

Units and Big Ideas from the K-7 Science Content Expectation Companion Documents

Units for Kindergarten Observations With Senses Pushes and Pulls Basic Needs of Living Things My Earth

Big Ideas for Kindergarten

Observations with Senses

- The five senses are sight, sound, touch, smell, and taste.
- The senses aid in observation that helps us to understand our surroundings.
- Not all senses are used for all observations.

Pushes and Pulls

- The position of the observer and object affect the description of motion.
- Pushes and pulls are forces that change the motion of objects.
- Change in motion is affected by the shape and mass of an object.
- Objects on Earth fall down toward the Earth unless something holds them up.

Basic Needs of Living Things

- All living things have basic needs (air, water, food and space).
- Nonliving things do not have these basic needs.

My Earth

- The Earth is made of materials (rocks, sand, soil, and water) that have many different properties.

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Units for 1st Grade Sorting by Properties Animal Life Weather The Sun Warms the Earth

Big Ideas for 1st Grade

Sorting by Properties

- Objects and substances can be sorted by their observable properties.
- The physical properties of water as a solid and as a liquid are different.
- Magnets can attract and repel other magnets and attract magnetic objects.

Animal Life

- Animals have needs for life (air, water, food, and space).
- Animals have a life cycle that includes egg, young (larva, pupa) and adult.
- Animals share some, but not all characteristics of their parents.

Weather

- Weather exhibits short and long term patterns.
- Tools can be used to assist the recording and predicting of weather.

The Sun Warms the Earth

- The sun warms the Earth.
- It is usually warmer in the daytime than at night.
- It is usually warmer in the summer than in winter.
- Weather is related to the four seasons.
- Severe weather can occur throughout the year.

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Units for 2nd Grade

Measurement of Properties

Plant Life

Earth's Surface Features

Uses and Properties of Water

Big Ideas for 2nd Grade

Measurement of Properties

- Objects and substances can be described by their properties and through measurement.
- Objects and substances can be classified as single substances or mixtures and single substances can be combined to make mixtures.

Plant Life

- Plants need air, water, and sunlight to survive.
- Plants have a life cycle that includes seed, seedling or young plant, adult plant, flower, fruit and seed.
- Plants have characteristics that are passed from the parent plant.

Earth's Surface Features

- Earth surface has many major landform types.

Uses and Properties of Water

- Water can come from a variety of sources.
- Water has a variety of uses.
Water on Earth can be described as a solid or liquid.

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Units for 3rd Grade

Changes in Motion

Light and Sound

Structures and Functions of Living Things

Earth Materials, Change and Resources

Big Ideas for 3rd Grade

Changes in Motion

- The position of the observer and object affect the description of motion.
- Forces are pushes and pulls.
- Gravity is the force that pulls objects to the Earth.
- Motion is affected by the strength of the force and the mass of the object.

Light and Sound

- Light and sound are forms of energy.
- Light and sound can be described by their properties.
- Light travels in a straight path.
- Vibrations produce sound.

Structures and Functions of Living Things

- Plant and animal structures have specific functions.
- Plants and animals can be classified by observable characteristics.
- Plants and animals have observable characteristics that allow them to live and survive in their environment.

Earth Materials, Change, and Resources

- The Earth has natural resources that are renewable or non-renewable.
- Humans are dependent on and affect their environments in helpful and harmful ways.
- Earth's surface changes through slow processes and fast processes.
Earth materials have useful properties and can enhance the quality of life.

Units and Big Ideas from the K-7 Science Content Expectation Companion Documents

Units for Fourth Grade Heat, Electricity, and Magnetism Properties and Changes of Matter Relationships and Requirements of Living Things Sun, Moon, and Earth

Big Ideas for Fourth

Heat, Electricity and Magnetism

- Heat and electricity are forms of energy.
- Evidence of energy is change.
- Electrical circuits demonstrate a transfer of energy.
- Magnetism is a physical property of matter.
- Heat can be transferred from one substance or object to another.

Properties and Changes of Matter

- All objects have physical properties that can be measured.
- Matter exists in different states.
- Matter can change from one state to another by heating and cooling.

Relationships and Requirements of Living Things

- Plants and animals have basic requirements for maintaining life, which include the need for air, water and a source of energy (food).
- Organisms have observable traits and physical characteristics that help them survive and reproduce in their environments.
- Organisms are a part of a food chain or food web where food/energy is supplied by plants, which need light to produce food/energy.
- Plants and animals can be classified by observable traits and physical characteristics.
- Fossils provide evidence that life forms have changed over time and were influenced by changes in environmental conditions.

Sun, Moon, and Earth

- The moon and the Earth move in a predictable pattern around the sun.
- The predictable patterns of the Earth and moon define a day, year, and moon phases.
The sun appears to move in a predictable pattern across the sky.

Units and Big Ideas from the K-7 Science Content Expectation Companion Documents

Units for Fifth Grade Measuring Changes in Motion Animal Systems Evolution and Traits of Organisms Position and Motion of Objects in the Sky

Big Ideas for Fifth

Measuring Changes in Motion

- Every force is part of an interaction between two objects.
- Forces are pushes and pulls that can be contact or non-contact forces.
- Motion is described relative to something else (point of reference).
- A change in motion is due to unbalanced forces.
- No change in motion and an object at rest are due to balanced forces.

Animal Systems

- Animals' bodies are made up of various body systems that perform specific functions.
- These body systems function together and contribute to the animal's survival and well-being.

Evolution and Traits of Organisms

- Traits are influenced by both genetics of the individual and the environment.
- Traits can be classified as either inherited or acquired.
- Each organism (plants and animals) has specific behavioral and physical characteristics allowing it to better survive in a given environment.
- As environments change over time, these characteristics may change (adaptations) to allow them to continue to survive or flourish in their environment.
- Fossils provide evidence that life forms have changed over time and were influenced by changes in environmental conditions including catastrophic events.
- Organisms that are similar in anatomical structures are more likely to be more closely related than those whose structures are less similar to one another.

Position and Motion of Objects in the Sky

- The sun is the central and largest body in the solar system.
- The sun's warming of the Earth and tilt of the Earth on its axis has an important connection to the seasons.
- Earth's motion is the basis for measuring time.
- Objects in the sky move in regular and predictable patterns around the sun.

- The sun, stars and constellations appear to move in predictable patterns across the sky.
- Gravity is the force that keeps the planets in orbit around the sun and without it, planets would continue in a straight path.

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Units for Sixth Grade

Matter and Energy

Ecosystems

Composition, Properties, and Changes of the Earth

Plate Tectonics and Fossils

Big Ideas for Sixth

Matter and Energy

- Objects and substances in motion have kinetic energy.
- Objects and substances have potential energy due to their relative position in a system.
- Heat energy is transferred by radiation, conduction, and convections.
- Physically changing states of matter does not create a new substance.
- Everything we do is connected to energy in one form or another.

Ecosystems

- All life forms, including humans, are part of a global food chain in which food is supplied by plants, which need light to produce food.
- Ecosystems continually change with time as environmental factors and populations of organisms change.

Composition, Properties, and Changes of the Earth

- Earth materials have properties that make the materials useful.
- Earth materials and the surface of the Earth change gradually and rapidly.
- The Earth has magnetic properties.

Plate Tectonics and Fossils

- The surface of the Earth undergoes gradual and rapid changes.
- Plate tectonics is the central organizing theory of the field of geology and explains major landforms and geological events.

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Units for Seventh Grade

Waves and Energy

Physical and Chemical Properties and Changes in Matter

Structures and Processes of Living Things

Fluid Earth Systems and Human Activities

Big Ideas for Seventh

Waves and Energy

- Waves are produced through vibrations.
- Waves transfer energy when they interact with matter.
- Nuclear reactions that take place in the sun produce heat and light.
- A fraction of the light energy from the sun provides energy to heat the Earth.

Physical and Chemical Properties and Changes in Matter

- Matter is made up of atoms and molecules that are represented through models.
- Elements are chemical substances that make up all other substances and are composed of one kind of atom.
- Elements are organized on the Periodic Table in families.
- Physical and chemical properties identify substances and determine when a chemical change has occurred.

Structures and Processes of Living Things

- All living organisms are composed of cells, from one cell to many cells and they exhibit cell growth and division.
- Specialized cells within multi-cellular organisms form different kinds of tissues and organs and organ systems that function together.
- Photosynthesis transforms light energy to chemical energy making possible the building of key chemical building blocks of living organisms.
- All organisms have a life span and must reproduce in order to continue the species. Reproduction may be asexual or sexual.

Fluid Earth Systems and Human Activities

- The sun is the major source of energy for phenomenon on Earth.

- The sun's warming relates to weather, climate and the water cycle.
- Human interaction and use of natural resources affects the environment.
- The Earth's atmosphere is a mixture of gases and water vapor.