

4th Grade Science Curriculum

Kingdoms of Life

Cells

- summarize five functions of living things
- compare plant and animal life

Classifying Living Things

- define and compare the kingdoms of living things
- describe different types of microorganisms

The Plant Kingdom

- describe the functions of roots, stems, and leaves
- explain the processes of photosynthesis and respiration
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How Seed Plants Reproduce

- describe pollination in flowering plants
- explain the lifecycle of a flowering plant

The Animal Kingdom

Animals without Backbones

- define animals and list their basic needs and characteristics
- summarize the characteristics of groups of vertebrates

Animals with Backbones

- define vertebrates and describe their characteristics
- describe the seven groups of vertebrates

Systems in Animals

- identify seven organ systems of animals
- summarize the structures and functions of the seven organ systems

Animal Life Cycles

- introduce incomplete and complete metamorphosis
- summarize how traits are passed from parent to offspring

Ecosystems

Biomes

- define a biome
- describe Earth's six main biomes

Relationships in Ecosystems

- explain how energy is cycled through an ecosystem
- describe food webs and give examples of predator-and-prey relationships

Animal Adaptations

- define adaptation and give example of how adaptations help animals to survive in their habitats
- define and describe the types of symbiotic relationships

Plants and Their Surroundings

- describe ways in which plants respond to their environment
- describe plant adaptations

Changes in Ecosystems

- describe how living and nonliving things cause ecosystems to change
- understand that changes in ecosystems affect living organisms

Shaping Earth

Earth

- identify Earth's landforms and the features of the ocean floor
- describe the layers of the Earth

Earth's Crust

- describe how the movement of the plates builds mountains and causes earthquakes and volcanoes
- explain how scientists use seismic waves to study earthquakes

Weathering and Erosion

- define and give examples of physical and chemical weathering
- explain how erosion helps to break down and build up Earth's land

Changes Caused by the Weather

- describe the effects of floods, fires, tornadoes, and hurricanes
- explain the causes and effects of landslides and avalanches

Saving Earth's Resources

Rocks and Minerals

- describe the properties used to identify and classify minerals
- compare the three types of rocks

Soil

- describe the different layers of soil and how they form
- define the textures, porosity, and permeability of soil

Resources from the Past

- describe the different kinds of fossils, the ways they form, and how they provide evidence of Earth's past
- explain why fossils are a valuable and nonrenewable resource

Water

- explain how the water cycle renews Earth's fresh water
- describe ways people use and obtain fresh water

Pollution and Conservation

- identify the effects of pollution to land, water, and air
- describe ways to reduce pollution and conserve resources
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Weather and Climate

Air and Water

- define the atmosphere as a mixture of different gases
- describe four properties of weather that can be measured and the tools used to measure them

Tracking the Weather

- explain how air masses form and identify the types of weather they cause
- forecast the weather by interpreting data on a weather map

Climate

- define and give examples of climate
- explain the main factors that determine climate

The Solar System and Beyond

Earth and Sun

- explain how Earth's rotation causes the cycle of day and night
- explain why the Sun's apparent motion in the sky differs from season to season

Earth and Moon

- explain why the Moon is covered with craters
- identify the causes of the Moon's phases, solar eclipses, and lunar eclipses

The Solar System

- define and describe the solar system
- discuss the properties of the inner and outer planets

Stars and Constellations

- explore stars, including their composition, appearance, and distance from Earth
- identify the characteristics of the Sun and its importance to life on Earth
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Properties of Matter

Describing Matter

- define and describe the three states of matter
- compare and contrast properties of matter

Measurement

- describe some properties of matter that can be measured
- measure properties of matter using correct units

Classifying Matter

- explore how matter is classified
- explain how elements are organized in the periodic table

Matter and Its Changes

How Matter Can Change

- comprehend that a change of state is a physical change
- differentiate between physical change and chemical change

Mixtures

- explain the mixtures are combinations of matter
- describe ways of separating mixtures

Forces

Motion and Forces

- explain how motion, speed, velocity, and acceleration are related
- summarize the forces that act on a moving object, including friction and gravity

Changing Motion

- demonstrate a basic understanding of how forces affect motion
- explain how friction affects motion

Work and Energy

- define work and energy
- compare and contrast potential and kinetic energy

Simple Machines

- identify the different kinds of simple machines
- explain how simple machines work together to make compound machines

Energy

Heat

- explain that heat flows from warmer materials to cooler materials
- describe and define conduction, convection, and radiation

Sound

- explain how sound is produced and how it travels through a medium
- identify the characteristics of sound, including frequency, pitch, volume, and echoes

Light

- demonstrate that light travels in a straight line
- describe ways light can be absorbed, reflected, or refracted by objects

Electricity

- describe the characteristics of electrically charged objects
- explain the difference between static and current electricity

Magnetism and Electricity

- describe a magnetic field and the effect of distance on magnetic force
- understand how an electromagnet, an electric motor, and a generator work

