



STRAND 1: PHYSICAL SCIENCE

Unit Title: Matter

Enduring Understandings:

- Matter is composed of tiny particles.
- Matter exists in different states and can change from one state to another.
- Substances have properties that can be observed and measured.
- When substances are mixed, new substances may be formed.
- The total amount of matter does not change when substances are mixed.

Lessons:

- What Is Matter?
- What Are Atoms?
- States of Matter
- Measuring Mass and Volume
- Properties of Matter
- Conductors and Insulators
- What Are Chemical Reactions?
- Mixtures and Solutions
- Conservation of Matter

Unit Title: Forces and Motion

Enduring Understandings:

- Forces affect the motion of objects.
- Some forces act between objects that are in contact with one another.
- Some forces can act between objects that are not in contact.
- Motion can be described and sometimes predicted.
- People can apply information about forces and motion to solve problems and make tasks easier.

Lessons:

- What Are Forces?
- Balanced and Unbalanced Forces
- What Is Friction?
- What Are Electric and Magnetic Interactions?
- Gravitational Force
- Patterns of Motion
- Changes in Movement
- Using Magnets to Solve Problems
- Electromagnets
- What Are Simple Machines?
- What Are Compound Machines?

Unit Title: Energy

Enduring Understandings:

- Heat, sound, light, and electric currents transfer energy from place to place.
- Food contains energy needed by living things.
- An object's energy is related to its speed of motion.
- Energy is transferred between objects when they collide.
- Devices can convert, or change, energy from one form to another.

Lessons:

- Identifying Forms of Energy
- Introduction to Sound Energy
- Introduction to Light Energy
- Heat
- Electric Currents and Circuits
- Energy in Food
- Speed and Energy
- Energy Transfer
- Energy and Colliding Objects
- Energy Conversions

Unit Title: Waves and Information Transfer

Enduring Understandings:

- Waves can cause motion.
- Waves have properties, such as amplitude and wavelength.
- Waves interact with matter in a variety of ways.
- When light waves are reflected from an object and enter the eye, the object can be seen.
- People can use patterns to transfer information from one place to another.

Lessons:

- What Are Waves?
- What Is Light?
- Mirrors and Reflection of Light
- Patterns Transfer Information

STRAND 2: LIFE SCIENCE

Unit Title: Structures and Processes of Living Things

Enduring Understandings:

- Plants and animals have life cycles.
- Plants and animals have a variety of structures and processes that support survival and other functions.
- There is a hierarchical organization of structures in the human body.
- Animals take in information through their senses and respond to that information.
- Plants and animals respond to seasonal changes in the environment.

Lessons:

- Life Cycles of Flowering Plants
- Plant Structures
- Flowers
- How Do Flowering Plants Reproduce?
- Materials for Plant Growth
- Plant Responses
- Comparing Plant and Animal Structures
- Life Cycles of Animals
- Animal Structures
- The Heart
- The Brain
- The Skin
- The Lungs
- The Stomach
- What Are Cells?
- How Is the Human Body Organized?
- Human Body Systems
- Animal Senses
- Animal Responses
- Responding to Seasonal Changes

Unit Title: Ecosystems

Enduring Understandings:

- Ecosystems have living and non-living components.
- Living things meet their needs in their ecosystems.
- Living things interact with the living and non-living parts of their ecosystems.
- Energy flows through ecosystems, and this energy flow can be modeled.
- Changes in ecosystems and environments affect the living things found there.

Lessons:

- Ecosystems
- Ocean Ecosystems
- Changes in the Environment
- Group Behavior
- Producers, Consumers, and Decomposers
- Food Chains and Food Webs
- Plant Growth and the Environment
- Microorganisms

Unit Title: Traits and Behaviors

Enduring Understandings:

- Traits can be inherited from parents and affected by the environment.
- In a group of similar organisms, there is variation among individuals.
- Behaviors can be inherited or learned.

Lessons:

- What Is a Trait?
- Traits and the Environment
- Instincts and Learned Behaviors

Unit Title: Evolution and Classification

Enduring Understandings:

- Fossils provide evidence of Earth's past environments and organisms.
- Organisms have variations that affect their survival.
- When a type of living thing cannot adapt to changes in the environment, it might become extinct.
- Classification systems are used to organize information about life on Earth.

Lessons:

- Types of Fossils and How They Form
- Fossils and Evidence of Life
- Understanding Earth's Changes
- Extinct Plants and Animals
- Survival and Differences Among Organisms
- Animal Habitats
- Classification of Organisms
- Classifying Plants
- Comparing Animals

STRAND 3: EARTH SCIENCE

Unit Title: Earth and Space

Enduring Understandings:

- Earth is one of the eight planets in the solar system.
- The solar system contains many objects, including planets, moons, asteroids, comets, meteoroids, and the Sun, which is a star.
- Motions of the objects in the solar system cause patterns of seasonal and daily changes that can be observed from Earth.

Lessons:

- Earth, the Sun, and the Moon
- How Earth Moves
- Patterns of Daily Change
- Comets, Asteroids, and Meteoroids
- The Planets
- What Are Moons?
- The Sun
- The Phases of the Moon
- Moon Phases and Tides
- What Are Stars?
- Seasonal Changes in Stars
- What Are Galaxies?

Unit Title: Earth's Systems and Resources

Enduring Understandings:

- Weather and climate result from interactions of Earth's systems.
- Earth's features and landforms are shaped by many processes.
- The water cycle is driven by energy from the Sun.
- Earth's soil, rocks, minerals, air, and water have distinct characteristics and are important for life on Earth.

Lessons:

- What Is Weather?
- Weather Data
- Seasons and Weather
- Weather-Related Hazards
- What Is Climate?
- Weathering and Erosion
- Patterns of Earth's Features
- Earth's Land Features
- Natural Hazards
- Earth's Spheres
- Interactions of Earth's Spheres
- Understanding the Water Cycle
- Where Is Earth's Water Found?
- Soil, Rocks, Air, and Water
- Soil and How It Is Formed
- What Is the Rock Cycle?
- What Are Minerals?

Unit Title: Earth and Human Activity

Enduring Understandings:

- Human activities affect Earth.
- The use and conservation of energy resources have major impacts on Earth.
- Individuals and communities can take actions to protect Earth.

Lessons:

- How Humans Change the Environment
- Renewable Energy Resources
- Nonrenewable Energy Resources
- How Do Fossil Fuels Form?
- Conservation of Energy Resources
- Protecting Earth
- What Is Recycling?

STRAND 4: ENGINEERING DESIGN

Unit Title: Engineering Design

Enduring Understanding:

- The design process involves a set of steps, including defining a problem, developing possible solutions, and optimizing the design.

Lessons:

- What Is the Design Process?



STRAND 1: PHYSICAL SCIENCE

Unit Title: Structure and Properties of Matter

Enduring Understandings:

- Matter is composed of tiny particles called atoms, which can combine in many ways.
- Synthetic materials are produced using natural materials.
- Adding or removing thermal energy changes the motion of the particles that make up matter.
- Matter has properties that can be used to identify and classify materials.

Lessons:

- The Structure of Matter
- The Structure of Atoms
- Elements and Compounds
- Synthetic Materials
- Thermal Energy and States of Matter
- How Heat Affects Matter
- Substances and Mixtures
- Chemical Symbols and Formulas
- Comparing Properties of Matter
- Density
- Classifying Conductors and Insulators
- Classifying Elements
- The Properties of Water
- Factors that Affect Dissolving
- Acids, Bases, and Salts

Unit Title: Chemical Reactions

Enduring Understandings:

- The reactants and products of a chemical reaction have different properties.
- Mass is conserved when chemical reactions occur.
- Energy changes during chemical reactions can be useful in designed devices.

Lessons:

- Chemical Changes Affect Properties
- Chemical Reactions
- Conservation of Matter in Chemical Reactions
- Chemical Reactions and Energy

Unit Title: Forces and Interactions

Enduring Understandings:

- Forces can cause changes in motion.
- Newton's third law of motion can be applied to solve problems.
- Both the sum of the forces on an object and the object's mass affect its change in motion.
- Electrical, magnetic, and gravitational forces are examples of non-contact forces.
- Evidence supports the existence of fields between objects that are not in contact.

Lessons:

- Forces and Motion
- Newton's First Law
- Newton's Third Law
- Graphing and Describing Motion
- Comparing Simple Machines
- Electric and Magnetic Forces
- Gravitational Interactions
- Fields and Forces

Unit Title: Energy

Enduring Understandings:

- Kinetic energy, mass, and speed are related.
- The amount of potential energy in a system is related to the arrangement of interacting objects in the system.
- Thermal energy transfer can be maximized or minimized.
- Several factors affect the amount of energy transfer needed to change the temperature of matter.
- Energy transfer is related to changes in kinetic energy.
- Energy is conserved when it is transferred or transformed.

Lessons:

- Kinetic Energy
- Potential Energy
- Changes in Kinetic Energy
- Thermal Energy Transfer
- Energy and Temperature Change
- Electrical Circuits
- Energy Transfer in Mechanical Systems
- Conservation of Energy

Unit Title: Waves and Electromagnetic Radiation

Enduring Understandings:

- Waves transfer energy.
- Waves have properties, such as amplitude, wavelength, and frequency.
- Waves interact with materials and objects.
- People use waves to transmit information over a distance.

Lessons:

- Introduction to Wave Properties
- The Speed of Waves in Different Materials
- Light
- The Electromagnetic Spectrum
- Digital and Analog Signals

STRAND 2: LIFE SCIENCE

Unit Title: Structure, Function, and Information Processing

Enduring Understandings:

- All living things are made up of cells.
- Cells have structures that carry out specific functions.
- Cells are the basic level of organization in living things.
- The human body is composed of many interacting subsystems.
- Information gathered by sensory receptors is processed in the brain and can form memories or prompt behavioral responses.
- Organisms can be classified based on their structures and characteristics.

Lessons:

- Cells
- Parts of a Cell
- Osmosis and Diffusion
- Organization of the Human Body
- Sensing Information
- The Human Muscular System
- The Human Respiratory System
- The Human Circulatory System
- The Human Excretory System
- The Human Nervous System
- The Human Immune System
- Body Structure and Symmetry
- Homeostasis
- Cell Division for Growth and Repair
- Meiosis
- Comparing Vascular and Non-vascular Plants
- Using Characteristics to Classify Organisms
- Comparing Organisms

Unit Title: Matter and Energy in Organisms and Ecosystems

Enduring Understandings:

- Photosynthesis plays a role in the movement of matter and energy in ecosystems.
- Food provides the materials, or matter, that is used for the growth of living things.
- In ecosystems, the amount of food and other resources affects individuals and populations.
- Matter cycles in ecosystems.
- Living things are affected by changes in their ecosystems.

Lessons:

- Photosynthesis
- Cellular Respiration
- Materials in Food Are Used for Growth
- Resources in Ecosystems
- Cycles of Matter: Carbon
- Matter and Energy in Food Webs
- Energy Pyramids
- Ecosystems: Impacts of Change
- Primary and Secondary Succession
- Responding to Changes in Ecosystems

Unit Title: Interdependent Relationships in Ecosystems

Enduring Understandings:

- Organisms interact in ecosystems.
- Biodiversity affects ecosystems and the ecosystem services they provide.
- Solutions for maintaining biodiversity can be tested and evaluated.

Lessons:

- Interactions in Ecosystems
- Predators and Prey
- Viruses, Bacteria, Fungi, and Parasites
- Epidemics and Pandemics
- Biodiversity
- Organization of Ecosystems
- Ecological Niches

Unit Title: Growth, Development, and Reproduction of Organisms

Enduring Understandings:

- Structures and behaviors affect the probability of successful reproduction in plants and animals.
- Growth of organisms is affected by both genetic and environmental factors.
- Mutations can affect the structure and function of an organism.
- Sexual reproduction results in offspring with genetic variation; asexual reproduction results in offspring with no variation.
- Models can be used to predict traits of offspring and diagram the inheritance of certain traits.
- Humans influence the inheritance of desired traits in organisms.

Lessons:

- Plant Reproduction
- Animal Behaviors Affect Reproduction
- Growth of Organisms
- Genes, Chromosomes, and Traits
- Mutations
- Reproduction
- Humans Influence the Inheritance of Traits
- Punnett Squares and Pedigrees

Unit Title: Natural Selection and Adaptation

Enduring Understandings:

- The fossil record provides information about the history of life on Earth.
- Evolutionary relationships are revealed by structural similarities and patterns in development.
- Natural selection can cause changes in populations over time.
- Mathematical evidence supports explanations of how natural selection changes populations.

Lessons:

- Patterns in the Fossil Record
- Extinctions
- Inferring Evolutionary Relationships
- Patterns in Development
- Natural Selection
- Understanding Adaptation

STRAND 3: EARTH SCIENCE

Unit Title: Space Systems

Enduring Understandings:

- Eclipses, lunar phases, seasons, and tides occur in patterns.
- Gravity affects the motion of objects in the solar system, including Earth.
- Objects in the solar system can be compared based on their properties.
- The solar system is a part of the Milky Way galaxy, which is just one of the galaxies in the universe.

Lessons:

- Lunar Phases
- Seasons
- Eclipses
- What Causes Tides?
- Motion in Space
- Earth's Rotation
- Characteristics of the Sun
- The Sun's Energy
- The Solar System
- Earth's Unique Properties
- Understanding the Solar System
- Stars
- Galaxies
- The Universe

Unit Title: History of Earth

Enduring Understandings:

- The geologic time scale organizes information about Earth's history.
- Earth's surface has changed over time.
- Evidence is used to find out about Earth's structure and past motions of Earth's plates.

Lessons:

- The Geologic Time Scale
- Measuring the Age of Earth
- Weathering and Other Changes in Earth's Surface
- Volcanoes
- Plate Movements
- Plate Boundaries
- Earth's Layers

Unit Title: Earth's Systems

Enduring Understandings:

- Water on Earth cycles through the geosphere, atmosphere, lithosphere, and biosphere.
- Models can be used to illustrate and analyze the cycling of matter on Earth.
- Earth's resources are not evenly distributed.

Lessons:

- The Earth System and Subsystems
- Heat Transfer in Earth's Systems
- The Rock Cycle
- The Water Cycle
- Natural Resources
- Soil Formation and Its Properties
- Minerals and Their Properties

Unit Title: Weather and Climate

Enduring Understandings:

- The movement and interactions of air masses and ocean currents affect weather and climate.
- Climate change affects Earth in many ways.

Lessons:

- Earth's Atmosphere
- Air Masses and Weather
- Introduction to Climate
- Biomes
- Climate Change
- What Are Greenhouse Gases?

Unit Title: Human Impacts and Natural Hazards

Enduring Understandings:

- Natural hazards can affect people, but technology can help minimize these effects.
- Human impacts on Earth can be monitored and minimized using technology.
- Growth of the human population and increased per-capita consumption of resources affect Earth and its systems.
- Human activity affects watersheds in positive and negative ways.

Lessons:

- Introduction to Natural Hazards
- Natural Disasters Affect Florida
- Monitoring and Minimizing Human Impact
- Resource Management
- Human Impacts on Earth Systems
- Watersheds
- How People Use Water
- How People Depend on Oceans

STRAND 4: ENGINEERING DESIGN

Unit Title: Engineering Design

Enduring Understandings:

- The design process involves a set of steps, including identifying a problem, and testing, modeling, and evaluating solutions.

Lessons:

- Engineering and the Design Process