

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.**

- \_\_\_\_\_ Formulate a question on a specific science topic and list the steps needed to answer the question.
- \_\_\_\_\_ Collect data for investigations using a variety of process skills.
- \_\_\_\_\_ \*Construct charts, graphs, and visualizations to display and interpret data.
- \_\_\_\_\_ Use data to display 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 A1 PLANT STRUCTURE and FUNCTION**

- \_\_\_\_\_ Describe ways to group plants (e.g., make seeds vs. don't make seeds).
- \_\_\_\_\_ \*Identify structure and function of parts of a flower.
- \_\_\_\_\_ Describe how flowers make seeds and fruits.
- \_\_\_\_\_ Describe the life cycle of flowering plants.

**UNIT A2 ANIMAL STRUCTURE and FUNCTION**

- \_\_\_\_\_ Describe ways that animals are alike and different (e.g., vertebrae and invertebrae).
- \_\_\_\_\_ Identify, compare, and contrast animals with backbones (e.g., fish, amphibians, reptiles, birds, mammals).
- \_\_\_\_\_ \*Compare similarities and differences of young animals to their parents.

**UNIT A3 ENERGY IN ECOSYSTEMS**

- \_\_\_\_\_ Distinguish between living and nonliving things in an ecosystem and habitat.
- \_\_\_\_\_ \*Explain the concept of food chains and webs and the related classifications of plants and animals (e.g. consumers, decomposers, producers, herbivores, carnivores and omnivores).

**UNIT A4 SURVIVING IN THE ENVIRONMENT**

- \_\_\_\_\_ Describe physical features and behaviors that help animals survive.
- \_\_\_\_\_ Identify ways that changes in the environment and human impact affect the survival of plants and animals.
- \_\_\_\_\_ Identify ways that some living things become endangered or extinct.
- \_\_\_\_\_ \*Know that the world contains many kinds of environments and that different animals and plants are suited to live in different environments.
- \_\_\_\_\_ Identify the basic classifications of animals based on how they interact with their environment (e.g. diurnal, nocturnal, warm blooded, cold blooded, herbivores and carnivores).

## STANDARD C

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

### UNIT B1 MEASURING MATTER

\_\_\_\_ \*Identify that an increase in temperature generally causes things to expand, and that a decreases in temperature causes things to contract and that particles move more slowly in a solid than they do in a liquid or a gas.

### UNIT B3 ELECTRICITY and MAGNETISM

\_\_\_\_ Recognize what is attracted to magnets and how poles of different magnets attract or repel.

\_\_\_\_ Identify materials that are conductors and insulators.

\_\_\_\_ Describe the effects of static electricity and how charges can be built up and the interaction of like and unlike charges.

\_\_\_\_ Identify that electrical energy can be converted into other types of energy.

\_\_\_\_ \*Understand that current electricity is different from static electricity and identify the how a a circuit can be constructed to make a bulb light.

### UNIT B4 LIGHT and SOUND

\_\_\_\_ \*Describe how lighter colors reflect more light, darker colors reflect less light, and the color of an object is determined by what kind of light is reflected as opposed to what light is absorbed.

\_\_\_\_ Recognize that white light can be broken all the colors of the rainbow by a prism.

\_\_\_\_ Identify that light travels in a straight line and can be reflected, refracted, transmitted and absorbed by matter.

## STANDARD D

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

### UNIT B2 FORCE and MOTION

\_\_\_\_ \*Define force and describe what occurs when balanced and unbalanced forces act on an object.

\_\_\_\_ Identify the basic forces, such as friction, magnetism, and gravity and which is operative in a simple scenario.

\_\_\_\_ Identify the types of simple machines and how they function and identify the which machine is suited for accomplishing a simple task.

\_\_\_\_ Identify what is necessary for equilibrium to exist (e.g. balanced weights on levers or pulleys).

## 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 MEASURING WEATHER

\_\_\_\_ \*Explain how temperature, air pressure, wind speed and wind direction are measured.

\_\_\_\_ Describe factors that affect weather measurement.

\_\_\_\_ Describe the water cycle and what causes clouds and precipitation.

\_\_\_\_ Describe how meteorologists predict the weather.

### UNIT C2 THE MAKEUP OF THE EARTH

\_\_\_\_ Identify landforms on the Earth and how the Earth is changed by volcanoes and earthquakes.

\_\_\_\_ Describe the properties of minerals, rocks and soil and how they are formed.

\_\_\_\_ Describe how weathering and erosion affect the Earth's features.

\_\_\_\_ \*Recognize the differences between renewable & nonrenewable resources and the sources of fossil fuels.

\_\_\_\_ Identify which everyday materials decompose more slowly (e.g. plastics and glass decompose slower than metals, wood or food).

### UNIT C3 EXPLORING THE OCEANS (present after ISAT)

\_\_\_\_ Describe how scientists map the ocean floor and what it has shown us.

\_\_\_\_ Describe saltwater habitats and how coral reefs are affected by humans.

\_\_\_\_ Identify ways that scientists explore the ocean depths.

\_\_\_\_ Describe how currents, tides and waves affect the Earth.

### UNIT C4 MOVEMENTS IN THE SOLAR SYSTEM

\_\_\_\_ Identify which objects in the universe produce or reflect light.

\_\_\_\_ \*Identify positions of the earth, sun and moon in the various types of eclipses and phases of the moon.

\_\_\_\_ Identify the order of the planets from the sun, that planets require different periods of time to complete their orbits, and the effect of planet size on the weight of an object.

\_\_\_\_ Explain how the tilt of the Earth and rotation on its axis causes seasons and day and night.

\_\_\_\_ Describe how constellations appear to change positions due to the movement of the Earth.

\_\_\_\_ Explain how the tilt of the Earth and rotation on its axis causes seasons and day and night.

## GOAL 23 Human Body

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

### STANDARD A

Describe and explain the structure and functions 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 THE DIGESTIVE, CIRCULATORY and NERVOUS SYSTEMS

\_\_\_\_ \*Describe how the parts of the digestive, circulatory, and nervous systems work.

## UNIT D2 KEEPING YOUR BODY SYSTEMS HEALTHY

\_\_\_\_ \*Describe how to keep the digestive, circulatory and nervous systems healthy.

## 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.**

- \_\_\_\_ Identify basic safety equipment and safety procedures in conducting science activities.
- \_\_\_\_ Explain why similar results are expected when procedures are done the same way and that results should be reproducible.
- \_\_\_\_ Recognize that scientists accept a theory that is supported by experiments until it is disproved or improved upon.
- \_\_\_\_ \*Recognize that scientists share results so they can build upon what they learn from others.
- \_\_\_\_ Recognize that one should find an explanation for conflicting results even if it means repeating the experiment many times

### STANDARD B

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

- \_\_\_\_ Identify occupations in science and the important contributions men and women have made to science and technology.
- \_\_\_\_ Identify ways that technology has changed local, national or global environments.
- \_\_\_\_ Recognize that measuring tools result in greater accuracy than making estimates.
- \_\_\_\_ \*Identify basic science instruments and their function (e.g. ruler, balance, graduated cylinder, clock, stopwatch, thermometer, microscope and telescope).