

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

GRADE 4

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 a question on a specific science topic and list the steps needed to answer the question.
- _____ Collect data for investigation using a variety of process skills.
- _____ Construct charts, graphs and visualizations to display data.
- _____ Use data to produce logical explanations.
- _____ Describe individual and group investigations in oral and written reports.

STANDARD B

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

- _____ When given a design problem, describe how to solve the problem.
- _____ Propose a design to solve a problem based on given criteria.
- _____ Build a prototype of the design using available tools and materials.
- _____ Test the design using given instruments, techniques and quantitative measurement methods.
- _____ Assess the effectiveness of test results and solutions using given criteria and noting limitations in procedures.
- _____ Report the design, the process and test results in relation to established criteria.

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 1 THE IMPORTANCE OF PLANTS

- _____ Describe that all plants have common characteristics such as the same parts and the ability to make food.
- _____ Identify the structure and function of roots, leaves and stems.
- _____ Identify how plants make food and produce oxygen through photosynthesis.

UNIT 2 PLANT REPRODUCTION and RESPONSE

- _____ Identify the structure and life cycle of seedless and seed plants.
- _____ Describe the way plants with seeds reproduce; identify plant behaviors and adaptations.

UNIT 3 DESCRIBING ANIMALS

- _____ Identify that all animals have certain basic characteristics.
- _____ Describe how animals without backbones can be classified into many smaller groups based on their characteristics.

UNIT 4 SEE HOW THEY WORK

- _____ Identify how organ systems work together to keep animals alive.
- _____ Explain how animals reproduce and develop in many interesting ways.
- _____ Identify a variety of characteristics that help animals survive.

STANDARD C

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

UNIT 5 DESCRIBING MATTER

- _____ Explain how material can be described and classified by its characteristics.
- _____ Identify how matter can be measured in different ways.
- _____ Describe how matter is made of tiny particles that can be classified, mixed and combined. Identify that density is the cause of layering in salt solutions.

UNIT 6 ENERGY and CHANGE

- _____ Identify how matter can be changed in two basic ways.
- _____ Describe how heat travels and affects matter in different ways.

UNIT 7 MAKING and USING ELECTRICITY

- _____ Explain how lightning and rubbed balloons are both examples of static electricity.
- _____ Explain how electricity needs a complete path along which to travel.
- _____ Describe how electricity and magnetism are related.
- _____ Identify the different ways to make electricity.
- _____ Describe how electrical energy changes into many other forms of energy.

STANDARD D

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

UNIT 8 WORK and MACHINES

- _____ Describe how work is a product of a force changing the motion of an object.
- _____ Explain how machines make work easier by applying the direction of force.
- _____ Describe how simple and compound machines have been used since ancient times to make work easier.

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 9 INTERPRETING EVIDENCE IN ROCKS

- _____ Describe the properties of various rocks.
- _____ Describe things that fossils tell us about the past.

UNIT 10 LEARNING ABOUT EARTH

- _____ Explain how glaciers play a large role in shaping Earth's surface.
- _____ Describe what soil is and factors that affect it.

UNIT 11 WATER SOURCES and USES

- _____ Describe the water cycle and how it affects us daily.
- _____ Explain how the ocean moves in ways that affect the weather, the climate, the land and living things.
- _____ Identify sources of water, its different forms and how it is used and conserved.

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 12 MOVING ABOUT

- _____ Describe how the human body is supported by a skeleton.
- _____ Identify how muscles work together to move bones.

UNIT 13 ALCOHOL, TOBACCO, DRUGS

- _____ Describe how alcohol and tobacco have a variety of effects on the body.
- _____ Explain how medicines and other drugs have a variety of effects on the body and should only be taken from a trusted adult.

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.
- _____ Describe what could cause different results from following the same procedure.
- _____ Accurately record and report observations.

STANDARD B

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

- _____ Explain how technology is used in science for a variety of purposes.
- _____ Explain how scientific discoveries and technological innovations have changed people's lives.
- _____ Describe science and technology related careers and describe the background needed for these positions.
- _____ Describe whether reducing, reusing or recycling would be beneficial for a given situation.
- _____ Describe ways that technology changes an ecosystem.
- _____ Investigate the history of a technological advancement and make predictions about the future development.