

TRIMESTER 1
TRIMESTER 2
TRIMESTER 3

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	Project	Designing a Severe Weather Bag	Designing an Animal Sanctuary	Record & Observe Life Cycle of Butterfly	Design & Build a Cart that can stop at a specific location	Create a model of energy transfer or transformation	Create a model showing the cycling of matter in an ecosystem
	Theme	Weather	Plant & Animal Survival	Organisms & Their Habitat	Investigating Forces	Energy Transfer	Energy & Matter in Ecosystems
	Project	Designing a Mini Golf Course	Building a Communication Device	Repurpose/ Design Something New	Research & Create a Presentation on an Endangered Animal	Analyzing the Structure & Function of a Living Thing Research	Investigating Chemical Reactions
	Theme	Pushes & Pulls	Exploring Light & Sound	Properties of Matter	Habitats & Change	Structure & Functions of Living Things	Investigating Matter
	Project	Creating a Model for an Animal, Plant, or Person to live in	Creating a Model showing how the Sun impacts the moon	Record & Create a Travel Journal Based on National Park Virtual Visits	Design a solution to stop hail damage	Model a tool or concept that will reduce the impact of a natural disaster.	Carbon Footprint Research Project
	Theme	Needs of Plants & Animals	Sun, Moon & Stars	Exploring Land & Water	Weather & Climate	Processes That Shape Earth	Solar System & Our Place In IT
		Life Science		Phsycial Science		Earth & Space Science	



Unit 1: Overview

Topics & Vocabulary Terms	Organisms Need and Use Energy: movement, respiration, sensitivity, growth, reproduction, excretion, nutrition, energy, energy transfer, energy transformation, living, photosynthesis, sugar, glucose, metabolism, sunlight, food Plants and Animals: minerals, transpiration, hydroponics, producer, consumer, scavenger, decomposer, organism, chemical energy, herbivore, carnivore, omnivore, scavenger, decomposition Matter Cycles Through Ecosystems: ecosystem, matter, cycling, producers, consumers, decomposers, food chain, food web, balance, species, interactions, energy flow
Projects & Artifacts	Biome Research Project Summary: Students will begin by independently researching an assigned organism. Once their research is complete, they will join classmates with related organisms to determine the biome in which their organisms coexist. As a group, students will collaboratively create a presentation (choosing from a provided list of formats) that illustrates a food web based on their organisms. The presentation must identify and categorize the following roles within their food web: Producers, Consumers, Herbivores, Omnivores, Carnivores, Scavengers, Decomposers
Resources	Core Knowledge: Energy & Matter in Ecosystems [Teacher Guide & Student Reader] STEELS Routine Physical Materials: garlic cloves, water, rulers, clear cups for plant experiments

Unit 2: Overview

Topics & Vocabulary Terms	Investigating Matter: Matter, particles, properties, mass, volume, weight, solid, liquid, gas, evidence, model, measurement, physical change, chemical change, evaporation, condensation, dissolve, mixture, solution, reaction, conserve, gravity, evidence-based argument, precipitation, phase change
Projects & Artifacts	During this unit students will engage in several hands-on physical and chemical change investigations. At the end of the unit, students will draw conclusions based on their observations and discussions.
Resources	Core Knowledge: Investigating Matter [Teacher Guide & Student Reader] STEELS Routine Physical Materials: beakers, balloons, salt, ice, vinegar, baking soda, steel wool, glue, food coloring, borax, plastic cups, scales, measuring spoons.

Unit 3: Overview

Topics & Vocabulary Terms	Astronomy: space systems, solar system, orbit, galaxy, universe, axis, rotation, revolution, apparent brightness, light-year, eclipse, moon phase. Earth's Systems: atmosphere, geosphere, biosphere, hydrosphere, fresh water, salt water, groundwater, water cycle, reservoir, geologic, rock cycle, air pollution, land contamination, carbon footprint.
Projects & Artifacts	Carbon Footprint Project: Students calculate their carbon impact, model system connections, and design realistic lifestyle-based action plans.
Resources	Core Knowledge: Solar System & Our Place In It [Teacher Guide & Student Reader] STEELS Routine Demonstration Tools: yellow balls, inflatable globes, flashlights, moon phase matching cards, green/blue balls, small white balls, meter tape

Unit 1: Energy & Matter in Ecosystems

STAGE 1 | DESIRED RESULTS

Organization for Matter and Energy Flow in Organisms

3.1.5.A Support an argument that plants get the materials they need for growth chiefly from air and water.

Interdependent Relationships in Ecosystems

3.1.5.B Develop a model to describe the movement of matter among plants, animals, decomposers, and the environment.

Transfer

Energy and matter flow through an ecosystem to individual organisms and back to the ecosystem in a continuous cycle.

Meaning

Big Ideas:

- Animals have external and internal sensory receptors that detect different kinds of information that then gets processed by the brain.
- Ecosystems are complex systems that include both living (biotic) and non-living (abiotic) components that interact with each other.

Essential Questions:

- How do organisms detect, process, and use information about the environment?
- How do organisms interact with the living and nonliving environments to obtain matter and energy?

Acquisition

Knowledge:

- I know plants acquire their material for growth chiefly from air and water.
- I understand the food of almost any kind of animal can be traced back to plants. Organisms are related in food webs in which some animals eat plants for food and other animals eat the animals that eat plants.
- I know matter cycles between the air and soil and among plants, animals, and microbes

Skills:

- I can support an argument with evidence, data, or a model.
- I can develop a model to describe phenomena.

STAGE 1 | DESIRED RESULTS

	as these organisms live and die. Organisms obtain gasses, and water, from the environment, and release waste matter.	
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Unit 2: Investigating Matter

STAGE 1 DESIRED RESULTS		
Structure and Properties of Matter 3.2.5.A Develop a model to describe that matter is made of particles too small to be seen. 3.2.5.B Make and communicate observations and measurements to identify materials based on their properties. 3.2.5.C Interpret and analyze data to make decisions about how to utilize materials based on their properties. Chemical Reactions 3.2.5.D Measure and graph quantities to provide evidence that regardless of the type of change that occurs when heating, cooling, or mixing substances, the total weight of matter is conserved. 3.2.5.E Conduct an investigation to determine whether the mixing of two or more substances results in new substances. Types of Interactions 3.2.5.F Support an argument that the gravitational force exerted by Earth on objects is directed down.	Transfer	
	<i>Matter is made up of tiny particles and the arrangement accounts for the matter's properties.</i>	
	Meaning	
	Big Ideas • All forms of matter exist as a result of the combination or rearrangement of atoms. • The atoms of some substances combine or rearrange to form new substances that have different properties. • All forces between objects, regardless of size or direction, arise from only a few types of interactions. • To produce energy typically means to convert some stored energy into a desired form.	Essential Questions: • How do particles combine to form the variety of matter one observes? • How do substances combine or change (react) to make new substances? • How does one characterize and explain these reactions and make predictions about them? • What underlying forces explain the variety of interactions observed? • How do food and fuel provide energy? If energy is conserved, why do people say it is produced or used?
	Acquisition	
	Knowledge: • I know matter of any type can be subdivided into particles that are too small to see, but even then the matter still exists and can be detected by other means. A model showing that gasses are made from matter particles that are too small to see and that are moving freely around in space can explain many observations, including the inflation and shape of a balloon and the effects of air on larger particles or objects.	Skills: • I can use models to describe phenomena. • I can make observations and measurements to produce data to serve as the basis for evidence for an explanation of a phenomenon. • I can measure and graph quantities such as weight to address scientific and engineering questions and problems. • I can conduct an investigation collaboratively to produce data to serve

	• I understand measurements of a variety of properties can be used to identify materials. (Boundary: At this grade level, mass and weight are not distinguished, and no attempt is made to define the unseen particles or explain the atomic scale mechanism of evaporation and condensation.) • I know the amount (weight) of matter is conserved when it changes form, even in transitions in which it seems to vanish. • I understand no matter what reaction or change in properties occurs, the total weight of the substances does not change. (Boundary: Mass and weight are not distinguished at this grade level.) • I know when two or more different substances are mixed, a new substance with different properties may be formed. • I know the gravitational force of Earth acting on an object near Earth's surface pulls that object toward the planet's center. • I understand the energy released from food was once energy from the sun that was captured by plants in the chemical process that forms plant matter (from air and water). • I know food provides animals with the materials they need for body repair and growth and the energy they need to maintain body warmth and for motion. (secondary)	as the basis for evidence, using fair tests in which variables are controlled and the number of trials considered. • I can support an argument with evidence, data, or a model.¹
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Unit 3: Our Solar System & Our Place In It

STAGE 1 | DESIRED RESULTS

The Universe and Its Stars

3.3.5.A Support an argument that differences in the apparent brightness of the sun compared to other stars is due to their relative distances from Earth. (Part C Lesson 10)

Earth and the Solar System

3.3.5.B Represent data in graphical displays to reveal patterns of daily changes in length and direction of shadows, day and night, and the seasonal appearance of some stars in the night sky.

Plate Tectonics and Large-Scale System Interactions

3.3.5.C Develop a model using an example to describe ways the geosphere, biosphere, hydrosphere, and/or atmosphere interact.

The Roles of Water in Earth's Surface Processes

3.3.5.D Describe and graph the amounts of salt water and fresh water in various reservoirs to provide evidence about the distribution of water on Earth.

Human Impact on Earth Systems

3.3.5.E Obtain and combine information about ways individual communities use

Transfer

Earth is one object in a system of objects in space and we can observe these objects reveal predictable patterns of motion. Earth systems are dynamic and interact with each other.

Meaning

Big Ideas:

- We can infer information about stars based on observations we make from Earth.
- Observations of the sky can be explained by predictable patterns of the movement of Earth, moon, sun and planets.
- Plate tectonics explains the past and current movements and features of the rocks at Earth's surface.
- Weather and climate are influenced by interactions involving sunlight, the ocean, the atmosphere, ice, landforms, and living things.
- Human activities in agriculture, industry, and everyday life have had major impacts on the land, rivers, ocean, and air.

Essential Questions:

- What is the universe, and what is Earth's place in it?
- What are the predictable patterns caused by Earth's movement in the solar system?
- Why do the continents move, and what causes earthquakes and volcanoes?
- What regulates weather and climate?
- How do humans change the planet?

Acquisition

Knowledge:

- I know the sun is a star that appears larger and brighter than other stars because it is closer.

Skills:

- I can support an argument with evidence, data, or a model.

science ideas to protect the Earth's resources and environment.

3.3.5.F Generate and design possible solutions to a current environmental issue, threat, or concern.

Stars range greatly in their distance from Earth.

- I know that the orbits of Earth around the sun and of the moon around Earth, together with the rotation of Earth about an axis between its North and South poles, cause observable patterns. These include day and night; daily changes.
- I understand earth's major systems are the geosphere (solid and molten rock, soil, and sediments), the hydrosphere (water and ice), the atmosphere (air), and the biosphere (living things, including humans). These systems interact in multiple ways to affect Earth's surface materials and processes. The ocean supports a variety of ecosystems and organisms, shapes, landforms, and influences climate. Winds and clouds in the atmosphere interact with the landforms to determine patterns of weather.
- I know nearly all of Earth's available water is in the ocean. Most freshwater is in glaciers or underground; only a tiny fraction is in streams, lakes, wetlands, and the atmosphere.
- I know human activities in agriculture, industry, and everyday life have had major effects on the land, vegetation, streams, ocean, air, and even outer space. But individuals and communities are doing things to help protect Earth's resources and environments.

- I can represent data in graphical displays (bar graphs, pictographs and/or pie charts) to reveal patterns that indicate relationships.
- I can develop a model using an example to describe a scientific principle.
- I can describe and graph quantities such as area and volume to address scientific questions.
- I can obtain and combine information from books and/or other reliable media to explain phenomena or solutions to a design problem.
- I can communicate with peers about proposed solutions is an important part of the design process, and shared ideas can lead to improved designs.

	• I understand matter cycles between the air and soil and among plants, animals, and microbes as these organisms live and die. Organisms obtain gasses, and water, from the environment, and release waste matter (gas, liquid, or solid) back into the environment.	
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