

**Science
Learning Outcomes
Kindergarten**

Students will

Standard #

INQUIRY

- L6** Use their senses to observe and describe objects and organisms.
Note similarities and differences between objects and organisms.
- I5** Communicate observations verbally and through drawings.
- I3** Make predictions.
- I1** Ask and respond to questions about objects, organisms, and events.

EARTH/SPACE SCIENCE

- ES3** Identify weather changes that occur day to day.
- ES3** Articulate characteristics of seasons.

LIFE SCIENCE

- L2** Sort living and nonliving things.
- L1** Observe that organisms have certain needs in order to survive.
- L3** Recognize that organisms grow, change, and die over time.

PHYSICAL SCIENCE

- P1** Describe, group, and classify objects and organisms according to one property (such as size, weight, shape, color, odor, or texture).

Explore the physical properties of objects and materials using balls and ramps, magnets and/or water tables for sink and float activities.

TECHNOLOGY/ENGINEERING

Invent and build simple constructions using common tools and materials.

**Science
Learning Outcomes
Grade 1**

Students will

Standard #

INQUIRY

- L6** Use their senses to observe and describe objects and identify changes.
Note similarities and differences between objects.
- I5** Collect data and record observations through writing and drawing.
- I3** Make predictions.
- I1** Ask and generate questions about objects, organisms, and events.
- P1** Describe, group, and classify objects according to more than one property.
Communicate observations and conclusions.

EARTH/SPACE SCIENCE

- ES3** Recognize that weather features include cloud cover, precipitation, wind, and temperature.
- ES5** Observe and describe that change is something that happens in the natural world.
Collect, analyze, and interpret weather data.

LIFE SCIENCE

- L8** Recognize that organisms have certain needs in order to survive.
- L4,L12** Observe and describe changes over time in an organism and correctly sequence a life cycle/metamorphosis of butterflies and frogs.

PHYSICAL SCIENCE

- P1 P2** Observe and know the properties of solids, liquids, and gases.
- P2** Investigate and recognize the conditions in which water can be a liquid, solid, or gas: freezing, melting, evaporation, and condensation.

Learning Outcomes
Grade 1 *Continued*

Students will

Standard #

TECHNOLOGY/ENGINEERING

T1 Invent and build simple constructions (such as paper airplanes, wind measurers, pinwheels, rain gauges, etc.) using common tools and materials.

**Science
Learning Outcomes
Grade 2**

Students will

Standard #

INQUIRY

- L6** Use their senses to observe, describe, sort, and classify objects according to properties.
Compare and contrast similarities and differences between objects.
- I5, I12** Collect data and record observations through writing, drawing, and graphing.
- I3** Make reasonable predictions based on observed patterns.
- I2** Suggest and describe ideas about how, why, and what would happen if?
- I12** Communicate observations and findings to others using graphs.

EARTH/SPACE SCIENCE

- ES6** Recognize that rocks are made of minerals and that each mineral is composed of only one substance.
- ES8** Demonstrate an understanding that there are three types of rocks -- sedimentary, igneous, and metamorphic -- and recognize how they are formed.
- ES7** Identify different physical properties of minerals by conducting various tests.

LIFE SCIENCE

- L10** Recognize different structures of plants (roots, stems, leaves, flowers) and their different functions.
- L11** Recognize that plants and animals go through predictable life cycles, which include birth, growth, development, reproduction, and death.

Learning Outcomes
Grade 2 *Continued*

Students will

Standard #

PHYSICAL SCIENCE

- P9** Recognize that energy exists in different forms such as heat, light, sound, and electricity and that these forms of energy can be changed from one kind to another.
- P10** Demonstrate an understanding that forms of energy can move and change things.

TECHNOLOGY/ENGINEERING

Construct a working Capsela system based on information gained by analysis of its parts and their function.

**Science
Learning Outcomes
Grade 3**

Students will

Standard #

INQUIRY

- I7** Ask questions and make predictions that can be tested about the natural world.
Use characteristics to group and classify animals based on shared characteristics.
- I10, I14** Plan and conduct a simple investigation knowing what is to be compared or sought, and identify variables to be changed, controlled, and measured.
- I8** Extend observations and make measurements of observations using simple tools, e.g., hand lens, telescopes, light meters, rulers.
- I11** Recognize simple patterns in data and use data to create a reasonable explanation for the results of an investigation.
- I12** Communicate observations, results, and explanations through discussions, drawings, models, simple graphs, and writing.

EARTH/SPACE SCIENCE

- ES19** Recognize that the rotation of the earth every twenty four hours explains night and day and the apparent movement of the sun and moon across the sky.
- ES19** Recognize what causes the seasons.
- ES20** Recognize what causes the phases of the moon.
- ES18** Recognize that the earth is part of a system called a solar system, which includes the sun and nine planets.
Explain how a shadow is made.

LIFE SCIENCE

- L12** Recognize that some animals such as insects go through remarkable changes during development called *metamorphosis*.
Recognize that individuals of the same species differ in their characteristics.
- L7** Recognize that organisms exist best in certain habitats and that environmental factors of heat, light, and moisture affect them.

Learning Outcomes **Grade 3 *Continued***

Students will

Standard #

PHYSICAL SCIENCE

- P11** Demonstrate physically an understanding of the concept that electric circuits require a power source, such as a battery, and a closed circuit in order to light a bulb.
- Demonstrate an understanding that the number and arrangement of batteries affect the brightness of a bulb (series and parallel circuits).
- P12** Compare and contrast basic characteristics of insulators and conductors.
- P15** Differentiate between materials that a magnet will attract and materials that a magnet will not attract.

TECHNOLOGY/ENGINEERING

- Analyze and describe the components of an electric circuit and their functions.
- Develop, sketch, and discuss possible solutions to a design problem, select appropriate materials, and construct a working model.
- Use, evaluate, and suggest ways to improve the model.

**Science
Learning Outcomes
Grade 4**

Students will

Standard #

INQUIRY

- I7** Ask questions and make predictions about the natural world that can be tested.
- I10** Plan and conduct a simple investigation, knowing what is to be compared or sought.
- I8** Extend observations and make measurements using simple tools, e.g., hand lens, ruler, pH paper, thermometer, and appropriate technology.
- I11** Recognize simple patterns in data and use data to create a reasonable explanation for the results of an investigation.
- I12** Communicate observations, results, and explanations through discussions, drawings, models, simple graphs, and writing.
- I14** Design an investigation or problem, specifying variables to be changed, controlled, and measured.

EARTH/SPACE SCIENCE

- ES15** Describe how water on earth cycles in different forms and in different locations, including the atmosphere and underground.
- ES11** Recognize that air temperature, moisture, wind speed and direction, and precipitation make the weather in a particular place and time.
- ES17** Recognize that the surface of the earth changes, and some changes are due to slow processes, such as erosion and weathering, while other changes are due to rapid processes, such as land slides, volcanic eruptions, and earthquakes.
- ES4** Recognize that the sun supplies heat and light to earth and is necessary for life.

LIFE SCIENCE

- L10** Identify different seed structures (embryo, cotyledon, seed coat) and plant structures (roots, stems, leaves, flowers) and their functions.
- L9** Recognize that plants and animals can be classified into groups based on shared characteristics.
- L18, L19** Explain the concepts of environmental community and ecosystems and identify examples such as forest, pond, wetlands.

Learning Outcomes **Grade 4 *Continued***

Students will

Standard #

PHYSICAL SCIENCE

- P 2** Recognize that gases like liquids have mass, conform to the shape of their container, and expand to fill the container.
- P 31** Recognize that things that give off light may also give off heat.
- P 27** Describe, when testing a substance, how change in a material may be either physical, such as changes in state or appearance, or chemical, such as changes in pH.
- Identify acids and bases using pH paper, scale, and/or other instruments.

TECHNOLOGY/ENGINEERING

- T 11** Develop, sketch, and discuss possible solutions to a design problem (building a model solar home), select appropriate materials, and given specific constraints, construct a working model.
- Recognize that technology can impact the environment (e.g., acid rain).

**Science
Learning Outcomes
Grade 5**

Students will

Standard #

INQUIRY

- I15** Ask questions and make predictions about the human body, the interdependency of its systems, and the impact of change on these systems.
- Use the characteristics of objects to group and classify them into groups based on shared properties.
- I12** Communicate observations, results, and explanations and draw conclusions through discussions, drawings, models, simple graphs, and writing.
- I8** Use more complex tools and technologies and appropriate measurement units to make observations, collect and organize qualitative and quantitative data, e.g., microscopes, graduated cylinders, computer probes, stress and impact testers, and timers.

LIFE SCIENCE

- L26** Recognize that humans have interdependent systems (digestive, respiratory, circulatory, reproductive, skeletal, nervous, and muscular) that serve different functions for nourishment, reproduction, growth, and protection.
- L1** Recognize that people, like other animals, need water, food, air, and a particular range of temperature in their environment.
- L4, L27** Recognize that individuals of the same species differ in their characteristics and that some of these characteristics are inherited from parents and some are not.
- L11** Recognize that humans go through predictable life cycles, which include birth, growth, development, reproduction, and death.
- L22, L23,
L24** Recognize that all organisms are composed of cells that carry out the processes that sustain life: obtaining food, growing, locomoting, and exchanging materials with the environment.

TECHNOLOGY/ENGINEERING

Give examples of how bioengineering technologies can improve health and/or contribute improvement to our daily lives.

