

# **MOVE TO LEARN GLOBAL SCHOOL**

## **GRADE 4 CURRICULUM - SCIENCE**

### **UNIT 1**

### **OUR BODIES AND OUR SENSES**

#### **Muscle and Bone Concepts**

- Muscles and bones work together to move the body
- Muscles contract and release
- Muscle tissue is soft tissue
- There are voluntary and involuntary muscles in the body
- Bone tissue is hard tissue
- Bones cannot move by themselves

#### **Skin Concepts**

- Skin is an organ that protects the body
- Skin is made up of epithelial and connective tissue, thick tissues that keep the skin from getting damaged
- There are three layers of skin; the hypodermis, dermis and epidermis
- A callus is tough, thick tissue that keeps the skin from getting damaged
- Sebum is an oily substance that keeps your skin from absorbing too much water

#### **Eyesight Concepts**

- The eye takes in light and sends signals to the brain, which tells us what we are looking at
- The parts of the eye we can see are the sclera, iris, and pupil
- Light reflects off objects and travels in a straight line into the eye
- Light enters the eye through the cornea to the pupil
- The lens refracts light to the retina
- The retina changes images into nerve signals that travel through the optic nerve to the brain

#### **Hearing Concepts**

- Objects make sound by vibrating to produce sound waves
- The faster an object vibrates, the higher the pitch of the sound
- The pinna collects sound waves and helps to determine the direction of sound
- The middle ear turns sound waves into vibrations that are sent to the inner ear
- The inner ear translates vibrations into nerve signals the brain can interpret as sound

## UNIT 2

## SHAPING THE EARTH

### Weathering and Erosion Concepts

- Weathering and erosion helps to shape our planet's surface
- Over millions of years, layers of sediment become layers of rock
- Erosion and weathering helped to form the Grand Canyon

### Glaciers Concepts

- Glaciers are large sheets of ice that are found in places that are cold year-round
- Glaciers are moving objects that can advance or retreat
- Movement of glaciers has helped to shape the land
- Glaciers shape the land by erosion
- Glaciers can leave behind moraines and basins

### Earthquakes Concepts

- Earth's crust is made up of plates
- When the plates move suddenly, an earthquake happens
- Earthquakes happen along the boundaries of plates
- Plates interact along their boundaries in different ways
- Scientists use different tools to measure and classify earthquakes

### Volcano Concepts

- There are three types of volcanoes; active, dormant, and extinct
- Most of the world's volcanoes are located along the edge of the Pacific Ocean
- Hot molten rock beneath Earth's crust is called magma
- Hot molten rock after it erupts from a volcano is called lava
- Volcanoes can erupt violently or slowly and steadily

## UNIT 3

## WAVES

### What is a Wave? Concepts

- A wave is a disturbance that moves through a medium
- A wave carries energy from place to place
- Energy from the sun travels to Earth in waves
- Waves of the same type can differ in wavelength
- Waves of the same type can differ in amplitude
- We can hear the amplitude of sound waves

### Waves in the Water Concepts

- Most waves are made when wind disturbs water
- Waves carry energy forward, but not water
- Waves in shallow water behave differently than deep-water waves

- Tsunami waves are created by earthquakes
- People cannot eliminate natural hazards like tsunamis, but they can take steps to reduce their impact
- Engineers are working to harness the energy in waves

### **Sound Waves Concepts**

- Sound waves result when an object vibrates
- Sound waves are made up of compressions and rarefactions of the air
- The faster an object vibrates, the greater its frequency
- A high-pitched sound has a higher frequency than a low-pitched sound
- Acoustics is the study of sound and how it works
- A variety of science careers make use of acoustics

### **Digital Waves Concepts**

- Digitalized information can be sent over long distances
- A telephone converts the sound waves of a human voice to signals that can be sent along a wire
- High-tech devices such as cellphones can receive and decode information
- Digitalized information can be transmitted over long distances
- High-tech devices such as computers can receive and decode information

## **UNIT 4 ENERGY**

### **What is Energy? Concepts**

- Energy is the ability to do work
- Energy can be neither created or destroyed
- Potential energy is stored energy
- Kinetic energy is the energy of motion
- Faster objects have more kinetic energy
- Energy can be transferred from place to place
- Energy is transferred through sound, light, and electric current

### **Heat Energy Concepts**

- Heat energy flows from warm objects to cool ones
- When matter heats up, its molecules move faster
- Conduction is the transfer of heat when there is a difference in temperatures between objects
- A conductor is matter that transfers heat easily, such as metal
- Convection is the transfer of heat through a liquid or gas, causing currents
- Radiation is the transfer of heat energy through waves

## **Electrical Energy Concepts**

- Turbines change kinetic energy of wind and water into electrical energy
- Hydroelectricity is created from the power of water
- A circuit is a closed path through which electricity can flow
- Electric current causes heat
- Electric current creates light
- An LED display has bulbs in an electrical circuit

## **Light Energy Concepts**

- Visible light waves allow us to see the world around us
- Light travels through empty space at 186,000 miles per second
- Light passes through transparent objects
- Translucent objects let some but not all light to pass through
- Light cannot pass through opaque objects
- Light is absorbed by opaque objects
- Shiny objects reflect light
- Some objects refract, or bend, light