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Grade 5

Life Science

Basics of Life

Grouping Living Things B

- **Define organisms as living things that carry out life functions.**
- **Explain how living things are grouped.**
- **Describe some causes of extinction.**

Tiny Cells

- **Identify cells as the basic unit of life.**
- **Explain that cells carry out life processes.**
- **Describe cell parts and their functions.**

Types of Cells

- **Examine how plant and animal cells are different.**
- **Relate the size and shape of a cell to its function.**
- **Explain what makes up tissues.**

Cell Organization

- **Tell how unicellular organisms carry out life functions.**
- **Explain what an organ is.**
- **Describe organ systems.**

Classifying Plants and Animals

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- **Classify different living organisms.**
- **Explain the scientific system used for classifying organisms.**

Cell Theory

- Understand that cells are the basic units that make up all living organisms.
- Explain how cells, tissues, organs, and organ systems work to perform basic life functions.

Plant and Animal Cells

- Distinguish between plant and animal cells.
- Discuss photosynthesis and respiration in cells.

Cell Division

- Summarize the cell cycle.
- Compare the ways that organisms reproduce.

Organisms

Many Kinds of Animals

- Tell how invertebrates are classified.
- Identify the five major groups of vertebrates.
- Give examples of adaptations that help animals survive.

Unit 2, Lesson 5, pages 203-213, "What Are Food Chains and Webs?"

Many Kinds of Plants

- Explain how plants are grouped.
- Describe plant parts and their functions.
- Identify the role of flowers in the life cycle of plants.

Diversity of Life

- Describe the diversity of life on Earth.
- Explain how living things are classified.
- Examine how the diversity of life has changed over time.

Adaptation and Survival

- Identify the importance of reproduction.
- Determine examples of adaptations that help an organism survive.
- Differentiate between instinctive and learned behaviors.

Unit 2, Lesson 5, pages 203-213, "What Are Food Chains and Webs?"

How Traits Are Controlled

- Compare dominant and recessive traits.
- Summarize the importance of Mendel's work.

Ecosystems

Organisms in Ecosystems

- Identify the parts of an ecosystem.
- Explain the importance of habitats.
- Describe how the living things in ecosystems are organized.

Unit 2, Lesson 5, pages 203-213, "What Are Food Chains and Webs?"
Unit 2, Lesson 6, pages 216-217, Science Inquiry, "Urban Predators"
Unit 6, Lesson 1, pages 593-605, "Founders of the Children's Rain Forest"

Getting Energy

- **Explain how plants get energy.**
- **Summarize the relationship between producers and consumers.**
- **Describe the role of decomposers in ecosystems.**

Unit 2, Lesson 5, pages 203-213, "What Are Food Chains and Webs?"
Unit 2, Lesson 6, pages 216-217, Science Inquiry, "Urban Predators"

Transferring Energy

- **Describe how energy passes from one organism to another.**
- **Compare and contrast food chains and food webs.**
- **Explain how food webs are impacted by humans and by natural changes.**

Unit 2, Lesson 5, pages 203-213, "What Are Food Chains and Webs?"
Unit 2, Lesson 6, pages 216-217, Science Inquiry, "Urban Predators"

Ecosystems in Action

- **Describe competition in ecosystems.**
- **Give examples of interactions between organisms that help them survive.**
- **Explain why some animals migrate.**

Working Ecosystems

- **Describe living and nonliving parts of a water ecosystem.**
- **Describe living and nonliving parts of a land ecosystem.**
- **Explain how the growth of urban areas affects ecosystems.**

Unit 2, Lesson 6, pages 216-217, Science Inquiry, "Urban Predators"

Ecosystems Change

- **Explain how ecosystems change over time.**
- **Describe how ecosystem change affects organisms.**
- **Identify ways that humans change ecosystems.**

Unit 2, Lesson 6, pages 216-217, Science Inquiry, “Urban Predators”
Unit 6, Lesson 1, pages 593-605, “Founders of the Children’s Rain Forest”

Relationships in Ecosystems

- **Provide examples of how organisms of the same species can cooperate.**
- **Explore mutualism and commensalism.**
- **Discuss harmful relationships between organisms.**

Needs of Organisms

- **Identify the parts of an ecosystem.**
- **Explain how different resources in an ecosystem affect its population.**
- **Describe how resources move through an ecosystem.**

Unit 2, Lesson 5, pages 203-213, “What Are Food Chains and Webs?”
Unit 2, Lesson 6, pages 216-217, Science Inquiry, “Urban Predators”

Earth’s Biomes

- **Describe how land biomes are distributed.**
- **Identify land biomes that have cooler temperatures.**
- **Identify land biomes that have warmer temperatures.**

Unit 6, Lesson 1, pages 593-605, “Founders of the Children’s Rain Forest”

Changing Ecosystems

- **Explain how ecosystems change naturally.**
- **Describe ways in which humans change ecosystems.**
- **Identify ways in which humans depend on healthy ecosystems.**

Unit 2, Lesson 6, pages 216-217, Science Inquiry, “Urban Predators”
Unit 6, Lesson 1, pages 593-605, “Founders of the Children’s Rain Forest”

Earth’s Ecosystems

- **Describe how abiotic factors cycle in an ecosystem.**
- **Explain symbiosis, and give examples of parasitism, mutualism, and commensalism.**

Scientific Method

- **Scientific Method**

Unit 2, Lesson 3, pages 184-185, Science Inquiry, “The Scientific Method”

Grade 5

Earth Science

Earth Materials

Earth’s Structure

- **Describe Earth’s crust.**
- **Explain how earthquakes provide information about Earth’s interior.**
- **Identify the layers of Earth.**

Changing Earth

- **Compare the processes of weathering and erosion.**
- **Identify the three main types of rocks and how they form.**
- **Describe the rock cycle.**

Rocks and Minerals

- Explain that rocks are made of minerals, each with their own properties.
- Explain why gems are valuable.
- List common uses for rocks and minerals.

Earth's Changing Crust

- Identify Earth's layers.
- Recognize that Earth's crust is separated into slow-moving plates.
- Describe features and events caused by plate movement.

Weathering and Erosion

- Compare and contrast physical weathering and chemical weathering.
- Describe how agents of erosion change Earth's surface.
- Define deposition.

Earth Materials

- Distinguish among the three main types of rocks.
- Give examples of properties used to identify minerals.
- Classify resources as inexhaustible, renewable, or nonrenewable.

Unit 2, Lesson 1, pages 133J-133M, "Saving Energy"
Unit 2, Lesson 4, pages 198-199, Science Inquiry, "Fossil Fuels: Ancient Technology"

Forces That Shape Earth

- Describe the two main types of weathering.
- Summarize how soil is formed and why it is important.

Minerals and Rocks

- Identify minerals by their properties.
- Discuss the formation of igneous, sedimentary, and metamorphic rocks.

Other Land Resources

- Compare renewable and nonrenewable resources.
- Describe how human activities affect the environment.

Unit 2, Lesson 1, pages 133J-133M, "Saving Energy"
Unit 2, Lesson 4, pages 198-199, Science Inquiry, "Fossil Fuels: Ancient Technology"

Saving Resources

- Describe practices used to conserve Earth's land, water, and air.
- Discuss alternative energy sources and methods of reducing pollution from fossil fuels.

Unit 2, Lesson 1, pages 133J-133M, "Saving Energy"
Unit 2, Lesson 4, pages 198-199, Science Inquiry, "Fossil Fuels: Ancient Technology"

Water and Weather

Moving Water on Earth

- Summarize the processes of the water cycle.
- Identify different types of clouds and the kinds of weather they bring.
- Discuss the importance of fresh, clean water.

Unit 1, Lesson 6, pages 122-123, Science Inquiry, "The Laketown Water Treatment Plant"
Unit 2, Lesson 2, pages 153-161, "Tailing Tornadoes"
Unit 2, Lesson 2, pages 164-165, Science Inquiry, "A Fresh Idea for the New Century"
Unit 6, Lesson 1, pages 608-609, Science Inquiry, "Water in the Sky"

Predicting Weather B

- Describe the structure and composition of the atmosphere.
- Identify the properties of the atmosphere that are used to describe weather.
- Summarize how meteorologists forecast the weather.

Unit 2, Lesson 2, pages 153-161, "Tailing Tornadoes"

Weather and Climate

- Compare and contrast climate and weather.
- Identify the factors that affect climate.
- Explain how air masses affect climate and weather.

Unit 2, Lesson 2, pages 153-161, "Tailing Tornadoes"

Earth's Dynamic Atmosphere

- Identify the layers of the atmosphere.
- Explain why winds occur.
- Explain how the greenhouse effect helps support life.

Water on Earth

- Identify sources of water on Earth.
- Describe the processes of the water cycle.
- Give examples of ways to conserve water.

Unit 2, Lesson 2, pages 164-165, Science Inquiry, "A Fresh Idea for the New Century"

Unit 6, Lesson 1, pages 608-609, Science Inquiry, "Water in the Sky"

Earth's Weather and Climate

- **Tell how air masses cause changes in weather.**
- **Compare and contrast different types of severe weather.**
- **Classify different climates.**

Unit 2, Lesson 2, pages 153-161, "Tailing Tornadoes"

Air and Water

- **Summarize the importance of air.**
- **Describe the water cycle.**

Unit 2, Lesson 2, pages 164-165,
Science Inquiry, "A Fresh Idea for the
New Century"
Unit 6, Lesson 1, pages 608-609,
Science Inquiry, "Water in the Sky"

Space

Sun, Earth, and Moon

- **Recognize that the sun is a star and the main source of energy on Earth.**
- **Distinguish between rotation and revolution.**
- **Compare and contrast Earth and its moon.**

Unit 4, Lesson 1, pages 353-361, "The Universe"
Unit 4, Lesson 3, pages 400-401, Science Inquiry, "Welcome to Sol!"

The Solar System

- **Recognize that the sun is the center of our solar system.**
- **Identify the eight planets that orbit the sun.**
- **Identify other objects found in the solar system.**

Unit 4, Lesson 1, pages 353-361, "The Universe"
Unit 4, Lesson 3, pages 387-397, "The Mystery of Mars"
Unit 4, Lesson 4, pages 428-429, Science Inquiry, "Space Messengers"

Exploring Space B

- Describe how telescopes help scientists study objects in space.
- Explain why scientists use computer-controlled spacecraft to study space.
- Summarize the types of information gathered by satellites orbiting Earth.

Unit 4, Lesson 1, pages 353-361, "The Universe"
Unit 4, Lesson 2, pages 369-379, "Circles, Squares, and Daggers: How Native Americans Watched the Skies"
Unit 4, Lesson 3, pages 387-397, "The Mystery of Mars"
Unit 4, Lesson 4, pages 405-425, "Apollo 11: First Moon Landing"
Unit 4, Lesson 4, pages 428-429, Science Inquiry, "Space Messengers"
Unit 4, Lesson 5, pages 433-447, "Ellen Ochoa: Reaching for the Stars"
Unit 4, Lesson 6, pages 450-451, "Cosmonaut Yuri Gagarin"

Solar System

- Describe the characteristics of the sun.
- Compare and contrast the planets in our solar system.
- Distinguish among asteroids, comets, and meteoroids.

Unit 4, Lesson 1, pages 353-361, "The Universe"
Unit 4, Lesson 3, pages 387-397, "The Mystery of Mars"
Unit 4, Lesson 3, pages 400-401, Science Inquiry, "Welcome to Sol!"

Earth in Space B

- Relate seasons to the tilt of Earth's axis as it orbits the sun.
- Describe ways in which the moon interacts with Earth.
- Identify different phases of the moon.

Unit 4, Lesson 2, pages 382-383, Science Inquiry, "Chasing the Moonlight"

Space Exploration

- Identify conditions necessary for life as we know it.
- Compare and contrast the technology used to explore space.
- Discuss the challenges of space exploration.

Unit 4, Lesson 1, pages 353-361, "The Universe"
Unit 4, Lesson 2, pages 369-379, "Circles, Squares, and Daggers: How Native Americans Watched the Skies"
Unit 4, Lesson 3, pages 387-397, "The Mystery of Mars"
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The Earth-Sun-Moon System

- Investigate how the interaction of Earth, the moon, and the sun causes lunar phases.
- Describe conditions that produce lunar and solar eclipses.

Unit 4, Lesson 2, pages 382-383, Science Inquiry, “Chasing the Moonlight”

Scientific Method

- Scientific Method

Unit 2, Lesson 3, pages 184-185, Science Inquiry, “The Scientific Method”
Unit 4, Lesson 1, pages 365A-365D, Inquiry Process
Unit 4, Lesson 2, pages 383A-383D, Inquiry Process
Unit 4, Lesson 3, pages 401A-401D, Inquiry Process
Unit 4, Lesson 4, pages 429A-429D, Inquiry Process
Unit 4, Lesson 5, pages 449C-449F, Inquiry Process
Unit 4, Lesson 6, pages 451A-451D, Inquiry Process

Grade 5

Physical Science

Matter

Matter Can Be Described

- Define matter.
- Describe the properties of matter.
- Identify and describe the states of matter.

Matter Can Be Measured

- Determine how scientists measure matter.
- Explain the difference between weight and mass.
- Relate density, mass, and volume.

Building Blocks of Matter

- **Explain that elements are made up of atoms.**
- **Identify ways in which elements can be combined.**
- **Compare and contrast physical changes and chemical changes.**

Unit 4, Lesson 1, pages 364-365, Science Inquiry, "A Lively Breakfast"

The Structure of Matter

- **Identify elements as the building blocks of matter.**
- **Compare and contrast solids, liquids, and gases.**
- **Describe mixtures and solutions.**

Properties of Matter C

- **Identify some properties of matter.**
- **Determine which properties of matter can be measured.**
- **Distinguish between chemical and physical changes in matter.**

Chemical Changes

- **Explain how chemical changes happen.**
- **Give examples of signs that show a chemical change has occurred.**
- **Define combustion.**

Physical Properties

- **Measure the density of a given substance.**
- **Classify the different states of matter.**

Elements and Compounds

- Compare protons, neutrons, and electrons.
- Compare atoms, molecules, elements, and compounds.

Unit 4, Lesson 1, pages 364-365, Science Inquiry, "A Lively Breakfast"

Solids, Liquids, and Gases B

- Explain boiling point and melting point.
- Understand the relation of temperature, pressure, and volume.

Chemical Changes

- Describe three types of chemical reactions.
- Compare exothermic and endothermic reactions.

Forces

Energy of Motion

- Summarize how forces affect motion.
- Identify different forms of energy.
- Describe examples of simple machines.

Electricity and Magnets

- Describe how the poles of magnets affect other magnets.
- Explain how magnets can be made.
- Recognize that electric motors change electricity into motion.

Forces Affect Motion

- Explain what causes motion.
- Describe the effect of gravity on the motion of objects.
- Identify how friction affects motion.

Unit 6, Lesson 2, pages 624-625, Science Inquiry, "Newton's Law"

Describing Motion

- Explain how motion can be measured.
- Contrast speed and velocity.
- Describe acceleration and momentum.

Unit 6, Lesson 2, pages 624-625, Science Inquiry, “Newton’s Law”

Newton’s Laws of Motion

- Describe the role of inertia in Newton’s first law of motion.
- Explain Newton’s second law of motion and how it relates to mass.
- Understand that forces always come in pairs.

Unit 6, Lesson 2, pages 624-625, Science Inquiry, “Newton’s Law”

Forces and Motion

- Explain that motion can be described by position, direction, and speed.
- Summarize how forces affect motion.

Unit 6, Lesson 2, pages 624-625, Science Inquiry, “Newton’s Law”

Work and Energy

- Calculate work and explain its formula.
- Compare and illustrate the ways in which energy can be transformed.

Energy

Sounds All Around

- Determine how sound is produced.
- Describe how sound waves move through materials.
- Explain how sounds differ.

Light Travels

- Explain what light is and how light travels.
- Describe what happens when light hits an object.
- Understand what a lens does.

Electrical Energy B

- Explain how static electricity forms.
- Describe what happens when electrical charges build up.
- Identify how electric current moves.

Unit 2, Lesson 1, pages 137-145, "The Sparks Fly"

Electricity in Our Homes

- Explain how energy sources are used to produce electricity.
- Identify renewable and nonrenewable sources of energy.
- Discuss ways to stay safe around electricity.

Unit 2, Lesson 1, pages 133J-133M, "Saving Energy"

Unit 2, Lesson 1, pages 137-145, "The Sparks Fly"

Unit 2, Lesson 4, pages 189-195, "The Wind at Work"

Unit 2, Lesson 4, pages 198-199, Science Inquiry, "Fossils Fuels: Ancient Technology"

What Is Energy?

- Identify some of the many forms of energy.
- Explain the relationship between potential energy and kinetic energy.
- Give examples of how energy can change forms.

Unit 2, Lesson 1, pages 133J-133M, "Saving Energy"

Unit 2, Lesson 1, pages 148-149, Science Inquiry, "The Science of Energy"

Unit 2, Lesson 4, pages 189-195, "The Wind at Work"

Thermal Energy

- Describe what causes heat.
- Identify three ways in which thermal energy is transferred.
- Define temperature and understand how it is measured.

Electrical Energy C

- **Explain how most homes use electrical energy.**
- **Summarize how electrical energy is produced.**
- **Identify energy sources used to produce electricity.**

Unit 2, Lesson 1, pages 133J-133M, “Saving Energy”
Unit 2, Lesson 1, pages 148-149, Science Inquiry, “The Science of Energy”
Unit 2, Lesson 4, pages 189-195, “The Wind at Work”

Heat

- **Explain the difference between heat and temperature.**
- **Compare how thermal energy can be transferred by conduction, convection, and radiation.**

Unit 2, Lesson 1, pages 148-149, Science Inquiry, “The Science of Energy”

Electricity and Magnetism

- **Describe electricity and identify the roles that static electricity and current electricity play.**
- **Describe electromagnets and electromagnetism in the context of their utility in society.**

Unit 2, Lesson 3, pages 169-181, “Jake Drake Know-It-All”

Scientific Method

- **Scientific Method**

Unit 2, Lesson 1, pages 149A-149D, Inquiry Process
Unit 2, Lesson 2, pages 165A-165D, Inquiry Process
Unit 2, Lesson 3, pages 185A-185D, Inquiry Process
Unit 2, Lesson 3, pages 184-185, Science Inquiry, “The Scientific Method”
Unit 2, Lesson 4, pages 199A-199D, Inquiry Process
Unit 2, Lesson 5, pages 215C-215F, Inquiry Process
Unit 2, Lesson 6, pages 217A-217D, Inquiry Process