

CURRICULUM

GUIDE

Science – Grade 5

Providence
Schools

UNIT A

Content students have to learn

Processes students will learn and use

Unit A.1 – Mixtures (8 days)

- Explain that a mixture combines two or more materials, but the materials keep their individual properties.
- Explain how the mass of the parts of an object is equal to the mass of the whole object.
- Investigate how different methods can be used to separate a solution.
- Describe how some mixtures of solid matter can be separated by different processes.

- » Identify the differences between mixtures and solutions.
- » Observe materials that have been separated from mixtures and solutions.
- » Compare the mass of a mixture to the mass of its parts.
- » Use scientific thinking and processes to conduct investigations and build explanations by observing, comparing, organizing, and communicating.
- » Demonstrate safe practices during classroom investigations.

Unit A.2 – Saturation (7 days)

- Explain a simple solution.
- Understand that the mass of individual substances is equal to the mass of the solution.
- Recognize that a solution can have properties different from the substances used to create it.
- Understand how solutions can be made of different materials.

- » Investigate the behavior of solid materials in water.
- » Measure the volume and mass of solids and liquids.
- » Compare the solubility of materials in water.
- » Use scientific thinking and processes to conduct investigations and build explanations by observing, comparing, organizing, and communicating.
- » Demonstrate safe practices during classroom investigations.

Unit A.3 – Concentration (6 days)

- Understand that solutions have properties such as concentration.
- Explain how a concentrated solution can be changed.
- Investigate how two solutions made from the same substances can be different.

- » Measure the volumes of solids and liquids.
- » Observe the behavior of solid materials in water.
- » Use scientific thinking and processes to conduct investigations and build explanations by observing, comparing, organizing, and communicating.
- » Demonstrate safe practices during classroom investigations.

Unit A.4 – Chemical Changes (11 days)

- Describe a chemical reaction.
- Understand that a precipitate occurs in some chemical reactions.
- Distinguish the properties of a product from those of the original substances.
- Understand that not all chemicals react when mixed.

- » Measure the volumes of solids and liquids.
- » Observe and compare materials before and after a chemical reaction.
- » Demonstrate safe practices during classroom investigations.
- » Use metaphors to demonstrate knowledge of chemical reactions.
- » Use models to examine the structure of compounds.

UNIT A

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Unit A.5 – States of Matter (5 days)

- Understand that matter is made up of particles.
- Explain that particles behave differently in each state of matter.
- Understand that one way to study solids, liquids, and gases is to study their behavior.
- Understand the effects of heating and cooling on the physical state of a substance.

- » List characteristics of solids, liquids, and gases.
- » Classify living and nonliving things by states of matter.
- » Investigate the effects of heat on a substance.
- » Investigate the effects of cooling on a substance.
- » Conduct investigations using appropriate tools.
- » Collect and record data from investigations.
- » Demonstrate safe practices during classroom investigations.
- » Communicate valid conclusions supported by data.

Unit A.6 – Rock Cycle (5 days)

- Distinguish between a mineral and a rock.
- Understand that the rock cycle, like other cycles (water, life), has various stages.
- Understand that rocks move through various stages of the rock cycle.

- » Investigate the properties of rocks and minerals.
- » Compare and contrast igneous, sedimentary, and metamorphic rocks.
- » Diagram the rock cycle.
- » Collect and record data from investigations.
- » Demonstrate safe practices during investigations.
- » Communicate valid conclusions supported by data.

Unit A.7 – Earth Processes (4 days)

- Understand that the earth's surface consists of layers.
- Understand that the earth's changes are due to constructive and destructive forces.
- Explain the relationship between volcanoes and earthquakes.

- » Identify the layers of the earth.
- » Plot the locations of various earthquake occurrences and volcanoes.
- » Collect and record data from investigations.
- » Demonstrate safe practices during investigations.
- » Communicate valid conclusions supported by data.

UNIT B

Content students have to learn

Processes students will learn and use

Unit B.1 – Force and Motion (12 days)

- Recognize that a force is a push or a pull.
- Recognize that forces cause changes in position, speed, and/or direction of motion.
- Use data or graphs to investigate forces, including friction, gravity, and magnetism, and their effect on objects.
- Compare the relative speed of objects.
- Demonstrate that electric currents and magnets exert a force on each other.
- Use data to predict and determine the effect of forces on the position, speed, and direction of motion of objects.

- » Cite evidence regarding the existence of forces that cannot be seen.
- » Observe and record changes in position, speed, and/or direction of objects.
- » Record, analyze, and interpret data.
- » Predict the effects of forces on objects.
- » Demonstrate safe practices during classroom investigations.
- » Use scientific thinking processes to conduct investigations and build explanations: observing, citing evidence, communicating, comparing, and analyzing.

Unit B.2 – Energy Flow in Ecosystems (10 days)

- Understand the role of the sun in an ecosystem.
- Understand the process of photosynthesis.
- Understand energy flows in an ecosystem.
- Understand the role of the water cycle in an ecosystem.
- Understand how food chains and food webs work.

- » Sequence the energy flow within an ecosystem.
- » Cite evidence of photosynthesis.
- » Diagram various food webs and food chains.
- » Collect, record, analyze, and interpret data from investigations.
- » Use scientific thinking processes to conduct investigations and build explanations: observing, citing evidence, communicating, comparing, and analyzing.
- » Demonstrate safe practices during investigations.
- » Communicate valid conclusions supported by data.

Unit B.3 – Organisms Within Ecosystems (10 days)

- Understand that certain factors in an ecosystem help control the size of the populations within the ecosystem.
- Understand that organisms respond to the interactions in ecosystems by adapting in order to survive.
- Understand that the number of organisms an ecosystem can support depends on the resources available and on abiotic factors.

- » Observe, record, analyze, and interpret data.
- » Predict the effects of forces on objects.
- » Demonstrate safe practices during classroom investigations.
- » Use scientific thinking processes to conduct investigations and build explanations: observing, citing evidence, communicating, comparing, and analyzing.

UNIT B

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Unit B.4 – Factors Affecting the Human Body (10 days)

- Understand how environmental conditions can be harmful to the human body.
 - Understand how bacteria and germs can be harmful to the human body.
 - Understand how scientists use investigations to search for ways to prevent disease.
 - Understand how some diseases are prevented.
- » Investigate the role of various organisms in the human body.
 - » Research how various diseases affect the human body.
 - » Investigate the negative impact of humans on the environment.
 - » Research how humans' negative impact on the environment results in harm to the human body.
 - » Collect and record data during investigations.
 - » Demonstrate safe practices during investigations.
 - » Communicate valid conclusions supported by data.

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