

Science Grade 3

UNIT I: Earth and Space Science

Goal 1. Objects in the Sky - The student will use scientific skills and processes to observe, describe, and compare celestial objects and their position in the sky; and conclude that Earth's rotation produces the night-and-day cycle.

Objectives – The student will be able to:

- a. Identify and describe a science problem related to celestial objects.
- b. Conclude that the rotation of Earth on its axis every 24 hours produces the repeating pattern of the night-and-day cycle.
- c. Conclude that Earth revolves around the Sun in approximately 365 days.
- d. Compare observations of the position of the Sun at different times of the day to conclude that it appears to move slowly across the sky.
- e. Compare observations of the position of the Moon at different times during a 24-hour period to conclude that it moves slowly across the sky.
- f. Use science knowledge to make decisions and/or devise a plan to solve a problem.

Goal 2. Weather Elements - The student will use scientific skills and processes to describe and compare weather elements.

Objectives - The student will be able to:

- a. Identify and describe a science problem related to weather elements.
- b. Predict and describe weather conditions and patterns for each season.
- c. Describe and compare the effects of varying weather conditions on humans and their environment.
- d. Research the use and purpose of various scientific weather instruments.
- e. Record, collect, and compare temperature data from different locations and varying heights.
- f. Compare hygrometer readings from different locations that have varying humidity.
- g. Observe, compare, and describe the processes of condensation and evaporation.
- h. Observe and describe the characteristics of wind.
- i. Construct an anemometer to observe the effects of wind.
- j. Use an anemometer to measure, record, and describe wind speed.
- k. Record and describe wind speed using the Beaufort Scale.
- l. Construct a weather instrument to be used as part of a weather station.
- m. Use science knowledge to make decisions and/or devise a plan to solve a problem.

UNIT II: Physical Science

Goal 1. Heat - The student will use scientific skills and processes to identify and compare sources of heat and ways heat is produced; conclude that energy is exchanged as materials of different temperatures interact, and that some materials are better conductors of heat than others.

Objectives - The student will be able to:

- a. Identify and describe a science problem related to heat, light, and sound.
- b. Identify materials that people use to produce heat energy (e.g. fuel, wood).
- c. Describe ways in which heat energy can be produced (e.g. burning, rubbing, using electric currents).
- d. Explain that heat energy moves from a warm object to a cooler object by contact or at a distance until the objects reach the same temperature.
- e. Compare materials that conduct heat and give examples of materials that conduct heat energy better than others.

Goal 2. Light and Sound - The student will use scientific skills and processes to identify and compare how light and sound travel; conclude that the motion of light is affected by changing its path and the motion of sound is affected by changing the properties of its source.

Objectives – The student will be able to:

- d. Identify materials that block the path of light and materials that allow light to pass through.
- e. Observe and conclude that light travels in a straight line unless it strikes an object.
- f. Observe and conclude that light can be reflected by a mirror, refracted by a lens, or absorbed by an object.
- g. Identify things (e.g. prisms, soap bubbles, oil films) that produce colors from white light.
- h. Identify things that vibrate and explain that sound vibrations are needed for hearing to occur.
- g. Demonstrate different ways that properties of sound can be altered by changing the properties of the sound's source.
- h. Use science knowledge to make decisions and/or devise a plan to solve a problem.

UNIT III: Physical Science

Goal 1. Experimentation - The student will use scientific skills and processes in various well-designed investigations to determine the effects of independent variables upon dependent variables; explain that magnets can attract, repel or have no effect on some objects; and explain that magnets can cause movement with or without contact.

Objectives - The student will be able to:

- a. Identify and describe a science problem and recognize simple and well-designed procedures within an investigation.
- b. Construct pendulums and describe observations of their swings.
- c. Identify and describe variables that affect pendulum swings.
- d. Conduct an investigation to determine if thickness of string affects the number of round trips of a pendulum.
- e. Conduct an investigation to determine if length of string affects the number of round trips of a pendulum.
- f. Conduct an investigation to determine if the number of bobs affects the number of round trips of a pendulum.
- g. Identify and describe the effects of ball size, release height, and bouncing surface on the height of a ball's bounce.
- h. Identify and describe the relationship among the independent variable of placement of weight and dependent variable of distance on the flight of a paper airplane.
- i. Explain how magnets can attract, repel, or have no effect on objects.
- j. Classify objects by magnetic attraction and identify the properties of materials attracted to magnets.
- k. Explain how magnets can exert a force over distance and can cause movement with or without direct contact.
- l. Use knowledge of science to make decisions and/or devise a plan to solve a problem.

UNIT IV: Life and Environmental Science

Goal 1. Seeds - The student will use scientific skills and processes to describe and compare seeds, explain how seeds travel, and explain the functions of each seed part.

Objectives - The student will be able to:

- a. Identify and describe a science problem related to seeds.
- b. Classify seeds to discover differences in their physical characteristics and how these

- affect the way seeds travel in the environment.
- c. Observe and compare the parts of a seed, using a magnifying instrument.
 - d. Explain the functions of different parts of a seed.
 - e. Explain the role of seeds in the reproduction of plants and trees.

Goal 2. Parts of a Plant - The student will use scientific skills and processes to describe and compare parts of plants and describe the functions of each part in the plant's survival.

Objectives - The student will be able to:

- n. Identify and describe parts of a plant (i.e., roots, stems, trunks, leaves, and flowers).
- o. Describe the functions of the different parts of a plant (i.e., roots, stems, trunks, leaves, and flowers).
- p. Observe the stem or trunk of a plant to observe the movement of nutrients, using a magnifying instrument.

Goal 3. Growing Plants - The student will demonstrate the ability to identify the basic needs of green plants; explain that plants grow best in environments that meet their basic needs; describe how animals depend on plants; and infer the impact of human use of plants on the environment.

Objectives - The student will be able to:

- a. Determine the effect of light on seed germination.
- b. Determine the effect of temperature on seed germination.
- c. Determine the effect of different soils on seed germination.
- d. Explain that plants need air, water, nutrients, and light to survive.
- e. Explain that green plants grow best in environments that meet their basic needs.
- f. Describe how animals depend on plants (e.g. food, shelter, oxygen).
- g. Explain that plants help humans meet a basic need by providing oxygen.
- h. Explain that plants are used to meet human needs and that using plants to meet one's wants and needs has consequences.
- i. Use science knowledge to make decisions and/or devise a plan to solve a problem.