

Sixth Grade Science Indicators

Student's Name: _____

Teacher: _____

Earth and Space Standard

A Describe how the positions and motions of the objects in the universe cause predictable and cyclic events.

B Explain that the universe is composed of vast amounts of matter, most of which is at incomprehensible distances and held together by gravitational force. Describe how the universe is studied by the use of equipment such as telescopes, probes, satellites and spacecraft.

C Describe interactions of matter and energy throughout the lithosphere, hydrosphere and atmosphere (e.g., water cycle, weather, and pollution).

D Identify that the lithosphere contains rocks and minerals and that minerals make up rocks. Describe how rocks and minerals are formed and/or classified.

_____ 1 Describe the rock cycle and explain that there are sedimentary, igneous and metamorphic rocks that have different properties (e.g., color, texture) and are formed in different ways.

_____ 2 Explain that rocks are made of one or more materials.

_____ 3 Identify minerals by their characteristic properties.

E Describe the process that contribute to the continuous changing Earth's surface (e.g., earthquakes, volcanic eruptions, erosion, mountain building and lithospheric plate movements).

Life Standard

A Explain that the basic functions of organisms are carried out in cells and groups of specialized cells from tissues and organs; the combination of these cells make up multicellular organisms that have a variety of body plans and internal structures.

_____ 1 Explain that many of the basic functions of organisms are carried out by or within cells and are similar in all organisms.

_____ 2 Explain that multicellular organisms have a variety of specialized cells, tissues, organs and organ systems that perform specialized functions.

_____ 3 Identify how plant cells differ from animal cells (e.g., cell wall and chloroplast).

B Describe the characteristics of organisms in terms of a combination of inherited traits and recognize reproduction as a characteristic of living organisms essential to the continuation of the species.

_____ 4 Recognize that an individual organism does not live forever; therefore reproduction is necessary for the continuation of every species and traits are passed on to the next generation through reproduction.

- _____ 5 Describe that in asexual reproduction all the inherited traits come from a single parent.
- _____ 6 Describe that in sexual reproduction an egg and sperm unite and some traits come from each parent, so the offspring is never identical to either of its parents.
- _____ 7 Recognize that likenesses between parents and offspring (e.g., eye color, flower color) are inherited. Other likenesses, such as table manners are learned.

Life Standard

- C** Explain how energy entering the ecosystem as sunlight supports the life of organisms through photosynthesis and the transfer of energy through the interactions of organisms and the environment.
- _____ 8 Describe how organisms may interact with one another.
- D** Explain how extinction of a species occurs when the environment changes and its adaptive characteristics are insufficient to allow survival (as seen in evidence of the fossil record).

Physical Standard

- A** Relate uses, properties and chemical processes to the behavior and/or arrangement of the small particles that compose matter.
- _____ 1 Explain that equal volumes of different substances usually have different masses
- _____ 2 Describe that in a chemical change new substances are formed with different properties than the original substance (e.g., rusting, burning).
- _____ 3 Describe that in a physical change (e.g., state, shape, and size), the chemical properties of a substance remain unchanged.
- _____ 4 Describe that chemical and physical changes occur all around us (e.g., in the human body, cooking and industry).
- B** In simple cases, describe the motion of objects and conceptually describe the effects of forces on an object.
- C** Describe renewable and nonrenewable sources of energy (e.g., solar, wind, fossil fuels, biomass, hydroelectricity, geothermal and nuclear energy) and the management of these sources.
- _____ 5 Explain that the energy found in nonrenewable resources such as fossil fuels (e.g., oil, coal and natural gas) originally came from the sun and may renew slowly over millions of years.
- _____ 6 Explain that energy derived from renewable resources such as wind and water is assumed to be available indefinitely.
- _____ 7 Describe how electric energy can be produced from a variety of sources (e.g., sun, wind and coal).
- _____ 8 Describe how renewable and nonrenewable energy resources can be managed (e.g., fossil fuels, trees and water).

- D** Describe that energy takes many forms, some forms represent kinetic energy and some forms represent potential energy; and during energy transformations the total amount of energy remains constant.

Science and Technology Standard

- A** Give examples of how technological advances, influenced by scientific knowledge, affect the quality of life.

- _____ 1 Explain how technology influences the quality of life.
- _____ 2 Explain how decisions about the use of products and systems can result in desirable or undesirable consequences (e.g., social and environmental).
- _____ 3 Describe how automation (e.g., robots) has changed manufacturing including manual labor being replaced by highly skilled jobs.

Science and Technology Standard

- _____ 4 Explain how the usefulness of manufactured parts of an object depends on how well their properties allow them to fit and interact with other materials.

- B** Design a solution or product taking into account needs and constraints (e.g., cost, time, trade-offs, properties of materials, safety and aesthetics).

- _____ 5 Design and build a product or create a solution to a problem given one constraint (e.g., limits of cost and time for design and production, supply of materials and environmental effects).

Scientific Inquiry Standard

- A** Explain that there are differing sets of procedures for guiding scientific investigations and procedures are determined by the nature of the investigation, safety considerations and appropriate tools.

- _____ 1 Explain that there are not fixed procedures for guiding scientific investigations; however, the nature of an investigation determines the procedures needed.
- _____ 2 Choose the appropriate tools or instruments and use relevant safety procedures to complete scientific investigations.

- B** Analyze and interpret data from scientific investigations using appropriate mathematical skills in order to draw valid conclusions.

- _____ 3 Distinguish between observation and inference.
- _____ 4 Explain that a single example can never prove that something is always correct, but sometimes a single example can disprove something.

Scientific Ways of Knowing Standard

A Use skills of scientific inquiry processes (e.g., hypothesis, record keeping, description and explanation).

_____ 1 Identify that hypotheses are valuable even when they are not supported.

_____ 2 Describe why it is important to keep clear, thorough and accurate records.

B Explain the importance of reproducibility and reduction of bias in scientific methods.

C Give examples of how thinking scientifically is helpful in daily life.

_____ 3 Identify ways scientific thinking is helpful in a variety of everyday settings.

_____ 4 Describe how the pursuit of scientific knowledge is beneficial for any career and for daily life.

_____ 5 Research how men and women of all countries and cultures have contributed to the development of science.