Science

GRADE 6

*** Indicates Power Standard**

At the end of the school year, students will be able to...

GOAL 11 Inquiry

(Integrated into the whole year) ***Understand the processes of scientific inquiry and technological design to investigate questions, conduct experiments and solve problems.***

STANDARD A

Know and apply the concepts, principles and processes of scientific inquiry.

INTRODUCTION TO SCIENCE (Life Science Unit in Holt Text)

_____ Formulate a hypothesis and discuss real world examples.
_____ Describe the steps in the scientific method and how to design a controlled experiment.
_____ *Construct charts, graphs and visualizations to display data.
_____ Give examples of models and how they are similar and different from what they represent.
_____ Identify tools scientists use to collect data.
_____ Use measuring equipment with correct units.
_____ Interpret, draw conclusions and report the results of a scientific experiment.

STANDARD B

Know and apply the concepts, principles and processes of technological design.

_____ Formulate a design problem and describe how to determine whether a solution is successful.
_____ Compare two design plans based on a given criteria.
_____ *Build and test a prototype using available materials.
_____ Evaluate test results based on the established criteria.
_____ Report the design, the process and test results in relation to the criteria.

GOAL 12

Understand the fundamental concepts, principles and interconnections of the life, physical and earth/space sciences.

STANDARD A

Know and apply concepts that explain how living things function, adapt and change.

STANDARD B

Know and apply concepts that describe how living things interact with each other and with their environment.

CELLS, HEREDITY AND CLASSIFICATION

_____ *Compare and contrast plant and animal cells, and prokaryotic and eukaryotic cells.
_____ *Describe the structure and function of cell organelles.
_____ Compare and contrast diffusion, osmosis, passive and active transport.
_____ *Describe general characteristics of photosynthesis and cellular respiration.
_____ Identify what the genetic experiments of Mendel tell us about heredity (including genotype and phenotype).
_____ *Use a Punnet square to predict the probability of possible genotypes in offspring.
_____ Describe general aspects of cellular reproduction.
_____ Recognize the basic function of a DNA molecule.
_____ Explain how fossils are formed.
_____ *Find evidence that shows how organisms have changed over time.
_____ Explain how organisms are classified and how dichotomous keys help in identifying organisms.

STANDARD C

Know and apply concepts that describe properties of matter and energy and the interactions between them.

Unit V INTRODUCTION TO MATTER

_____ *Compare and contrast physical and chemical properties of matter.
_____ Explain the metric units of measurement and devices for measuring length, mass and volume.
_____ *Compare and contrast the properties and phase changes of solids, liquids and gases.
_____ Describe factors that affect how gases behave.
_____ *Compare and contrast elements, compounds and mixtures.
_____ Identify characteristics and examples of solutions.
_____ Explain how models of the atom have changed as scientists have discovered new information.
_____ *Identify subatomic particles and describe terms used to compare atoms (i.e. atomic number, atomic mass and mass number).
_____ Identify the chemical symbols for common elements and explain the organization of the periodic table.
_____ *Describe characteristics of elements in major groups of the periodic table.

STANDARD E

Know and apply concepts that describe the features and processes of Earth and its resources.

STANDARD F

Know and apply concepts that describe the composition and structure of the universe and the Earth's place in it.

EARTH'S CHANGING SURFACE

_____ *Compare latitude and longitude; true and magnetic north; and describe how a compass is used to find directions on Earth.
_____ Recognize how a map is a model and describe the information that should be shown on a map.
_____ Explain how a topographic map shows surface features and how to read contour lines.
_____ *Describe factors that affect mechanical and chemical weathering.
_____ Compare and contrast factors that affect the rate of weathering.
_____ *Identify sources, properties and types of soil, how it is affected by climate and methods of preventing soil damage and loss.
_____ Identify ways waves affect a shoreline.
_____ *Describe the process of wind erosion and deposition.
_____ *Describe types of glaciers, ways in which they move, and how they change the Earth.
_____ Explain the role of gravity in erosion and deposition.

WEATHER AND CLIMATE

_____ *Describe characteristics of the atmosphere and how energy is transferred within it.
_____ Explain how wind patterns are formed.
_____ Identify sources and effects of air pollution.
_____ *Describe the process of the water cycle.
_____ *Identify how air masses form fronts and how they affect the weather.
_____ *Describe types of severe weather including thunderstorms, tornados and hurricanes.
_____ Recognize tools to measure weather and discuss how the weather is predicted.
_____ *Explain the difference between weather and climate and identify factors that affect climate.
_____ Compare and contrast the major biomes.
_____ Identify how the Earth's climate has changed over time, including the cause and consequences of the Greenhouse Effect.

GOAL 13

Understand the relationships among science, technology and society in historical and contemporary contexts.

STANDARD A

Know and apply the accepted practices of science.

_____ *Demonstrate lab safety procedures and accepted practices of science.
_____ Describe risks associated with natural hazards (e.g. tornados, hurricanes, thunderstorms) and chemical hazards (e.g. pollutants in air, water, soil and food).
_____ Identify that science influences society insofar as its theories enter into people's everyday thinking and affect how they understand themselves and the world they live in.
_____*Identify equipment for measuring in the laboratory and use correct metric units.

STANDARD B

Know and apply concepts that describe the interactions between science, technology and society.

_____ Explain how technology can help scientists in a variety of ways.
_____ *Describe the contributions of scientists of different ethnic and gender groups.
_____ Describe how specific scientific knowledge would be needed for various careers.
_____ *Identify science-related careers an the skills/education needed for them.