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

To meet this standard, the student will:

Benchmark 4.6.1: Understand how science contributes to the treatment of diseases in the maintenance of a healthy lifestyle (Personal and Community Health)

Indicators:

- 4.6.1.1 Contrast and compare scientific discoveries to control diseases
- 4.6.1.2 Develop awareness of scientific contributions toward the maintenance of good health
- 4.6.1.3 Examine unhealthy influences

Benchmark 4.6.2: Understand how the use of resources affects population growth and the global environment (Population)

Indicators:

- 4.6.2.1 Describe the diverse resources found in the world
- 4.6.2.2 Discuss the results of overuse of resources and its impact on people
- 4.6.2.3 Describe how the overuse of natural resources harm the environment
- 4.6.2.4 Discuss population explosion and the implications
- 4.6.2.5 Present possible solutions to avoid destruction of the environment

Benchmark 4.6.3: Understand the importance of maintaining resources and environmental quality (Environmental Quality/Resources)

Indicators:

- 4.6.3.1 Analyze land and water use and resources
- 4.6.3.2 Describe ways people can conserve resources
- 4.6.3.3 Recognize that while some resources are renewable other resources are not
- 4.6.3.4 Understand that resources are limited

Benchmark 4.6.4: Understand the ethical issues inherent in scientific research (Ethics)

Indicators:

- 4.6.4.1 Define ethics and what is meant by ethical issues
- 4.6.4.2 Discuss recent scientific research and ethical issues that might arise

Key: 1. Grade 1.1 Standard 1.1.1 Benchmark 1.1.1.1 Indicator

SCS Curriculum, Science, Grade 4, Approved January, 2007, Revised June, 2010

Science

GRADE 4

STANDARD 7

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

To meet this standard, the student will:

Benchmark 4.7.1: Understand that the Bible and the findings of science do not conflict

Indicators:

Earth

4.7.1.1 Identify that the Bible tells us that God is the creator of our earth, including the water, air, and land

Life

4.7.1.2 Use words and drawings to explain that God created complex habitats to meet the needs of different animals

Benchmark 4.7.2: Understand that the Bible teaches us that God is the creator of everything

Indicators:

Life

4.7.2.1 Identify God as the creator of different climates and habitats

4.7.2.2 State that God created the intricate structures within all living things

Benchmark 4.7.3: 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

4.7.3.1 Explain how the traits, properties, and patterns of electricity and magnetism display God's orderliness

Life

4.7.3.2 Explain that the consistent pattern of plants, animals, and human interdependence show God's control and plan

4.7.3.3 Use words and drawings to explain that God created plants and animals in an orderly fashion

Benchmark 4.7.4: Understand that God created for His own purpose, and creation is meant to praise and glorify God

Indicators:

Physical

4.7.4.1 Identify ways that humans can use electricity and magnetism to honor God

Earth

4.7.4.2 Develop and implement a list of ways in which we can care for our Earth

Benchmark 4.7.5: Understand that God uses His creation to teach people eternal truth through the study of science

Indicators:

4.7.5.1 Credit God with the wonder of life and the world around us

4.7.5.2 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 4, Approved January, 2007, Revised June, 2010