

# Science

GRADE 3

Life Science	Physical Science	Earth and Space Science
<b>Living Things</b> Life cycles <ul style="list-style-type: none"><li>• Photosynthesis</li><li>• Soil/water Cycle</li></ul> Ecosystems <ul style="list-style-type: none"><li>• Food Chains/Webs</li><li>• Role of Living Things<ul style="list-style-type: none"><li>▪ Extinction</li></ul></li></ul>	<b>Matter and Energy</b> Matter <ul style="list-style-type: none"><li>• Physical properties and changes</li><li>• Solids, Liquids, and Gases</li><li>• Elements, Compounds and Mixtures</li></ul> Energy <ul style="list-style-type: none"><li>• Heat</li><li>• Electricity</li><li>• Basic Properties of Light</li></ul>	<b>Solar System</b> Earth/Sun/Moon <ul style="list-style-type: none"><li>• Moon's phases</li><li>• Relationship among earth, sun and moon (Earth's rotation and revolution)</li><li>• Properties of the Sun</li></ul> Our Solar System and beyond <ul style="list-style-type: none"><li>• Planets</li><li>• Constellations</li><li>• Asteroids, comets, meteors</li></ul>

## STANDARD 1

*The student understands and uses scientific concepts and principles.*

To meet this standard, the student will:

**Benchmark 3.1.1:** Use properties to identify, describe, and categorize substances, materials, and objects.

**Indicators:**

**Physical**

- 3.1.1.1 Identify natural and manufactured materials by using properties
- 3.1.1.2 Describe and sort objects using sensory terms and properties including shape, size, color, texture, hardness, weight, and length
- 3.1.1.3 Describe the phases of matter associated with a substance at a particular temperature by using physical properties

**Benchmark 3.1.2:** Identify, describe, and categorize living things based on their characteristics

**Indicator:**

**Life**

- 3.1.2.1 Distinguish between different organisms based on characteristics

**Benchmark 3.1.3:** Measure properties and characteristics

**Indicators:**

- 3.1.3.1 Measure time, temperature, length, and weight in metric units with proper instruments
- 3.1.3.2 Use basic time scales (seconds, minutes, hours, days, weeks, months, years)
- 3.1.3.3 Demonstrate the goals of measurement and the usefulness of metric measurements

Key: 1. Grade 1.1 Standard 1.1.1 Benchmark 1.1.1.1 Indicator

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**Benchmark 3.1.4: Recognize the components, structure, and organization of systems and the interconnections within and among them**

**Indicators:**

**Physical**

- 3.1.4.1 Observe and record/draw evidence that materials are made of parts too small to be seen without magnification
- 3.1.4.2 Identify examples of the interdependence of structure and function in living and non-living systems
- 3.1.4.3 State that plants and animals must reproduce to keep from becoming extinct, and that some plants and animals have become extinct

**Earth**

- 3.1.4.4 Explain the influence of earth's gravity on the moon and the structure of the solar system

**Life**

- 3.1.4.5 Investigate the importance of reproduction for the survival of plants and animals
- 3.1.4.6 Investigate the passage of traits to offspring (genetics)
- 3.1.4.7 Examine local flora and fauna
- 3.1.4.8 Investigate the interdependence of animals and plants
- 3.1.4.9 Describe how each organism is suited for survival in a particular environment
- 3.1.4.10 Identify the basic needs of plants and animals
- 3.1.4.11 Identify components of simple systems and their interactions

**Benchmark 3.1.5: Understand that interactions within and among systems cause changes in matter and energy**

**Indicators:**

**Physical**

- 3.1.5.1 Recognize and record how some changes in matter do not affect the type of substance the matter is, while other changes do change the substance of the matter
- 3.1.5.2 Describe changes of state (melting, freezing, condensing and evaporating)
- 3.1.5.3 Observe and discuss examples of conduction and radiation
- 3.1.5.4 Identify and define forms and uses of energy including heat, electrical, and light
- 3.1.5.5 Demonstrate how light travels in a straight line from its source

**Earth**

- 3.1.5.6 Identify the size and location of the Earth in relation to other astronomical objects
- 3.1.5.7 Record the cyclical motions of the sun and moon, and use these motions and their relation to the Earth to explain the patterns of day and night and the seasons
- 3.1.5.8 Explain the defining properties of suns, planets, and moons
- 3.1.5.9 Explain the defining properties of suns, planets, and moons
- 3.1.5.10 Describe the motions of the planets and moons relative to the sun
- 3.1.5.11 Investigate the effects of the sun and moon on the earth (tides, eclipses, seasonal temperature differences due to the tilt of earth's axis, etc.)
- 3.1.5.12 Identify the properties of the Earth's interior
- 3.1.5.13 Identify the major properties of air and water
- 3.1.5.14 State that fossils are the remains of plants and animals that lived long ago
- 3.1.5.15 Explain that some species of plants and animals have become extinct
- 3.1.5.16 Describe how matter is recycled through animals, decomposers and the environment

**Life**

- 3.1.5.17 Describe and give examples of how living things (including humans) can affect the environment
- 3.1.5.18 Investigate how energy from the sun can provide for the energy needs of living organisms

*Key: 1. Grade 1.1 Standard 1.1.1 Benchmark 1.1.1.1 Indicator*

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**Benchmark 3.1.6: Construct and use models to predict, test, and understand scientific phenomena**

**Indicators:**

**Physical**

- 3.1.6.1 Describe how models are similar to and different from the systems they represent
- 3.1.6.2 Construct a physical model related to the solar system and discuss the scale of the model

**Earth**

- 3.1.6.3 Construct and interpret a physical model related to the earth

**Life**

- 3.1.6.4 Construct and interpret scale drawings of biological systems

# Science

## GRADE 3

### STANDARD 2

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

To meet this standard, the student will:

**Benchmark 3.2.1: Plan and implement scientific investigations**

**Indicators:**

- 3.2.1.1 Make accurate observations
- 3.2.1.2 Ask questions, identify conditions, and define problems in response to observations
- 3.2.1.3 Predict results
- 3.2.1.4 Collect data with appropriate tools and research methods
- 3.2.1.5 Individually and collaboratively plan and conduct a safe, controlled experiment
- 3.2.1.6 Accurately and appropriately record and report methods, data, results and logical explanations using evidence
- 3.2.1.7 Follow proper safety procedures

**Benchmark 3.2.2: Think logically, analytically, and creatively**

**Indicators:**

- 3.2.2.1 Approach questions and problems using several different strategies
- 3.2.2.2 Examine evidence to verify a conclusion
- 3.2.2.3 Explain how a conclusion was reached
- 3.2.2.4 Collect, organize, and evaluate scientific information

**Benchmark 3.2.3: Practice the principles of scientific inquiry**

**Indicators:**

- 3.2.3.1 Demonstrate that science is one way of looking at the world
- 3.2.3.2 Interpret data correctly, even when it contradicts predictions
- 3.2.3.3 Give proper credit for a discovery to the discoverer

**Benchmark 3.2.4: Understand the relationship between evidence and scientific explanation**

**Indicator:**

- 3.2.4.1 Explain 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

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### STANDARD 3

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

**To meet this standard, the student will:**

**Benchmark 3.3.1: Identify problems and challenges in which science knowledge and skills can be applied**

**Indicators:**

- 3.3.1.1 Generate and list problems to investigate
- 3.3.1.2 Develop ideas using resources
- 3.3.1.3 Identify a problem which science or technology might be used to solve
- 3.3.1.4 Define parts of a problem and factors which would make a suitable solution
- 3.3.1.5 Predict the probable outcome
- 3.3.1.6 Write a hypothesis

**Benchmark 3.3.2: Research, design, and test a variety of ways to address problems and/or challenges**

**Indicators:**

- 3.3.2.1 Write the steps to be used to test the hypothesis
- 3.3.2.2 Identify and collect necessary equipment and materials
- 3.3.2.3 Work individually and collaboratively to research, design, test, and evaluate a solution to a problem
- 3.3.2.4 Record data

**Benchmark 3.3.3: Evaluate solutions and consequences**

**Indicators:**

- 3.3.3.1 Discuss outcomes
- 3.3.3.2 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*

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## 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 3.4.1:** Use listening, observing, and reading skills to obtain scientific information

**Indicators:**

- 3.4.1.1 Listen to someone describe his/her own observations
- 3.4.1.2 Ask thoughtful, appropriate questions
- 3.4.1.3 Read, understand, and summarize informative science texts

**Benchmark 3.4.2:** Use writing and speaking skills to organize and express science ideas

**Indicators:**

- 3.4.2.1 Write informative reports that make proper use of appropriate scientific terminology
- 3.4.2.2 Present information orally to an audience

**Benchmark 3.4.3:** Use effective communication strategies and tools to prepare and present science information

**Indicators:**

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

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## GRADE 3

### 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 3.5.1: Use mathematics to enhance scientific understanding**

**Indicators:**

- 3.5.1.1 Recognize the usefulness of patterns and numerical data in science
- 3.5.1.2 Make predictions by using estimation skills
- 3.5.1.3 Describe results using symbols, graphs, numbers, and tables

**Benchmark 3.5.2: Understand the relationship between science and technology**

**Indicators:**

- 3.5.2.1 Use various technologies to access information
- 3.5.2.2 Research how tools and techniques have been used to solve problems and to help scientists make better observations and predictions

**Benchmark 3.5.3: Examine the relationship between science and history**

**Indicator:**

- 3.5.3.1 Research and describe how individuals from the past have contributed to science

**Benchmark 3.5.4: Examine the relationship among science, society, and the workplace**

**Indicators:**

- 3.5.4.1 Investigate examples of how science and technology influence everyday life
- 3.5.4.2 Describe how natural resources are used by people and how people can impact the environment
- 3.5.4.3 Examine how scientific and technological information can influence personal decisions
- 3.5.4.4 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

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## STANDARD 6

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

To meet this standard, the student will:

**Benchmark 3.6.1: Understand how science contributes to the treatment of diseases in the maintenance of a healthy lifestyle (Personal and Community Health)**

**Indicator:**

- 3.6.1.1 State that aspects of science are used to keep us healthy, such as electricity used in hospital equipment, mixtures made into medicines

**Benchmark 3.6.2: Understands the use of resources affects population growth and the global environment (Population)**

**Indicators:**

- 3.6.2.1 Investigate how humans have played a role in animal extinction due to humans overusing resources
- 3.6.2.2 Describe how our use of resources affects other people now and in the future

**Benchmark 3.6.3: Understand the importance of maintaining resources and environmental quality (Environmental Quality/Resources)**

**Indicators:**

- 3.6.3.1 Describe healthy and unhealthy environments
- 3.6.3.2 Discuss how and why people need to respect our environment
- 3.6.3.3 Brainstorm ways people can conserve resources

**Benchmark 3.6.4: Understand the ethical issues inherent in scientific research (Ethics)**

**Indicators:**

N/A

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## STANDARD 7

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

To meet this standard, the student will:

**Benchmark 3.7.1: Understand that the Bible and the findings of science do not conflict**

**Indicators:**

**Earth**

3.7.1.1 Identify that the Bible tells us that God is the creator of our earth, including the solar system

**Life**

3.7.1.2 Use words and drawings to explain that God created plants and animals

**Benchmark 3.7.2: Understand that the Bible teaches us that God is the creator of everything**

**Indicators:**

**Earth**

3.7.2.1 Identify God as the creator of all the parts of the solar system

**Life**

3.7.2.2 Explain how God created plants and animals in a complex way so that they can live in his world

**Benchmark 3.7.3: Understand that God preserves and controls His creation, the world we study in science, so that it continues to function as He planned**

**Indicators:**

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

**Physical**

3.7.3.2 Explain how the traits and patterns of matter and energy show God's orderliness

**Life**

3.7.3.3 Use words and drawings to explain that God created different cycles in the world in an orderly fashion

3.7.3.4 Identify ways that God created animals and plants to need different things, and he created the world to provide those things for each one

**Benchmark 3.7.4: Understand that God created for His own purpose, and creation is meant to praise and glorify God**

**Physical**

3.7.4.1 Identify how humans can use energy (heat, electricity, light) to help us work in ways that honor God

**Earth**

3.7.4.2 Explain how the magnificent heavens declare the glory of God

**Benchmark 3.7.5: Understand that God uses His creation to teach people eternal truth through the study of science**

**Indicators:**

3.7.5.1 Students will credit God with the wonder of life and the world around us

3.7.5.2 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

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