

Unit A: Plants and Animals
Chapter 1: Types of Plants

Vocabulary:

leaves – help a plant get light and air

roots – underground parts of a plant – help it get water and nutrients

seed – first stage in the growth of many plants

stem – supports a plant above the ground – helps get nutrients and water to flower

simple plant – has no roots, stems, or leaves, reproduces by spores(moss)

germinate – the process when a seed breaks open and a root starts to grow from the seed

seedling – a young plant

chlorophyll – helps a plant use energy to make food along with water, sunlight (light energy), and carbon dioxide

photosynthesis – the food-making process in plants

cells – small units that plants are made up of - the parts of a cell are the cell wall, cell membrane, nucleus, vacuole, and chloroplast

Facts to Know:

1. Seeds can be moved by air, people, animals, or water.
2. A cutting is a leaf or piece of stem that may be used to grow a new plant.
3. A tree trunk is a type of stem.
4. Moss is one example of a simple plant. It grows in damp, shady places.
5. The chlorophyll in a plant gives it its green color.
6. Plants can grow from bulbs (tulips), seeds (sunflower/pinetree), or tubers.
7. Plants need water, light, soil, and air to grow.
8. Simple plants and trees both have cell walls which protect the cell from losing water.
9. In flowering plants, seeds are formed in the bottom part of the pistil.

Essays:

1. Be able to tell how an acorn becomes a tree.
2. Be able to compare leaves and group them by similarities.

Unit A: Plants and Animals
Chapter 2: Types of Animals

Vocabulary:

amphibians – animals that usually live first on water and later on land (toad, frog)
birds – have 2 legs, most fly with wings, have feathers, and hatch from eggs
fish – live only in water, breathe with gills, are born live or hatch from eggs
gills – body features that take in oxygen from water
inherit – to receive features from parents
mammals – have fur or hair, breathe with lungs, and feed their young milk
reptiles – land animals that have scales
scales – body feature that helps protect a fish
trait – a body feature that an animal is born with
endangered – a species that may become extinct
species – the scientific name of an organism
fossil – evidence of a plant or animal that lived long ago
threatened – an organism whose numbers are going down
extinct – when all of one kind of organism is gone forever
instincts – behaviors an animal knows how to do (attract a mate)
hibernate – go into a deep sleep during winter months to save energy
migrate – travel from one place to another and back again
camouflage – colors, patterns, and shapes that help an animal blend in with its surroundings
mimicry – imitating the features of another animal to keep predators away

Facts to Know:

1. Snakes and crocodiles are reptiles – they have lungs and scales.
2. The process that takes place as a tadpole changes into a frog is metamorphosis.
3. Scientists can infer what extinct animals from long ago look like by using fossils to make a model and comparing the models with animals they know about.
4. Animals need air, shelter, water, and food to survive.
5. An egg cell is the largest animal cell.
6. Animal cells contain a nucleus, vacuoles, cell membrane, and cytoplasm.

Essays:

1. Describe how some of the parts of a beaver's body help it survive.
2. What are two reasons that organisms can become extinct today.

Unit A Test

Study: Unit A Chapter 1 and 2 study guides

Essays:

1. Explain how an animal becomes extinct.
2. Name and describe 3 ways that seeds are spread from one place to another.

Unit B: Plants and Animals Interact
Chapter 1: Where Living Things Are Found

Vocabulary:

- environment** – everything around a living thing
ecosystem – the living and nonliving things in an environment
population – a group of the same kind of living thing that all live in one place at one time (deer)
community – all the populations of organisms that live in an ecosystem (deer, rabbits, ducks)
habitat – the place where a population lives in an ecosystem (woods, pond, etc.)
forest – an area in which the main plants are trees
deciduous forest – a forest in which most trees lose and regrow their leaves each year
tropical rain forest – a hot, wet forest where the trees grow very tall and their leaves stay green all year (has the highest average yearly temperature)
coastal forest – thick forest with tall trees that gets a lot of rain and doesn't get very warm / cold
coniferous forest – forest in which most trees are conifers (cone-bearing) and stay green all year
desert – an ecosystem where there is very little rain
grassland – an ecosystem made up of very large, flat areas of land that are covered with grass with hot summers and cold winters
salt water – water that has a lot of salt in it
fresh water – water that has very little salt in it

Facts to know:

1. A pond that contains waterlilies, frogs, fish, insects, and cattails is an example of a community. The pond is the habitat, or home, of all the living things in the community.
2. More types of living things live in a tropical rainforest than anywhere else on Earth. A tropical rain forest has 3 main layers:
 - forest floor** – lowest layer
 - understory** – below the canopy, formed by plants that don't grow as tall as trees
 - canopy** – top layer formed by the branches and leaves of the tallest trees
3. A deciduous forest has warm, wet summers and cold winters. Plants you might find there include mosses, ferns, and shrubs.
4. Plants of the hot desert store water in their thick stems. The spiny leaves protect the cactus and keep water in, and the long, shallow roots soak up the water.
5. Animals that live in grasslands include antelope, rabbits, deer, mice, and prairie dogs, which are hunted by foxes, coyotes, badgers, hawks, owls, and rattlesnakes.
6. The 2 kinds of water ecosystems are salt water (oceans, seas, tide pools) and freshwater (rivers, streams, lakes, ponds). Most organisms live in shallow areas.
7. Oceans make up the Earth's largest ecosystem. Almost $\frac{3}{4}$ of the Earth's surface is water.
8. Ecosystems are able to survive after fires because seeds that survive underground become new plants.

Essays:

1. How can damage to an ecosystem harm animals that live there?
2. Why are conifers shaped like triangles, while trees in tropical rainforests aren't?
3. Why would it be unusual to find a cactus growing in a coastal forest?

Unit B: Plants and Animals Interact
Chapter 2: Living Things Depend on One Another

Vocabulary:

interact – when plants and animals affect one another or the environment to meet their needs
producer – a living thing that makes its own food (gets its energy from the sun)
consumer – a living thing that eats other living things as food
herbivore – an animal that eats plants (usually has flat teeth)
carnivore – an animal that eats other animals (usually has sharp teeth)
omnivore – an animal that eats both other plants and animals
decomposer – a living thing that breaks down dead organisms for food
food chain – the path of food from one living thing to another
energy pyramid – a diagram that shows the amount of usable energy in an ecosystem is less for each higher animal in the food chain (study the pyramid on page B58 in text)
food web – a model that shows how food chains overlap (see text pg. B63)
predator – an animal that hunts another animal for food
prey – an animal that is hunted by a predator

Facts to Know:

1. The 3 groups of consumers are herbivores, carnivores, and omnivores.
2. As decomposers (fungi/mushrooms, bacteria, earthworms) feed, they keep the environment clean by breaking down wastes.
3. Most of the energy in an ecosystem is found in plants. This energy is passed in a food chain from one living thing to another.
4. The sun is the source of all the energy on Earth.
5. Food chains overlap to form food webs. There are many food chains in an ecosystem.
6. An animal can be both a predator and prey if it eats other animals and gets eaten (snake eats a mole, snake is eaten by a hawk).
7. Animals defend themselves by running away, protective body parts (porcupine), or by being in a group (zebra).

Essays:

1. Be able to use a food web to list consumers and what they eat.
2. Explain how the loss of a forest might affect a food chain.
3. If you remove a predator from an ecosystem, what might happen?

Unit B Test

Study Unit B: Chapter 1& 2 study guides

Essays:

1. Explain three ways an ecosystem can change.
2. Why might the surface of a saltwater ecosystem contain different types of animals from those at the bottom of a saltwater ecosystem?
3. Describe how energy passes from the sun to an earthworm.

Unit C: Earth's Land
Chapter 1: Minerals, Rocks, and Fossils

Vocabulary:

mineral – solid natural object that has never been alive

rock – solid material made of one or more minerals

crust – Earth's solid outer layer – thin and made of solid rock

mantle – Earth's middle layer - thicker and made of hot, soft rock

core – center of Earth

igneous rock – rock that was once melted but has cooled and hardened – come from Earth's mantle or volcanoes

sedimentary rock – materials that settle into layers and harden

metamorphic rock – rock that has been changed by heat and pressure

rock cycle – a process of changing rock types

fossil – marks or remains of a once living thing – usually found in sedimentary rocks because the sediment covers objects and preserves their shapes

Facts to Know:

1. Minerals may be used to make jewelry, glass, pencils, money, and steel.
2. Diamond is the hardest mineral.
3. Three **properties** of minerals are hardness, color, and shape.
4. Igneous rocks can become sedimentary rocks by being broken down into bits by weathering and erosion. These rock bits are then carried away by water and settle into layers that are built up into sedimentary rock. (rock cycle)
5. Metamorphic rocks can become igneous rocks when they are buried in the Earth where heat and pressure cause them to melt. They then cool to become igneous rocks. (rock cycle)
6. Two types of fossils are **mold fossils** (the shapes left in rock by objects that rotted or dissolved) and **cast fossils** (molds that filled with mud or minerals).
7. Scientists have used fossilized bones and teeth of dinosaurs to learn how they looked and what they may have eaten (plants or animals based on shape of teeth). Skin color cannot be determined by studying fossils.
8. Limestone (sedimentary rock) is one type of rock that would most likely have a fossil in it.
9. Three types of rocks: igneous, sedimentary, metamorphic.
10. Graphite in pencils, chalk for chalkboard, and copper pennies are all uses of minerals.
11. A marble statue is an example of use of a metamorphic rock.

Essays:

1. How might school be different if the Earth's supply of graphite ran out?
2. If you kept an igneous rock in your classroom for six months, would it change into a metamorphic rock? Why or why not?

Unit C: Earth's Land
Chapter 2: Forces that Shape the Land

Vocabulary:

landform – Earth's natural shapes or features

mountain – a place on Earth's surface that is higher than the land around it

valley – lowland area between higher lands such as mountains

canyon – deep valley with very steep sides

plain – flat area on Earth's surface

plateau – flat area higher than the land around it - may have steep sides

barrier island – thin island near a coast – has wide, sandy beaches

weathering – the way rocks are broken down into smaller pieces – can be caused by wind, water, plants, etc.

erosion – movement of weathered rock or soil – caused by ice, wind or water

glacier – huge sheets of ice

earthquake – shaking of Earth's surface caused by movement of the crust where it meets the mantle – can cause rapid landform changes

volcano – opening in Earth's surface from which lava (liquid rock) flows - can cause rapid changes to the land

flood – large amount of water that covers normally dry land

creep – the slow movement of soil down steep hills

Facts to Know:

1. Plateaus can be formed by forces within Earth that lift up plains.
2. Ice can cause weathering – water enters rocks, freezes and expands, breaking the rocks.
3. Plants can grow in cracks and split rocks as they get bigger.
4. Glaciers change the surface by scraping up rocks and soil and piling them up into hills, or scooping out rocks to form huge holes that fill to form lakes.
5. The Earth's crust folds to form mountains.
6. Valleys and canyons are low-level landforms.

Essays:

1. Does weathering occur in areas where you have freezing temperatures? How do you know?
2. Describe a place in which floods may happen.
3. What damage can be caused by a volcano?
4. Explain how floods change land.

Unit C : Earth's Land
Chapter 3 : Soils

Vocabulary:

soil – loose material in which plants can grow in the upper layer of the Earth – contains minerals

humus – material made up of decayed parts of once-living things – mostly found in topsoil

topsoil – richest layer of soil

bedrock – layer of solid rock under soil

clay – soil that has small grains with small spaces between them and holds water easily – good for making pots (sticky and holds water easily)

loam – rich, dark soil with a lot of humus and a mix of particle sizes (best soil for growing plants and corn) – holds water better than sand

resource – material found in nature that living things use

conservation – saving resources by using them carefully

strip cropping – process to save soil by planting thick grass, alfalfa, or clover between rows of other crops

contour plowing – planting rows of crops around the sides of hills instead of up and down – keeps soil from being washed away

Facts to Know:

1. People get the minerals they need by eating plants and animals.
2. Humus, minerals, and water are all part of soil.
3. Fertilizers are added to soil to add nutrients.
4. Minerals are used up when you plant the same crop every year in the same soil.
5. Without plants, wind and water can carry the soil away.
6. Tilling loosens the soil and can cause wind and water to carry the loose soil away.
7. Bedrock will turn to soil faster if wind and rain can reach it.

Essays:

1. What is one way that farmers use compost?
2. How is water good for soil? How can water harm soil?
3. Describe how minerals from the soil end up inside your body.
4. Name a way farmers can save soil from erosion. Describe how this method conserves the soil.

Unit C: Earth's Land
Chapter 4: Earth's Resources

Vocabulary:

resource – material found in nature and used by living things

renewable resource – resource that can be replaced in a human lifetime – trees (wood, paper)

reusable resource – resource that can't be used up – water and air

nonrenewable resource – resource that will be used up someday – coal(electricity), oil(gasoline and plastic), iron, copper, soil

recycle – reuse a resource to make something new – aluminum

Facts to Know:

1. When you recycle aluminum, the following resources are saved – bauxite, soil, trees, fuel.
2. Recycling aluminum involves chopping, paint removal, melting, and molding into new cans.
3. Recycling paper conserves trees, preventing pollution conserves resources.
4. People get resources that are under the Earth's surface by mining.
5. Plastic is made of a non-renewable resource.
6. Air and sunlight are found above the Earth's surface, soil, water, and plants are found on the surface, and water, diamonds, coal, iron, oil and natural gas are below the surface.

Essays:

1. How does strip mining affect resources, such as soil, on the Earth's surface?
2. Why is it important to protect reusable resources such as air and water?
3. How can people use energy from the sun to help conserve nonrenewable resources?

Unit C: Earth's Land Test

Study: Unit C Chapter 1-4 study guides

Essays:

1. Describe how weathering changes the surface of the Earth.
2. A friend plans to plant a garden. What type of soil should she use?
3. Water is a reusable resource and trees are renewable resources. So why is it important to conserve water and recycle paper?

Unit D: Cycles on Earth and in Space
Chapter 1: The Water Cycle

Vocabulary:

estuary – a place where fresh water from a river mixes with salt water from the ocean

groundwater – fresh water under the Earth's surface

water cycle – the movement of water from the Earth's surface into the air and back to the surface again

evaporation – the changing of a liquid into a gas when water is heated (puddle disappearing when sun beats down on it)

condensation – the changing of gas into a liquid when water is cooled (mirror fogging up in bathroom while showering, clouds forming)

precipitation – water that falls to the Earth as rain, snow, sleet, or hail

Facts to Know:

1. Fresh water can be used for drinking, cooking, bathing, farming, industry, and other things. Salt water is used as a food source, for resources, and to distribute the Earth's heat.
2. Water gets underground by soaking into the soil and collecting above the bedrock.
3. Rivers carry salts from weathered rock into the oceans, creating salt water.
4. Estuaries don't hold only salt water because rivers are always pouring fresh water into them.
5. Fresh water is found in rivers, lakes, and in underground water. Salt water is found in oceans, seas, and some lakes. Most of Earth's water is found in oceans.
6. If water could evaporate, but not condense, all the water on the Earth's surface would one day be gone.
7. Water on land returns to the oceans in the water cycle by the flow of rivers.
8. Grass that grows well in salt water would grow well on the banks of an estuary.
9. Be able to label the water cycle (book page D18)
10. Without water on Earth there would be no plants.

Essays:

1. What makes a wet towel on a towel rack finally dry out?
2. Can a place that receives very little rain still receive a lot of precipitation? Explain.
3. Suppose you want to measure the amount of precipitation in your town every day for a month. How could you collect your data?

Unit D: Cycles on Earth and in Space
Chapter 2: Observing Water

Vocabulary:

wind – movement of air

weather map – map that shows weather data for a large area

weather – what is happening in the atmosphere at a certain place

atmosphere – air that surrounds the Earth

front – place where two air masses of different temperatures meet

temperature – measurement of how hot or cold something is (measure with a thermometer)

anemometer – tool for measuring wind speed

Facts to Know:

1. A meteorologist might use a rain gauge (precipitation), thermometer (temperature), and anemometer (wind speed) to measure the weather. He would use a weather map to record the weather and interpret data.
2. Layers of air keep the Earth warm – the lowest layer is the warmest. There are 4 layers of the atmosphere – Troposphere (the layer we live in), Stratosphere, Mesosphere, and Thermosphere.
3. A rain gauge is used to measure precipitation.
4. A hurricane would have stronger winds than a thunderstorm or blizzard.
5. The weather will cool down after a cold front moves through, and it will warm up after a warm front moves through. It usually gets cloudy and rains as the front moves through an area.
6. Wind blows because of differences in air pressure – wind blows from areas of high pressure to areas of low pressure.
7. A meteorologist might use computers, satellites, and anemometers to make a weather map.
8. Precipitation usually occurs in places where warm and cold air meet (front).
9. Three properties of air are: air takes up space, has weight, and exerts pressure on things.
10. Ozone absorbs harmful rays from the sun – it is found in the Stratosphere.
11. Weather happens in the Troposphere – the layer of the atmosphere next to the Earth's surface – it is caused by the sun's heat.
12. An air mass is a large body of air with the same temperature and moisture (moving air masses cause weather to change).
13. Airplanes can gather data about storms, such as wind speed and direction a storm is moving.
14. Satellites send pictures of storms and clouds to Earth – meteorologists can use this data to see the direction and speed of weather movement.
15. Weather is always changing, so meteorologists gather data many times each day.
16. A station model is a set of symbols that shows the current weather at one place.
17. When cold air bumps into warm air, the cold air pushes the warm air up.

Essays:

1. Today you are in Illinois, where it is raining. Tomorrow you will be traveling east to New York where it is cloudy. What should you take with you? How do you know this?
2. People who live near rivers need to measure precipitation so that they can predict when a flood might occur. Think of another reason why people might want to measure precipitation.
3. Why do meteorologists fly airplanes into the middle of hurricanes?

Unit D: Cycles on Earth and in Space
Chapter 3: Earth and Its Place in the Solar System

Vocabulary:

revolution – movement of one object around another.

orbit – path an object takes around another object

asteroid – chunk of rock or metal that orbits the sun

lunar eclipse – result of Earth's shadow falling on the sun

phases – different shapes the moon seems to have (new, crescent, quarter, full)

solar system – sun and objects that orbit around the sun

axis – imaginary line that goes through the North Pole and South Pole

planet – large body of rock or gas that orbits the sun

rotation – spinning of an object on its axis

solar eclipse – result of the moon's shadow falling on the Earth

comet – large ball of ice and dust that orbits the sun

Facts to Know:

1. The inner planets are alike because they; all have rocky surfaces; are warmer than the outer planets; are closer to the sun and smaller than the outer planets; have two or fewer moons.
2. The outer planets are alike because they; are made of frozen gas (most); are very far from the sun; have surfaces that are much colder than the inner planets; are much larger than inner planets (except for Pluto); most have many moons; most have rings.
3. Asteroids are chunks of rock in the solar system that orbit the sun in a band between Mars and Jupiter. When one of these rocks falls out of its orbit and hits Earth, it is called a meteoroid.
4. A comet is visible in the sky only when it is close to the sun.
5. When it is winter in the northern half of Earth, it is summer in the southern half.
6. Many places are warmer in the summer because the sun's rays hit the surface more directly, so these places and the air above them are hotter, and there are more hours of daylight, so there is more time for the surface to warm.
7. If the Earth did not rotate, it would always be day on one half and night on the other half.
8. The tilt of the Earth's axis causes seasons.
9. The sun's gravity causes the objects in a solar system to stay in orbit.
10. The Earth takes one day to rotate. The moon appears to move in the sky each night because of this rotation.

Essays:

1. Compare the inner planets to the outer planets. How are they alike? How are they different?
2. How is a lunar eclipse like a new moon? How is it different?
3. Be able to label the planets on a diagram of the solar system.
4. What are 3 ways Mars is like Venus?

Unit D Test

Study: Unit D Chapter 1, 2, and 3 study guides

Essays:

1. Explain the three different states of the water cycle.
2. If the weather is cold and the days are short in the US, what will the weather and days be like in Australia? If the weather is different, what causes the changes?

Unit E: Investigating Matter
Chapter 1: Properties of Matter

Vocabulary:

matter – anything that takes up space

physical property – anything you can observe about an object by using your senses

solid – a form of matter that takes up a specific amount of space and has a definite shape

liquid – a form of matter that has volume that stays the same, but can change its shape

gas – a form of matter that does not have a definite shape or a definite volume

atom – the basic building block of matter

evaporation – the process by which a liquid changes into a gas

volume – the amount of space that matter takes up

mass – the amount of matter in an object

Facts to Know:

1. Hard, soft, sticky, sweet, and cold are some words that name physical properties of matter.
2. The three states of matter are solid, liquid, and gas.
3. You cannot observe temperature just by looking at an object.
4. In a solid, the particles are most tightly connected to one another. In a liquid, they are loosely connected like beads on a string. In a gas, they are farthest apart.
5. Adding heat or cold can cause matter to change state.
6. The mass of an object stays the same regardless of its shape.
7. All matter is made up of atoms.
8. A pan balance is a good tool for measuring mass.

Essays:

1. You can pour salt, but is salt a solid or a liquid? Explain.
2. Describe what happens when you put water in the freezer.
3. Which has more mass, a bowling ball or a basketball? Explain.

Unit E: Investigating Matter
Chapter 2: Changes in Matter

Vocabulary:

physical change – a change to matter in which no new kinds of matter are formed

mixture – a substance that contains two or more different types of matter

solution – a mixture in which the particles of two different kinds of matter mix together evenly

chemical change – a change that forms different kinds of matter

Facts to Know:

1. One example of a solution is sugar mixed in water.
2. Burning and rusting are two common chemical changes – new matter is formed.
3. Cutting, folding, and grating are examples of physical changes – no new matter is formed.
4. One example of a mixture is a fruit salad or a mixture of nuts and raisins.
5. A solid steel beam can lose its strength if it becomes rusty – chemical change.

Essays:

1. Does adding vinegar to milk to make it curdle cause a physical change or a chemical change? Explain.
2. Does heat always cause a chemical change in food? Why or why not? Give examples.

Unit E Test

Study: Unit E: Chapter 1 and 2 study guides

Essays:

1. Describe how to find the volume of a solid object using water and a measuring jug.
2. When ice melts in your soft drink, what causes the solid ice to change into liquid water?

Unit F: Exploring Energy and Forces
Chapter 1: Energy

Vocabulary:

energy – the ability to cause change

potential energy – the energy an object has because of its position or its shape

kinetic energy – the energy of motion

electricity – a form of energy that people produce from the active energy of wind and moving water and the stored energy in oil and coal

fossil fuel – fuel formed from the remains of once living organisms (coal & oil)

vibrate – to move quickly, back and forth, producing sound

circuit – the path electricity follows from a battery to the bulb and back to the battery

Facts to Know:

1. Wind, moving water, coal, and oil are some kinds of energy found in nature.
2. Light and sound energy travel in waves of vibrating air. Light waves move in an up and down wave and sound waves move in a back and forth wave.
3. A car engine feels hot after a long ride because the energy of motion produces waste heat. The heat from a lightbulb is another example of waste heat.
4. Most energy on Earth comes from the sun. Light and heat are two forms of energy we receive from sunlight.
5. Food energy (stored energy) is converted into the energy of motion and heat when we eat it
6. Machines are used to convert energy to motion.
7. A plant converts sunlight into stored energy that we can eat. A plant stores its food in its branches, leaves, and stem.
8. A battery, oil, and the sun are examples of stored energy.
9. Oil must be burned to release energy.
10. A battery and a lightning bolt are examples of sources of electricity.
11. A rock rolling down a hill has kinetic energy.

Essays:

1. How can wind be used as an energy resource?
2. How is the energy in the food you eat like the chemicals in a battery? How are they different?

Unit F: Exploring Energy and Forces
Chapter 2: Heat

Vocabulary:

thermal energy – the energy that moves the particles in matter (we feel this as heat)

heat – the movement of thermal energy from one place to another

friction – the force between two moving objects that make it hard for the objects to move

conduction – the movement of thermal energy from one object to another where they touch

conductor – a material in which thermal energy moves easily (wire)

insulator – a material in which thermal energy does not move easily (oven mitt)

convection – the movement of thermal energy from one place to another in moving liquids and gases

radiation – the movement of thermal energy without any objects touching or moving

thermometer – a tool used to measure temperature

Facts to Know:

1. Warm air (faster moving particles) is lighter than cool air (slow moving particles). As a result, the warm air is pushed up by the cool air.
2. Two different kinds of metals make up thermostat coils because one metal gets bigger faster than the other. This thermostat is used to control thermal energy indoors.
3. Friction is the force that makes matches work.
4. Rubbing our hands together or burning something makes thermal energy (heat).
5. Adding heat (thermal energy) can change particles in a liquid into a gas.
6. Two scales for measuring temperature are Fahrenheit and Celsius.
7. Particles in cold water move more slowly than particle in hot water.
8. Drying your hair with a blow-dryer is one example of using thermal energy.

Essays:

1. How does the liquid in a thermometer show how warm it is?
2. How do mittens keep hands warm in winter?

Unit F: Exploring Energy and Forces
Chapter 3: Forces and Motion

Vocabulary:

force – a push or a pull (all motion starts and stops with a force)

motion – a change in position

speed – the measure of how fast something moves over a certain distance

gravity – the force that pulls objects toward each other

weight – the measure of the pull of gravity on an object

work – the measure of force that it takes to move an object a certain distance

simple machines – a tool that helps people do work

lever – a bar that moves on or around a fixed point

inclined plane – a simple machine made of a flat surface set at an angle to another surface

Facts to Know:

1. Raking leaves is an example of doing work. Pushing on a box that doesn't move or against a wall is not doing work.
2. A screw is a simple machine with an inclined plane. Scissors are a compound machine.
3. It takes more force to move something that has more mass.
4. Jupiter has more gravity than Earth, so people weigh more on Jupiter.
5. Work is measured in newton-meters.
6. Examples of some simple machines are: lever, screw, inclined plane, pulley, wedge, and wheel and axle.

Essays:

1. What simple machine would you use to move some books up to your treehouse? Write your answer and draw a picture of your idea.
2. Suppose you try to take a lid off a jar, but it is stuck. It won't come off no matter how hard you try. Have you done any work? Why or why not?

Unit F Test

Study: Unit F: Chapter 1, 2 and 3 study guides

Essays:

1. Explain why an astronaut feels lighter on the moon than on Earth?
2. A marble is moving across the floor. List two forces that could cause this motion.
3. Give 3 examples of simple machines and explain how they change work when they are used.