

Ecosystems

Cross-Curricular Focus: Life Science



An **ecosystem** is all the things that interact in a specific area, whether they are living, or non-living. Some examples of non-living things that support life in an ecosystem are light, air, soil, and water. Living things are the **organisms** (plants and animals) that use those resources. Each of the specific ecosystems in the world has its own conditions created by the non-living things. These conditions determine what kinds of living things will be able to thrive there. Organisms can only thrive where their needs are being met. Everything in an organism's environment has an effect on it. A temperate zone is an area where the conditions never become too hot or too cold, allowing many different kinds of organisms to thrive.

All the living things in an ecosystem are called a **community**. All of one specific kind of organism living in a community is called a population. All the tree frogs in a rainforest community are one population within the community. All the white birch trees are another population within the same community. All the jaguars are yet another rainforest community population.

All living organisms perform certain life processes. They take in nutrients like air, sunlight, water, and food. They use energy from those nutrients to grow and develop. They release energy by doing work and moving. They release waste products. They react to things in their environment. They **reproduce**, producing offspring (babies) that are similar to themselves.

LEVEL: D.1

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NAME:

- PREVIEW THE PASSAGE (*title, bold words, pictures, etc.*)
- READ THE **5 QUESTIONS** OUT LOUD
- READ THE PASSAGE **OUT LOUD** TO SOMEONE (*daily*): _____
- "ZAP"** THE ANSWERS WITH THE QUESTIONS (*with marker/highlighter*)
- ANSWER EACH QUESTION WITH A **COMPLETE SENTENCE**

1) What would happen to the living organisms in an ecosystem if some of the non-living things were removed? Why?

2) What are some of the life processes that living organisms do?

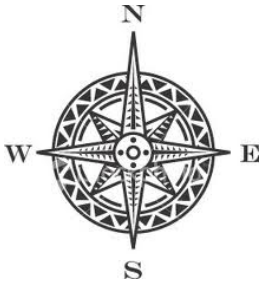
3) What would happen in an ecosystem if one population grew too large for its needs to be met?

4) Explain how the living and non-living parts of an ecosystem work together.

5) Why does a temperate zone support the greatest variety of organisms?

Where On Earth Are You?

Cross-Curricular Focus: History/Social Sciences



You may already be aware of the cardinal (or main) directions that are shown by a magnetic compass. They are north, south, east, and west. You will also find them on a map with another kind of compass. A **compass rose** is a symbol that shows these directions so you know which direction is where on the printed map. They are often very artistically drawn, especially on older maps. Knowing the cardinal directions can help you understand where you are on Earth when you look at a map.

Another important way you can identify your exact location is to use lines of **latitude** and **longitude**. Lines of latitude are imaginary lines that circle the Earth going east and west. Lines of longitude are imaginary lines that circle the Earth going north and south. Together, these lines form squares kind of like what you see on graph paper. If you look closely on most maps, you will see this graph paper printed on top of the map. If you look even closer still, you will notice numbers written by each of the lines. These numbers help to give an address to places on Earth. This address for each place is known as its **absolute location**.

The **equator** is the main line of latitude that circles Earth at its widest point. It is the starting point for measuring degrees of latitude. They are measured with a number that says how many degrees north or south of the equator they are. The prime meridian is the main line of longitude that circles Earth. It is the starting point for measuring lines of longitude. They are measured with a number that says how many degrees east or west of the prime meridian they are. You can accurately identify absolute, or exact, locations on Earth by giving the degrees that identify the latitude line and the longitude line that cross closest to your location.

LEVEL: D.2

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1) What is the purpose of a compass rose? _____

2) What is a line of latitude? _____

3) What is a line of longitude? _____

4) In your own words, explain how to find an absolute location. _____

5) Which do you find more helpful on a map, a compass rose, or lines of latitude and longitude? Why? _____

Natural Resources

Cross-Curricular Focus: History/Social Sciences



Throughout history, people have often selected where they wanted to live based on the **natural resources** that were available in the area. Natural resources are things that are useful to people, and come from the earth. Some examples of these resources include: shelter, or materials for building shelter, food sources such as fruits and vegetables, animals that could be caught or hunted, and water.

A region's climate and landforms determine what can grow in different areas, and what organisms will be able to survive there. Regions with very rich soil can support agricultural societies, while poor soil conditions will either send people looking for better conditions, or attract those with other purposes for the land, such as establishing businesses or factories.

While you may not think of the mountains, lakes, or oceans as natural resources, they are. People who wish to make a living as fishermen can do so by the ocean, but cannot in the desert. Desert peoples have many traditional foods made with cactus, which cannot be found in the forest. Each area attracts people based on their interests and purposes. Areas that support many different interests will naturally have larger populations. Traditionally, villages and cities built near water sources have been the most successful. People living near water are able to use water resources to meet their daily needs, and can also use the water to help them transport goods and products to other areas where they can be sold. Places that are difficult to reach, such as high on mountain tops or hillsides, or long distances away through hot, dry deserts, will naturally have fewer people living in them.

Renewable resources are those that can be replenished easily. For too long, humans have destroyed resources, using up those that cannot be easily replaced. On Earth, we are fortunate to have many resources that are renewable, such as sun, wind, water, and trees. As more and more focus is placed on the use of renewable resources, it will become easier to protect our planet from further harm.

LEVEL: D.3 DATE: NAME:

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1) Think about the natural resources near you. What are the things that made your family decide to live where you do?

2) Why do you think few people live in the desert?

3) Give some examples of shelter.

4) When you become an adult, will you choose to live the same place as your parents did? Why, or why not?

5) What natural resources are available on the coast that might not be available somewhere else?

Ecology: Taking Care of Earth

Cross-Curricular Focus: Life Science



The term **ecology** comes from a Greek word that means "the study of the house." In a way, Earth is the house of all living things. We all live together and interact on the planet that we share. Ecology is the study of these interactions between living things and their environments. Today, we also understand ecology to mean taking care of the Earth so that humans, plants and animals can all thrive. Sometimes damage is **irreversible**.

Ecology is a huge area of study, because it touches on every part of a living thing's ecosystem that can affect its ability to live. Things like climate, soil conditions, the availability of clean water, and access to natural resources all must be taken into account, along with many things not even listed here. By learning about how living things, including humans, affect each other, we can make smart decisions that protect not just the living things, but the resources that the living things need as well.

As a young person, you may think that none of this is your responsibility yet. However, there are many things that children can do to help make sure that their world stays healthy so that it will be around for many years to come. Although it may seem strange to be thinking about them already at your age, some day you will have children of your own who will need a safe place to live. The decisions you are making even today can affect them in the future.

Conservation is one area of ecology where we can all make a difference, regardless of our ages or where we live. Conservation means using Earth's limited resources wisely so that they don't run out. We can also show our support of businesses that make their products using methods and materials that do not damage Earth. By buying their products, we are telling them that we appreciate their efforts to be Earth-friendly. When you are in your own home, take a moment to think about how you use resources. Most people are just plain wasteful. Leaking toilets, half-filled dishwashers or clothes washers and unattended hoses waste precious water. Leaving lights on and appliances running in rooms where they are not even being used wastes energy.

We need to take the time to learn about how to save resources, and then put into practice what we learn. Even children can do their part by modeling ways to save resources. Together, we can all make a difference.

LEVEL: D.4 DATE: NAME:

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1) The passage compares Earth to a house. How are they alike?

2) Name something people do that could be harmful to animals.

3) Sometimes Earth-friendly products are a little more expensive. Why should you buy them anyway?

4) Why do you think people leave lights on when they are not using them?

5) What is one thing that you, personally, could do today to help conserve resources?

Branches of Government

Cross-Curricular Focus: History/Social Sciences



There are three different levels of government in the United States: federal, state, and local. Each of those levels is elected by the people to serve and protect the people within its **jurisdiction**, or area of authority. The federal government handles relations between the United States and other countries, including war. It is also in charge of printing money and running the military. State governments are responsible for public education, health, and safety. Local governments provide services, such as parks, police, fire, and city records, to members of the community.

The federal government, which is the national level of government, is divided into three separate **branches**: the **legislative** branch, the **judicial** branch, and the **executive** branch. The three branches work together to make sure power is balanced, and none of the individual branches becomes too powerful. This is known as a system of checks and balances.

The legislative branch is responsible for making laws. It is made up of two separate groups: the Senate, and the House of Representatives. Each state has two representatives in the Senate. Representation in the House of Representatives is based on a state's population. The House and the Senate together are called Congress.

The judicial branch is responsible for interpreting laws, and for hearing court cases to see if laws have been broken, or if laws are unjust. The Supreme Court is our nation's highest court, and has power over all lower courts when deciding matters mentioned in the U.S. Constitution.

The executive branch is responsible for executing, or carrying out laws. The President of the United States is in charge of this branch, and is assisted by his cabinet of advisors. The President signs bills into law, and can also veto proposed laws. In addition, the President is Commander in Chief of the U.S. Armed Forces.

The three branches of the federal government work together to ensure that the rights of citizens are not lost. The ultimate power in the U.S. government belongs to the people. We entrust it to our government officials by voting to elect them.

LEVEL: D.5	DATE:	NAME:
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- 1) What does a system of checks and balances protect against?

- 2) Which of the branches of government is divided into two separate groups? What are the groups?

- 3) What is the difference between representation in the House and representation in the Senate?

- 4) Based on the context of the next to last paragraph, what does the word **veto** mean?

- 5) How can the American people use their power in the government system?

What's Eating You?

Cross-Curricular Focus: Life Science



Within any ecosystem, all the living organisms have a role to play. Plants are **producers**. Within their green leaves they have round discs called chloroplasts that form stacks called grana. A distinctively green substance called chlorophyll fills the chloroplasts, giving the plant its green color. The chloroplasts allow the plant to use water, sunlight, and carbon dioxide (the gas we breathe out) to make, or produce, their own food. That's why they are called producers.

When an animal eats a plant, energy that the plant got from the sun is transferred to the animal. An animal that eats plants is called an herbivore. Since it is the first animal in the food chain, it is also the primary **consumer**. A consumer is an animal that eats plants, or other animals. Consumers that eat only other animals are called carnivores. Consumers that eat both plants and animals are called omnivores.

Producers are critical to the survival of all living organisms in an ecosystem. Consumers depend on producers for the food which gives them energy. Without producers, none of the other living things in the ecosystem would survive for long. It makes sense, then, that animals sometimes help plants to reproduce, or make more plants.

Many plants make seeds by combining pollen from their flowers with pollen from other flowers. Water or wind occasionally helps pollen get where it needs to go, but sometimes it is carried by animals, especially birds and insects. Animals that help plants reproduce by carrying pollen from one plant to another are called **pollinators**.

Larger animals often help plants reproduce without even realizing it. They carry seeds from one place to another so plants can spread to new places. Carrying and scattering plant seeds so they will have the opportunity to expand to new areas is called **seed dispersal**. Some seeds are blown by the wind or carried by water, but many are caught in the fur of animals or eaten with fruit from the plant. Carried either inside or outside of an animal, the seeds are deposited and grow in their new locations.

LEVEL: D.6	DATE:	NAME:
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- 1) What is the relationship between producers and consumers? _____
- 2) What is the ultimate source of energy for all living things? _____
- 3) How do animals help ensure that plants reproduce?

- 4) Give an example of a pollinator. _____
- 5) Describe a food chain with at least three links. What is the producer? What is the primary consumer? What is the secondary consumer?

The Transcontinental Railroad

Cross-Curricular Focus: History/Social Sciences



In today's world, travel by train is no longer a major mode of **transportation**. However, there was a time in our nation's history when the train was the biggest advancement in transportation technology. Up until that point, people had to rely on their own two feet, or on the strength of animals such as oxen and horses, when they wanted to travel any distance.

We are accustomed to the fast-moving pace of our society. In our country's early years, however, progress moved at a much slower rate. It was not an easy task to build a railroad. Lots of workers were required to lay the tracks, and the conditions were often very dangerous. To help clear rocks and mountains, unstable nitro-glycerine explosives were used. The glass containers of liquid had to be kept absolutely still to prevent them from exploding at the wrong time. Often, the job of handling the crate filled with the hazardous fluid was given to a Chinese immigrant. Many Chinese who came to California seeking their fortunes during the Gold Rush of 1849 stayed behind to work on the railroad. Unfortunately, thousands died during its construction.

Theodore Judah was the engineer who dreamed of making a transcontinental railroad come to life in the 1850's. There were already railroads operating in cities on the east coast, and Judah was in the process of constructing railroads in the west, but there was no service at all across the empty middle spaces of our nation. Judah was determined to change all that. He recruited some investors: Leland Stanford, Mark Hopkins, Charles Crocker, and Collis Huntington, who were nicknamed "the Big Four" provided the money to create the Central Pacific Railroad Company. Construction on the transcontinental railroad began in 1863.

Thousands of railway workers laid tracks from both the west and the east at the same time. It was dangerous and difficult work. The two sections of track were finally able to be joined on May 10, 1869 in Promontory, Utah. Its completion signaled the beginning of mass travel of both communication and people between the east and west coasts. For the first time, the country felt truly united.

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- 1) Why did the expansion of the railroad system have such an impact on the nation? _____

- 2) What do you think motivated the Big Four to invest in the construction of the transcontinental railroad? _____

- 3) Why do you suppose the company continued railroad construction in spite of the fact that so many people were killed or injured? _____

- 4) How did the ability to move people and ideas quickly from one side of the country to the other change the United States? _____

- 5) What impact do you think the Gold Rush had on the transcontinental railroad? _____

Hide and Seek

Cross-Curricular Focus: Life Science



In the wild, it often comes down to **predator** and **prey**, the hunter and the hunted. As you can imagine, most organisms want to stay alive. They have developed ways of adapting to severe **habitats**, and hiding or escaping from those who would like to eat them. So how do they do it?

One very helpful adaptation is called **camouflage**. You may have been surprised by an animal that was using camouflage in the past. It blended into its surroundings so well that you nearly missed seeing it at all. Its coloring, markings, or other physical features resemble its habitat so much that you can look directly at it without seeing it at first. This is often good enough to fool a predator that is scanning an area to look for food. This helps prey to hide from its predator. But did you know that it often works the other way around, too? Predators can use camouflage to trap their prey. If a predator wants to eat a certain animal, and that animal cannot see it lying in wait, it can pounce on its prey unexpectedly, devouring it before it even knows what is happening.

Another popular adaptation is **mimicry**. Mimicry is when an animal has markings or other physical characteristics that allow it to look like some other kind of animal or plant. If it can make its predators believe that it is something that preys on them, or would at least be difficult or painful to catch, its predator will often go off in search of an easier target.

Sometimes animals are able to survive when their habitat changes because they adapt to the new conditions. For example, birds that were accustomed to nesting on high cliffs or in tall trees have survived industrialization of their habitat by learning to nest in the crevices of tall buildings. Raccoons easily adapt to residential areas that have taken over their woodland homes. They often help themselves to any food they can grab, whether it is in trashcans, or inside people's homes!

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- 1) What is the function of camouflage in the wild? _____

- 2) Compare and contrast camouflage and mimicry. How are they different? How are they the same? _____

- 3) What would motivate wild raccoons to enter people's homes? _____

- 4) If you were a wild animal, would you rather have the ability to mimic another animal, or the ability to camouflage yourself? Why? _____

- 5) Why do you think cliff-dwelling birds feel at home on the ledges of skyscrapers? _____

Estimation

Cross-Curricular Focus: Mathematics



Estimation can be a powerful tool in mathematics. You can use it to check an answer when you are finished solving a problem, and it will tell you whether or not your answer is **reasonable**. If your answer is somewhat close to your **estimate**, you know that you are on the right track. If your answer is off by hundreds, thousands, or more, you know that you need to revisit the problem and check over your work. Sometimes you may have missed something simple, like not lining up place value columns, or putting a decimal point in the wrong place. Sometimes you have to go back to the beginning and start again. Your estimate tells you when that is necessary, rather than waiting until you suffer the consequences of a wrong answer, like a bad grade on a test or paying too much for materials at the hardware store.

An estimate is also useful for finding an answer quickly when an **approximate** answer is good enough. If you are the host of a buffet dinner and want to know about how many people are coming so you can put out enough potato salad, an estimate will probably work. However, if it is a sit-down dinner where every guest has a steak or filet on his or her own plate, an estimate is not very practical. It may leave you with too many, or even worse, too few plates to set before your guests. Knowing when to use an estimate, and when to solve for an exact answer is a life skill that comes with practice.

Shopping is an excellent activity to help you practice your skills of estimation. If you have twenty-three dollars, and you are buying something that costs \$9.98, you can quickly change the numbers to friendly numbers in your head by rounding. Twenty-three is close to 20, and \$9.98 is close to 10. If you have \$20 and spend \$10, you will have \$10 left. As you go into the music store, you keep in mind that you have *about* ten dollars to spend. This saves you time as you look for a CD to play during your party. You know that if the CD costs more than ten dollars, you will not have enough money to buy it, so you look in the section marked \$8.99 and under. When you find a CD you think you want, you can look on the back and estimate again. If the playing time says 129 minutes, you can estimate that it plays for about two hours, since that would be 120 minutes. Yes, estimation can be a very useful tool.

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1) What is one beneficial thing about using estimation?

2) What is the difference between an approximate answer and an exact answer?

3) What is meant by the term *friendly number*?

4) Describe a time when you used estimation. How was it helpful?

5) Use what you have learned. What is a good estimate for $48 + 37$? Round to friendly numbers, then estimate the sum.

Discrimination Against Gold Rush Immigrants

Cross-Curricular Focus: History/Social Sciences



Immigrants who came to California in the early 1850's for the Gold Rush faced horrible discrimination. They were not treated fairly by those around them. Two of the largest immigrant groups were Chinese (almost 50,000 Chinese came) and Irish. Between 1845 and 1849, thousands of people in Ireland died due to the Potato Famine. There was not enough food for the people who lived there to eat. Those who were lucky were sponsored by wealthy patrons who paid travel expenses for them to start a new life in America. Many of those who came had already suffered the loss of children or other family members. By the 1870's, the Irish and Chinese populations in California were so large, that people who had lived in California before their arrival grew worried. They thought the immigrants were trying to take their jobs, or were using resources that belonged to them. They treated the immigrants unfairly.

Chinese and Irish immigrants were sometimes forced off their land and told they must live in certain cities or areas. The land on which they had lived was taken over by **squatters**, people who settle on land they do not own in the hopes of claiming it after time has passed. The immigrants struggled to find jobs, or had to take jobs where they worked hard for very little pay. Occasionally, immigrants went on **strike** to try to improve their working conditions and pay. The strikes were not usually successful.

The United States government gave in to the pressure of citizens and passed some unfair laws during this time. In 1850, immigrant miners were forced to pay a Foreign Miners Tax of \$20 per month, just to have the right to look for gold alongside the other miners. Many had to give up their dreams of gold, unable to pay what was then a very large amount of money. The Chinese **Exclusion Act** of 1882 excluded any more Chinese immigrants from coming to the United States, and it was not changed until 1943. Struggles to balance immigration with what is best for our nation continue even today. Sometimes it is difficult to understand the passage of unfair regulations, and it takes a long time to make things right again. Many immigrants are still waiting for a fair chance to pursue their American dreams.

LEVEL: D.10 DATE: NAME:

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1) There are many conflicts even today when people of different races interact. Why do you think that is?

2) You read that the Chinese and Irish were made to live in certain areas, much like the Native Americans. Do you think this was fair? Why, or why not?

3) From the context of the passage, what do you think a **strike** is?

4) What do you think was the intent of the Foreign Miners Tax of 1850?

5) Why do you think immigrants stayed even though there was discrimination?

Endangered Species

Cross-Curricular Focus: Life Science



When an animal's habitat, or living space, is destroyed by humans, the animal can become an **endangered** species. Endangered species are kinds of animals that could face **extinction** (all members of their species dying out) if something is not done to change the way that humans are interacting with them. As human populations increase, more and more space is needed for people. Construction projects are pushing animals out of areas where generations of their ancestors have lived their whole lives. Forest and swamp habitats are especially threatened. Trees are cut down for home and business construction projects, and swamps are filled in so that neighborhoods can expand as the number of people continues to increase in certain areas. To prevent the extinction of animals because of their loss of habitat, humans have to become more conscious of animals populations when considering building and expansion projects. Even if a different option may not be as convenient as using the land occupied by animals, but the survival of the animals needs to be taken into consideration, too. Better planning and an awareness of how human actions affect animals populations can go a long way toward making sure a diverse animal population will be here for future generations to enjoy.

Another major cause of endangerment for animals is overhunting. The practice of shooting animals as a sport, or to harvest a desired resource from a certain animal can quickly bring the animal's extinction. This is a world-wide problem, so the governments of countries around the world must unite to agree on laws that control which animals people are allowed to hunt, and that prevent such hunting if animal population numbers drop too low.

There is still hope for animals who are already on the endangered species list. Some organizations are working hard to recreate habitat for endangered animals, and start breeding programs to help animal populations increase. We all have to be aware and think before we act. The things we do can affect more than just ourselves.

LEVEL: D.11

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1) What would be the result if world-wide laws were passed to protect animal habitats?

2) Give an example of something that can be done to help keep endangered animals from becoming extinct.

3) What statement supports the idea that the author believes animals need to be protected?

4) Why do you think hunting for sport can get out of control?

5) Why might protecting animals be a difficult choice for some people?

Water Carves the Land

Cross-Curricular Focus: Earth Science



If you look at the coastlines of North America, you will notice that there are many unusual shapes along the edges of our continent. The ocean waves are responsible for weathering away bits of soil, rock, and sand wherever the water meets the land. Some beaches change more than others. Those that experience severe storms or frequent winds change the most. Sediment carried by the water is often redeposited along another part of the coast. A **bay** is formed when land is worn away in a natural curve, creating a body of water that has a wide opening to the sea, but is enclosed part of the way by land. The waters of a bay tend to be relatively calm.

Ocean waves aren't the only water sources that pick up and redeposit sediment. River systems are made up of many different rivers that join up on their journey toward the ocean. They all eventually join a major river that will take them all the way to the ocean. One example of this is the Mississippi River system, which eventually empties into the Gulf of Mexico. At the mouth of the river, deposits of sediment build up. This forms a large area called a **delta**.

Sometimes people have to artificially change the path that water naturally follows. Man-made lakes are created by building dams in areas where doing so will allow the lake to be a **reservoir** that store the region's fresh water supplies. If the local geography is right, the dam can also use the force of gravity and rushing water to turn huge turbines, creating and storing electricity for the region's power grid system. Water from reservoirs can also be used in irrigation projects that help farmers get enough water to grow crops. It is true that water often shapes our land, but it is also true that we can shape and control our water sources.

LEVEL: D.12

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1) A bay can provide a natural harbor where ships can stop very close to land. How is this beneficial for people?

2) Predict what could happen if too much sediment is carried away by ocean waters.

3) What kind of water would you expect to find in a delta area? Why?

4) What is one benefit of a man-made lake that was not mentioned in the reading passage?

5) Use context clues in the last paragraph to help you define the meaning of the word **turbines**.

Charge it!

Cross-Curricular Focus: Physical Science



Many people do not really understand what **electricity** is and why it works. They just know that when they need power to run an appliance or electronic game, they have to plug it in to the funny-shaped thing on the wall. Energy comes from charged particles that are moving around. If you've ever rubbed a balloon against your clothing to generate static electricity to make the balloon stick, or to hold it over someone's head and watch their hair stand up straight, you have some idea about what electrical charges are. But electrically charged particles don't do us any good unless we can control and use their energy.

Static electricity builds up on certain materials. Other materials, though, allow electrical charges to continuous flow through them. This creates what is called an electric current. Electric current travels very easily through certain metals, like copper, gold, silver, and aluminum. We call materials that electric current flows through easily **conductors**. Water is also a good conductor of electricity, which means that electrical charges can travel through people, too. There is water in every cell of a person's body, so electric current can travel through these cells.

If you were to gather up metal and find a way to plug it directly into the wall to conduct the electric current, it would spark and fly all over the place, and the electric current would most likely travel on through your body since there would be nothing to stop it. Conductors have to be enclosed in a material that is an **insulator**. Insulators do not allow electric current to pass through them. The rubber coating that you see on standard electrical cords that come attached to most appliances is covering the metal so the sparks stay within the cord and we can direct the current to the appliance that needs power. Electricity is controlled power.

LEVEL: D.13 DATE: NAME:

- PREVIEW THE PASSAGE (*title, bold words, pictures, etc.*)
- READ THE **5 QUESTIONS** OUT LOUD
- READ THE PASSAGE **OUT LOUD** TO SOMEONE (*daily*): _____
- "ZAP"** THE ANSWERS WITH THE QUESTIONS (*with marker/highlighter*)
- ANSWER EACH QUESTION WITH A **COMPLETE SENTENCE**

1) Since people conduct electricity, it can also be very dangerous for people. Name one way to keep electricity safe for people.

2) How is static electricity different from electric current?

3) What could happen if the rubber coating on a power cord is damaged?

4) How can wearing rubber-soled tennis shoes prevent you from being electrocuted?

5) In your own words, explain the difference between a conductor and an insulator.

Import/Export

Cross-Curricular Focus: History/Social Sciences



When the colonies first began in America, there were no stores available for people to go and buy things that they needed or wanted. The people often did not have the supplies to be self-sufficient, so they relied heavily on the goods shipped to them from other countries, mainly England.

When you bring goods in from another country, you **import** them into your own country. Frequently, goods were imported to a major colony with a bay that was a safe place for large ships to dock. Individuals would travel to that town to purchase goods, and then **transport** them to their homes in wagons or on horseback.

Time went on, and the colonies became more self-sufficient. Crops like tobacco and rice proved to be very successful in the south, where the soil was especially rich in nutrients. Large plantations used the labor of many indentured servants and slaves to bring in plentiful harvests. It was not long before goods began to flow in the other direction. The colonies started to **export** goods back to England, as well as to other countries to sell.

As rumblings of independence started, colonists were relying less and less on goods they had to import. Local merchants did sell items from other countries, but the prices seemed to increase unreasonably as taxes were added on. Merchants began to carry more locally produced goods in trade for store credit.

Our nation grew and expanded westward, creating a unique opportunity for entrepreneurs to start businesses by purchasing extra supplies to take on the established routes and selling them at significantly higher prices. This economic principle of supply and demand reached its peak during the frantic westward migration when gold was discovered in California. Many miners experienced the frustrations of finding small bits of gold only to hand over their small fortunes to buy enough to eat a simple meal.

LEVEL: D.14 DATE: NAME:

- PREVIEW THE PASSAGE (*title, bold words, pictures, etc.*)
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- "ZAP"** THE ANSWERS WITH THE QUESTIONS (*with marker/highlighter*)
- ANSWER EACH QUESTION WITH A **COMPLETE SENTENCE**

1) Why was it necessary for the early colonists to rely on imported goods?

2) What is the advantage of producing goods for your own use?

3) What is the disadvantage of producing goods for your own use?

4) The export of goods from the southern colonies was possible because of the use of indentured servants and slaves. Do you think it was worth the human cost?

5) Is "supply and demand" economics fair? Explain.

The Great Depression

Cross-Curricular Focus: History/Social Sciences



The 1920's in the United States were a time of success like never before. People lived life loudly and on the edge. America's wealthiest often threw parties that lasted for weeks. The 18th amendment, known as Prohibition, went into effect in 1920, making the sale and production of alcohol illegal. Creative party hosts found ways around the rules, often involving secret tunnels and fast-speed police chases in the dark of night. This was the time of organized crime and the rise of gangsters. Prohibition was not repealed, or taken back, until the 21st amendment was passed in 1933.

The growth of business and abundant jobs of the 20's suddenly took a turn for the worse when the stock market failed in 1929. The stock market is an economic system that allows people to buy and sell shares of companies. Shares, or part ownership in businesses, became almost worthless, sending the entire country into very hard economic times. When an area goes through a time of very little business activity, it is called a **depression**. The economic struggle of the stock market crash hit the nation so hard, that the depression it caused was more severe than had ever been seen. This time period became known as The Great Depression.

During the Great Depression, many people lost their jobs, and even their farms and homes. People could not feed their families. Poverty, disease, and starvation affected most of the nation. There was a severe **drought** at the same time in the middle United States. The lack of rain made the ground so dry it turned to dust. Huge dust storms buried farms and houses. People got sick and some even died from breathing in the dust. The middle states became known as the Dust Bowl. Hundreds of people moved west in search of work and better lives during this time. The Great Depression finally came to an end when the United States entered World War II in 1941. Many new jobs were created as war supplies, like aircraft and ships, were needed to support the war effort.

Since people moved to where jobs were available in the west, the population grew quickly. Because the war was going on, it was hard to get enough of some supplies. **Inflation**, the raising of prices, made goods expensive. The government had to **ration** some items, like butter and gasoline, because there was not enough for everyone. Though some things were difficult, people looked back on the days of the Great Depression, and were grateful to have the things that they had. Things were not perfect, but the times were better than before.

LEVEL: D.15 DATE: NAME:

- PREVIEW THE PASSAGE (*title, bold words, pictures, etc.*)
- READ THE 5 QUESTIONS OUT LOUD
- READ THE PASSAGE OUT LOUD TO SOMEONE (*daily*): _____
- "ZAP" THE ANSWERS WITH THE QUESTIONS (*with marker/highlighter*)
- ANSWER EACH QUESTION WITH A COMPLETE SENTENCE

1) Why do you think the 18th amendment, to outlaw alcohol, was not successful?

2) Imagine living on a farm at the time of a huge dust storm. Would you stay, or would you move west? Why?

3) What was one effect of so many people moving west?

4) Why do you think inflation was a problem during World War II?

5) Based on the context of the last paragraph, what does the word **ration** mean?

Magnetic Attraction

Cross-Curricular Focus: Physical Science



An object that attracts certain kinds of metals, especially iron, is called a **magnet**. The area near the magnet where the magnet can act to attract things is called its magnetic field. The farther away from the magnet an item is, the weaker the magnetic field is, and the less likely an object is to become attracted to the magnet.

Magnets can be either **permanent** or **temporary**. A permanent magnet stays magnetized for a long time. A temporary magnet loses its magnetism after only a short time. You can even turn something made out of iron into a temporary magnet by rubbing it against a permanent magnet. The more you rub, the stronger the magnet is that you create. However, the effects will wear off over time.

The two ends of the magnets are called **magnetic poles**. The poles, which are found at the ends of bar magnets and the tips of the horseshoe magnets, are the strongest parts of the magnet. Each magnet has a north pole and a south pole. Opposite poles attract each other (pull toward each other), and same poles repel (push away from each other). So a north pole and a south pole will pull toward each other, and two norths or two souths will push away from each other. If you are holding the magnets, you can actually feel the push and pull effects of magnetism.

A special kind of temporary magnet that uses electricity to create a magnetic field is an **electromagnet**. An electromagnet can be an extremely strong magnet, but it only acts like a magnet when it is receiving electrical current. A stronger electrical current will produce a stronger magnet. Unlike other magnets, an electromagnet can be controlled by a switch. As soon as the switch is flipped to turn off the electrical current, it loses its magnetism and drops whatever had been attracted to it. This technology is used to operate large cranes that lift heavy metal object, such as cars. Electromagnets are also used to make motors run in small appliances. The combination of regular magnets and electromagnets makes it possible for electrical energy to be turned into energy of motion. Thanks to magnets, we have things like fans and refrigerators!

LEVEL: D.16 DATE: NAME:

- PREVIEW THE PASSAGE (*title, bold words, pictures, etc.*)
- READ THE 5 QUESTIONS OUT LOUD
- READ THE PASSAGE OUT LOUD TO SOMEONE (*daily*): _____
- "ZAP" THE ANSWERS WITH THE QUESTIONS (*with marker/highlighter*)
- ANSWER EACH QUESTION WITH A COMPLETE SENTENCE

1) Explain the difference between a temporary magnet and a permanent magnet.

2) Would the pull of a magnet be stronger at its north pole, or at the middle of the magnet? How do you know?

3) Why is an electromagnet unique?

4) What do we use electromagnets for?

5) List as many appliances as you can think of that use energy of motion.

Responsibilities of Citizenship

Cross-Curricular Focus: History/Social Sciences



You can become a citizen of a country by being born in that country and living there as a loyal member of society. Many countries also have alternative requirements for those who are not natural-born citizens, but would like to become citizens of that nation. When you complete the alternative requirements, you are called a naturalized citizen.

As a citizen of your country, you have some duties, rights, and **responsibilities**. Your rights as American citizens cannot be taken away, regardless of the state in which you live. That is because the United States Constitution is considered the supreme law of the land. Your rights as citizens of the United States are protected in the Bill of Rights, the first 10 **amendments** to the U.S. Constitution. You have the right to be free, and to enjoy your life. You have the right to defend yourself if someone tries to take away your right to life. You also have the right to buy, own, and protect your property.

In exchange for your rights, you have some duties and responsibilities. You should learn everything you can about your government so that you will be able to make good decisions when it is time to vote in elections. You should also be aware of the current laws, because you are expected to obey them. Citizens also have a responsibility to the other people in their community, to work together on issues that concern the community. Each citizen has a voice, and a duty to use that voice to speak up about the things that are important to him/her.

In addition to your national **citizenship**, you are also citizens of your state and your local city. You have similar rights and responsibilities toward each different level of your citizenship. By making sure you are aware, and that you use your voice by voting in **elections**, you make our country a better place.

LEVEL: D.17 DATE: NAME:

- PREVIEW THE PASSAGE (*title, bold words, pictures, etc.*)
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- “ZAP”** THE ANSWERS WITH THE QUESTIONS (*with marker/highlighter*)
- ANSWER EACH QUESTION WITH A **COMPLETE SENTENCE**

1) In your own words, explain what it means to be a citizen.

2) What are the first 10 amendments to the United States Constitution called?

3) Why do you think a person might be motivated to become a citizen of a country other than the one where they were born?

4) How could speaking up about issues that bother you help you and other citizens?

5) Why is it important for citizens to become informed and vote in elections?

What's Your Angle?

Cross-Curricular Focus: Mathematics



Did you know that when you measure an **angle**, the number of degrees you measure tells what part of a circle the angle is? That's right. Every angle is a part of a circle. A circle is divided up into 360 tiny little slices, called degrees. The word "degrees" can also be replaced by this mathematical symbol: °, usually written slightly up to the right just after the number in a measurement. When you measure an angle, you are basically counting how many of the circle's 360 degrees fit in the space between the two arms of your angle.

A straight angle is when the two arms of the angle lay flat in a straight line. A straight angle measures 180°. A **right** angle forms a perfectly square corner, with one arm of the angle laying flat on the straight line, and the other arm pointing straight up. A right angle measures exactly 90°. An angle that has less than 90° is called an **acute** angle. Some people remember the name of the acute angles by thinking about them being the smallest of the angles, and things that are tiny are often cute. "What a cute little angle!" An angle that has more than 90° is called an **obtuse** angle.

While it is possible to estimate the approximate size of an angle just by looking at it, sometimes other tools are necessary. In the case of a right angle, a special symbol lets you know at a quick glance that it measures exactly 90°. Just look for a small square in the corner formed by the two arms of the angle. For all other angles, though, you may want to take out either a protractor or an angle ruler. Both have markings that show the 360 degrees of a circle so that you can line them up with the arms of the angle you want to measure, and find out precisely how much of the circle fits between the two arms of the angle. Before long, you'll know exactly what your angle is.

LEVEL: D.18 DATE: NAME:

- PREVIEW THE PASSAGE (*title, bold words, pictures, etc.*)
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- “ZAP”** THE ANSWERS WITH THE QUESTIONS (*with marker/highlighter*)
- ANSWER EACH QUESTION WITH A **COMPLETE SENTENCE**

1) Why do we measure angles in degrees?

2) Which kind of angle has a special symbol that helps you know its measurement?

3) What tools can help you find out the precise measurement of an angle?

4) What is another name for a straight angle?

5) In your own words, explain the relationship between a circle and an angle.

The Metric System

Cross-Curricular Focus: Mathematics



There are two basic systems of measurement: the metric system, and the standard/customary system of measurement. The United States, Liberia, and Myanmar are the only countries in the world that still use the standard/customary system of measurement. Ironically, the United States was involved in the metric system meetings from the beginning, and was a signer of the 1875 Treaty of the Meter, voting to recognize the meter as a standard of measurement. So where did the metric system come from, and why don't we use it?

In 1790, just after the French Revolution ended in France, the new French government commissioned the French Academy to develop a simpler system of measurement. The agreed-upon measurement for one *metre* was one ten-millionth of the distance between the north pole and the equator, as measured along the Paris meridian. It took until 1800 to complete the survey and finalize the metric system based on this new measurement.

American relations with France were much better than its relations with England in 1800, as the American Revolution was fresh in the lives of the people on both sides of the ocean. President Thomas Jefferson enjoyed a good relationship with the new French government. It was during this time that he made the Louisiana Purchase, buying a huge section of land from France that greatly enlarged the territory of the United States. For some reason, the United States failed to immediately approve the new, simpler metric system at its first opportunity.

Interestingly, approval for the U.S. to "go metric" was granted by Congress in 1866, and the U.S. did sign the Treaty of the Meter in 1875. The standard or customary system of measurement would not go quietly. Instead, the U.S. added metric equivalents for standard measurements in 1959. For example, one inch is exactly 2.54 **centimeters**. But there is no direct comparison for the smaller unit, the **millimeter**. The U.S. government still states that our nation is working toward the goal of going metric, but for now we seem to be stuck somewhere in the middle. Many medical and scientific measurements use the metric system, while customary units are still seen in daily places such as marking miles and miles per hour rather than **kilometers** or kilometers per hour on our highways. Change is difficult. It's not the metric system we fear, but the change.

LEVEL: D.19

DATE:

NAME:

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- "ZAP" THE ANSWERS WITH THE QUESTIONS (*with marker/highlighter*)
- ANSWER EACH QUESTION WITH A COMPLETE SENTENCE

1) There is a lot of talk about the metric system being a simpler system. What makes it simpler?

2) Why do you think the United States did not immediately switch to the metric system in 1800?

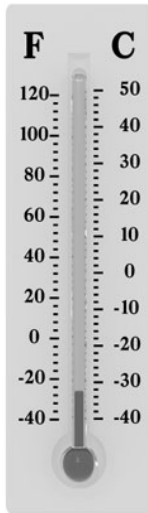
3) Do you think it was right for the U.S. to sign the Treaty of the Meter and then not switch to the metric system?

4) Why do you suppose the fields of science and medicine have been the first to switch to the metric system?

5) In your opinion, why are people so resistant to change?

Measuring Temperature

Cross-Curricular Focus: Physical Science



The most common tool for measuring **temperature** is the thermometer. Many thermometers, like the one pictured to the left, use two different temperature scales: Fahrenheit and Celsius. You may have wondered what these are and how they relate to each other. Both scales were invented in the 1700's and are named after their inventors.

The Fahrenheit scale was invented by Gabriel Fahrenheit. He set a boiling point for water at 212°, and a freezing point at 32°. Temperatures are measured all along the scale, much like a number line, with the unit of measurement being a degree rather than an inch.

Anders Celsius invented the Celsius scale after the Fahrenheit scale was in use. He kept Fahrenheit's anchor points: the temperatures at which water would freeze or boil, but he reset the numbers. Under the Celsius scale, water freezes at 0° and boils at 100°. This numbering scale has been adopted for most scientific study, and works well with the metric system, which they also use.

Many outdoor thermometers work because liquid changes its volume (the amount of space it takes up) based on its temperature. When a liquid is cold, it takes up less space than it does when it is warm. Since many of the changes are very slight, thermometers use a large bulb and a very narrow tube to capture changes in temperature when they happen. The markings on the thermometer are based on the freezing point and boiling point of water. Why? Because Gabriel Fahrenheit chose them as conditions that are easy to recreate, and Anders Celsius agreed. Sometimes, inventors set the standard for everyone.

LEVEL: D.20

DATE:

NAME:

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- READ THE 5 QUESTIONS OUT LOUD
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- "ZAP" THE ANSWERS WITH THE QUESTIONS (*with marker/highlighter*)
- ANSWER EACH QUESTION WITH A COMPLETE SENTENCE

1) Why do you think Gabriel Fahrenheit chose 32 degrees and 212 degrees as the numbers for the freezing point and boiling point of water?

2) Why do you think Anders Celsius wanted to change the numbers to 0 degrees and 100 degrees?

3) Why is it important to be able to measure temperature?

4) Gabriel Fahrenheit invented the first thermometer. Describe the process he probably went through.

5) If you invented your own temperature scale or thermometer, what might it look like? Why?
