

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

GRADE 5

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.

- _____ Formulate questions on a specific science topic and choose the steps needed to answer the question.
- _____ Collect data for investigations using scientific process skills including observing, estimating, measuring.
- _____ Construct charts and visualizations to display data.
- _____ Use data to produce reasonable explanations.
- _____ Report and display the results of individual and group investigations.

*Collect data for investigations using scientific process skills including observing, estimating and measuring.

STANDARD B

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

- _____ *Identify a design problem and propose possible solutions.
- _____ Develop a plan, design and procedure to address the problem identifying constraints (e.g., time, materials, technology).
- _____ Build a prototype of the design using available tools and materials.
- _____ Test the prototype using suitable instruments, techniques and quantitative measurements to record data.
- _____ Assess test results and the effectiveness of the design using given criteria and noting possible sources of error.
- _____ Report test design, test process and test results.

GOAL 12 Concepts

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.

UNIT A1 COMPARING LIVING THINGS

- _____ Describe the basic life processes and what living things are made of (e.g., cells, tissues, organs, systems).
- _____ Describe the way scientists classify living things.
- _____ Compare and contrast vertebrates and invertebrates.
- _____ Compare and contrast types of plants (e.g., mosses, ferns, conifers and flowering plants).

*Describe the way scientists classify living things.

UNIT A2 REPRODUCTION and CHANGE

- _____ Describe how cells divide and how organisms grow and reproduce.
- _____ Identify how traits are passed on to their offspring.
- _____ *Explain how traits are passed on through genes and chromosomes.
- _____ Identify the effect of dominant and recessive genes.

UNIT A3 ADAPTATIONS

- _____ Identify structural and behavioral adaptations and how they help organisms.
- _____ Identify adaptations for living in water and on land.
- _____ Identify adaptations for climate (cold, hot and dry) and seasons.
- _____ *Describe how organisms become adapted to their environment.

UNIT A4 ECOLOGY

- _____ Identify the parts of an ecosystem.
- _____ Identify the interactions in a food chain and web.
- _____ Describe how living things get energy (e.g., role of producers and consumers).
- _____ *Identify natural cycles in an ecosystem (e.g., carbon dioxide, nitrogen, water cycles).

STANDARD C

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

UNIT B1 CLASSIFYING MATTER

- _____ Define terms "element" and "atom" and describe how elements are classified on the periodic table.
- _____ Compare and contrast mixture and solutions.
- _____ Describe how atoms form molecules and what simple compounds are made of.
- _____ Identify physical properties of materials and how materials can be changed physically.
- _____ Identify chemical properties and how matter can be changed chemically.
- _____ *Define the terms "element" and "atom" and describe how elements are classified on the periodic table.

UNIT B3 FORMS OF ENERGY

- _____ Define kinetic and potential energy and describe how they interact.
- _____ Identify how radiant energy moves and how it is used.
- _____ Classify types of energy and how energy changes form.
- _____ *Identify how sound energy moves and how it is used.

UNIT B4 ELECTRICAL ENERGY

- _____ *Identify how electrons cause objects to attract and repel and how they flow in a circuit.
- _____ Describe how electricity is produced to use in the home.
- _____ Identify how electricity is measured and how it is used in the home.

STANDARD D

Know and apply concepts that describe force and motion and the principles that explain them.

UNIT B2 INVESTIGATING MOTION

- _____ *Identify terms to measure motion (speed and velocity).
- _____ Describe how gravity and friction affect motion.
- _____ Define inertia and the way that forces which work in pairs affect motion.

STANDARD E

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

STANDARD F

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

UNIT C1 THE CHANGING EARTH

- _____ Describe how weathering and erosion have changed the Earth.
- _____ *Identify the Earth's layers.
- _____ Describe the theory of plate tectonics and events caused by movement.
- _____ Identify ways that rocks and fossils indicate how the Earth has changed.

UNIT C2 THE EARTH'S RESOURCES

- _____ *Compare and contrast renewable and nonrenewable resources.
- _____ Describe how to protect water resources.
- _____ Describe how to protect land resources.

UNIT C3 CLIMATE

- _____ Identify how water changes state and what happens in the water cycle.
- _____ *Describe how land and water affect climate.
- _____ Describe how the sun interacts with the Earth to cause climate.
- _____ Identify things that make the climate change.

UNIT C4 ASTRONOMY

- _____ Identify and describe objects in the solar system.
- _____ Compare sun, stars, galaxies and constellations.
- _____ *Describe how scientists use instruments to study planets and stars.

GOAL 23 Human Body

Understand human body systems and factors that influence growth and development.

STANDARD A

Describe and explain the structure and function of the human body systems and how they interrelate.

STANDARD B

Explain the effects of health-related actions on the body systems.

STANDARD C

Describe factors that affect growth and development.

UNIT D1 RESPIRATION and EXCRETION

____ *Describe how the body takes in and uses oxygen (respiratory system).

____ Identify how the body produces and gets rid of wastes (excretory system).

UNIT D2 LIVING A HEALTHY LIFE

____ *Describe how communicable diseases are spread, how to defend against them, and how to treat them.

____ Identify diseases that are non-communicable and how they can be treated and controlled.

____ Describe how to live a healthy lifestyle (e.g., injury prevention, diet, exercise, avoidance of drugs and alcohol).

GOAL 13 Connections

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

STANDARD A

Know and apply the accepted practices of science.

____ *Demonstrate ways to avoid injury when conducting science activities (e.g., wearing goggles, fire extinguisher use).

____ Explain why similar investigations may not produce similar results.

____ Explain why keeping accurate and detailed records is important.

STANDARD B

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

____ *Explain how technology is used in science for a variety of purposes (e.g., sample collection; storage and treatment; measurement; data collection; storage and retrieval; communication of information).

____ Describe the effects on society of scientific and technological innovations (e.g., antibiotics, steam engine, digital computer).

____ Identify and explain ways that science and technology influence the lives and careers of people.

____ Compare the relative effectiveness of reducing, reusing and recycling in actual situations.

____ Identify and explain ways that technology changes ecosystems (e.g., dams, highways, buildings, communication networks, power plants).

____ Analyze how specific personal and societal choices that humans make affect local, regional and global ecosystems (e.g., lawn and garden care, mass transit).