Stonegate

5th Grade

Independent Study
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<th>Book Title(s)</th>
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**READING MENU**

After reading, choose 1 question and circle it.
Questions 1-6 are best for fiction stories and questions 7-9 are best for nonfiction books. Record your answer to the question in complete sentences.

| 1. | Compare and contrast this story to another story that you have read. |
| 2. | Would you recommend this story to others? Why or why not? Give specific reasons and examples. |
| 3. | How does the main character feel about the problem in the story? How do you know? |
| 4. | If you were the author, what would you change about the story? Why? |
| 5. | If you were giving a gift to the main character, what would you give? Why? |
| 6. | Was the author’s purpose to persuade, inform or entertain? How do you know? |
| 7. | Find three new words in the text. Use context clues and/or a dictionary to define the words. |
| 8. | What new facts have you learned from your book? |
| 9. | What questions do you still have on the topic you are reading about? |

**SELF CHECK**

- I answered the entire question that I chose.
- I wrote in complete sentences.
- I used evidence and examples from the text to support my answer.
- I edited my work to make sure that it makes sense.
Lesson 1: What are properties of matter?

Vocabulary

**element** one of more than 100 basic kinds of matter that cannot be broken into smaller pieces through physical or chemical processes

**physical property** any property of a material that can be seen or measured without changing the material

**chemical property** any property of a material that describes how it changes into other materials

Elements

An **element** is a basic building block of matter. There are more than 100 elements. For example, gold is an element. Gold is made only of gold. Elements combine to make all other matter.

Most living and nonliving things are made of only a few elements. These elements combine in many ways. More than 98 percent of Earth’s crust is made of only eight elements—oxygen, silicon, aluminum, iron, calcium, sodium, potassium, and magnesium. Earth’s crust has almost 3,500 minerals in it. These minerals are mostly made of the eight common elements in the crust.

Living things are mostly made of the elements carbon, oxygen, hydrogen, nitrogen, sulfur, and phosphorous. For example, 96 percent of your body is made of carbon, hydrogen, oxygen, and nitrogen.

Physical Properties of Matter

A **physical property** of a material is something that can be seen or measured without changing the material. We observe many different physical properties of a material or substance. Color and hardness are physical properties. If we look at a piece of copper, we see that it is a solid, not a liquid or a gas. This is a physical property. Copper is also shiny.

Mass and weight are physical properties. Mass is the amount of matter in an object. Weight measures the pull of gravity on an object. The weight of an object changes when gravity is stronger or weaker. For example, your weight on Earth is six times more than your weight on the Moon. But your mass on the Earth and your mass on the Moon are the same.

A physical property of a material is magnetism. Other physical properties are the temperatures that make a substance boil and freeze. Another physical property is whether or not a substance dissolves in other substances.

Chemical Properties of Matter

Matter also has chemical properties. The **chemical properties** of a substance tell how this substance mixes with something else to form a new substance. When wood burns, it changes into ash and gases. A chemical property of wood is that wood is flammable. Flammable means that it can burn. Water cannot burn. A chemical property of water is that water is not flammable.

Another chemical property is whether a substance changes when it is mixed with acid. A nail made of zinc forms bubbles when it touches acid. This is a chemical property of zinc.
Lesson 2: What makes up matter?

Vocabulary

**atom** the smallest particle of an element with the same properties of the element

**atomic number** the number of protons in the nucleus of an atom; the single most important property of an element

**molecule** the smallest part of a substance made from more than one atom that still has the properties of that substance

Atoms and Elements

An **atom** is the smallest piece of an element that still has the properties of that element. Each element is made of only one kind of atom. For example, gold only has atoms of gold.

Atoms are made of smaller parts. The center of the atom is the nucleus. Protons and neutrons are in the nucleus. A neutron does not have an electrical charge. A proton has a positive charge. Each element has a different number of protons in its nucleus. The number of protons is called the element's **atomic number**. The atomic number is the most important property of an element. Electrons have a negative charge. They move very quickly around the nucleus.

Molecules

Atoms combine to make molecules. A **molecule** is the smallest part of a substance that has the same properties as the substance.

Atoms and molecules are too small for you to see, even with a normal microscope. Scientists have devices to “see” atoms and molecules. Atoms look like small spheres arranged in patterns.

Elements and the Periodic Table

The periodic table on page 12 of your textbook shows elements in order according to their atomic numbers. The atomic numbers increase as you read across the table from left to right. The numbers also increase as you read down the table. Elements in the same column have similar chemical properties. Every element has a symbol of one or two letters.

Classifying Elements

There are three groups of elements: metals, nonmetals, and metalloids. Nonmetals are usually brittle. They break when you bend them. They are not good conductors of heat or electricity. Metalloids have some properties of metals and some properties of nonmetals.

Information on the Periodic Table

The periodic table has 18 columns. Each column is called a group or family. The elements in a group react in similar ways when they mix with other substances.

Each row is called a period. The elements in a period have very different properties.

Metals and Their Properties

Most metals are solid and shiny. They are malleable, which means that they do not break when you bend them. Metals are good conductors of heat and electricity. They can be made into wire, so they are called ductile. Some metals are pure elements, like gold and copper.

Some metals are made of more than one element. Metals that are made of two or more metals are called alloys. Steel is an alloy made of iron and carbon. Steel is stronger than iron.
Lesson 3: What are compounds?

Vocabulary

compound a kind of matter made of a chemical combination of two or more elements

Properties of Compounds

When atoms of two or more elements combine, they form a compound. Most things in the world are compounds. When atoms make a compound, the compound's properties are different from the properties of the atoms. Sugar is made from carbon atoms, hydrogen atoms, and oxygen atoms. But carbon atoms are not sweet. Hydrogen and oxygen atoms are not sweet. Sugar is sweet because carbon, hydrogen, and oxygen atoms combine in a special way.

Every compound has a chemical formula. The formula tells you how many atoms of each element are in the compound. Water has the formula H₂O. The H stands for hydrogen. The "2" tells you that a molecule of water has two atoms of hydrogen. The O stands for oxygen. There is no number after the O, so there is one atom of oxygen. Every molecule of water has one atom of oxygen and two atoms of hydrogen.

The Same Element in Different Compounds

Compounds are important to your body. Water is a compound. About 60 percent of your body is made of water. Other compounds are in your skin and your bones.

One element can be in different compounds. For example, sodium is an element. Sodium and chlorine make table salt. Table salt is safe and we can eat it. But sodium and water react violently. They can catch fire and burn. Sodium and water make sodium hydroxide and hydrogen gas.

Salts

Salts are compounds. The particles in salts have opposite charges. The positive and negative charges hold the particles together.

There are many kinds of salts. Almost all salts have two properties. First, almost every salt has at least one metal element and one nonmetal element. Table salt is made of sodium, a metal, and chlorine, a nonmetal. Second, all salts form crystals. A crystal is made of particles that are arranged in regular patterns. Salt crystals are brittle.

Forming Salts

Salts can form when an acid mixes with a base. Many acids and bases are dangerous. They can burn your skin or poison you. NEVER taste any chemicals in a science experiment.

Properties of Salts

Table salt, or sodium chloride, is the salt you eat. Most salts have many properties in common. You read that most salts contain metal and nonmetal elements. All salts form brittle crystals.

Most salts melt only at very high temperatures. Most salts dissolve in water. When salts are dissolved in water, they conduct electricity.

Salts have different properties than the elements that make them. For example, copper is not blue, sulfur is not blue, and oxygen is not blue. But copper, sulfur, and oxygen together make a blue salt. This salt is poisonous.
Lesson 4: How can we separate mixtures?

Vocabulary

**solution** a mixture in which substances are spread out evenly and will not settle.

Mixtures

Mixtures and compounds are different. The parts of a compound bond together. A compound has new physical and chemical properties. The parts do not keep their own properties.

The parts of a mixture do not bond together. Each part of a mixture keeps its own properties.

Many foods you eat are mixtures. Soup is a mixture. Soup can have chicken, noodles, carrots, and broth. You can separate the carrots from the noodles and eat them with your spoon.

The parts in a mixture are not always in the same amounts. One bowl of soup can have more carrots or noodles than another bowl.

Separating Mixtures

In a compound, the parts bond together. They become a new substance.

In a mixture, the parts do not bond together. Mixtures can be separated. To separate a mixture, you need to know the physical or chemical properties of the parts. Imagine you have sand mixed with small pieces of iron. It will take a long time to pick the pieces of iron from the sand. But you know that iron is magnetic. Sand is not magnetic. So, you can use a magnet to separate the iron from the sand. The magnet will pick up the iron. The magnet will not pick up the sand.

A filter can separate a mixture. Imagine you have a glass filled with a mixture of soil and water. Pour the mixture through a filter. The soil collects in the filter. The water flows through the filter. The mixture is separated.

Solutions

A **solution** is a special kind of mixture. The parts are spread evenly through all areas of the mixture. The parts do not settle to the bottom. Salt and water mix together to make a solution. The salt dissolves in the water.

The substance that dissolves is called the solute. The substance in which the solute dissolves is called the solvent. When salt and water mix, salt is the solute. Water is the solvent. Water is the solvent in many solutions. So, water is called "the universal solvent."

Solubility is a physical property. Solubility tells how much of one substance will dissolve in another substance.

Chromatography

Chromatography uses the different solubilities of substances to separate and identify the parts of a mixture. Police departments often use chromatography to identify substances.
Lesson 1: What are physical and chemical changes?

Vocabulary

**physical change** a change in which matter keeps the same chemical properties; a change in size, shape, volume, or state of matter

**chemical change** a change in which one kind of matter changes into a different kind of matter with different properties.

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Physical Changes

All matter can go through physical and chemical changes. A **physical change** can be a change in size, shape, volume, or state of matter. Rain can freeze to form ice. The rain and ice have different sizes, shapes, and states of matter. But they are both still water. They have not changed chemically.

You can cut paper into pieces. Wax can melt. Copper can be hammered into sheets. Diamonds can be cut into beautiful shapes. All of these changes are physical changes. The materials look a little different, but they have not changed into something else.

Some substances may look completely different after a physical change. When salt crystals dissolve in water, you cannot see the salt crystals. But the salt is still there. When the water evaporates, you can see the salt crystals again.

Chemical Changes

A **chemical change** happens when one kind of matter changes into a different kind of matter with different properties. When a chemical change happens, atoms are rearranged. The matter does not just change size or shape. The matter becomes something else with new properties.

When you cook a potato, it turns brown and crispy. The potato's chemical properties change. The potato tastes different.

How do you know when a chemical change happens? When iron rusts, this is a chemical change. You can see that the gray iron changes to red-orange rust. The chemical change causes a color change. Chemical changes can also cause heat, light, and sounds such as fizzing.

Evidence of Chemical Changes

A chemical change often produces a gas or a solid. Burning is a chemical change. When a candle burns, it goes through a chemical change. The oxygen gas in the air also goes through a chemical change. This process produces new substances: ash, carbon dioxide gas, and water vapor. These substances have different properties from the candle and the oxygen.
Lesson 2: How does matter change state?

Vocabulary

- **evaporation**: the process by which particles leave a liquid and become a gas
- **condensation**: the process by which a gas becomes a liquid
- **sublimation**: the process by which a solid changes directly into a gas

**States of Matter: Solids and Liquids**

Water has three states, or phases, of matter. It is a solid when it is frozen as ice. It is a liquid in the ocean. It is a gas in the air. Solid, liquid, and gas are phases of matter. The phase of any material depends on the motion and position of its atoms and molecules. The phase of a material is a physical property.

- Solids have a definite shape and volume.
- The particles in solids are close together.
- Liquids do not have their own shape.
- Liquids take the shape of their container.
- The particles in liquids are close together. But the particles can move and flow. Like solids, liquids have a definite volume.

**States of Matter: Gases**

The particles in gases are far apart. Gas particles spread out evenly to fill a container. Gases do not have a definite shape or volume.

**Freezing and Melting**

Melting point and freezing point are two names for the same temperature. The melting point is the temperature at which a solid turns into a liquid. The freezing point is the temperature at which a liquid turns into a solid.

- Each material has its own melting point. Scientists use melting points to identify materials. When one material is added to another, the melting point changes. When you add salt to ice, the salt lowers the melting point of the ice.

**Particles in Motion**

As a material gets hotter, its particles move faster. Particles that move faster have more space between them. The extra space makes the substance expand, or get larger.

When a material cools, it may get smaller. Its particles move more slowly. Particles that move slowly have less space between them.

**Evaporation and Condensation**

**Evaporation** is when particles leave a liquid and become a gas. Particles at the surface of a liquid can evaporate.

When the temperature of a liquid is high enough, particles change to a gas below the surface. This is called the boiling point. Each liquid has its own boiling point. Boiling point is a physical property. The amount of a liquid does not change its boiling point.

**Condensation** happens when a gas turns into a liquid. For example, when gas particles touch a cold surface, they get colder. The particles slow down. As more and more particles condense, they form a liquid drop. Clouds and dew form by the process of condensation.

**Sublimation**

Some solids change directly into gases. These solids do not form liquids first. This change is called **sublimation**. Solid carbon dioxide is called dry ice. Dry ice sublimes to form carbon dioxide gas.
Lesson 3: What are some kinds of chemical reactions?

Vocabulary

- **reactant**: a substance used in a chemical reaction
- **product**: a substance made by a chemical reaction
- **chemical equation**: a statement of chemical symbols that shows what happens during a chemical reaction

Chemical Equations

A substance changes into another substance during a chemical reaction. The substance that changes is called the reactant. The substance that is made is called the product. The atoms of the reactants rearrange to make the products. The products have different physical and chemical properties than the reactants.

A chemical equation shows what happens during a chemical reaction. On the left side of the equation are the reactants. On the right side of the equation are the products. There is an arrow between the reactants and the products. The arrow is like the equals sign in a mathematics equation.

When electricity flows through water, the water molecules rearrange to make hydrogen and oxygen gases. Water is the reactant. Hydrogen and oxygen gases are the products. The chemical equation is $2\text{H}_2\text{O} \rightarrow 2\text{H}_2 + \text{O}_2$.

Magnesium is a gray metal. At high temperatures, it reacts with oxygen and burns. The chemical reaction makes magnesium oxide, a white powder. Magnesium oxide is the product of the reaction.

Matter Is Always Conserved

Matter cannot be created or destroyed in a chemical reaction. The total mass of the products is exactly the same as the total mass of the reactants. This is the Law of Conservation of Mass.

Types of Chemical Reactions

There are three major kinds of chemical reactions. In a decomposition reaction, a compound splits apart. This forms smaller compounds or elements. Water molecules break apart to form hydrogen and oxygen gases.

In a combination reaction, elements or compounds come together, or combine. A new compound is formed. Iron and sulfur join in a combination reaction. The product is iron sulfide.

In a replacement reaction, one or more compounds split apart. Then the parts switch places. A replacement reaction happens when a candle burns. Candle wax is made of carbon and hydrogen atoms. Oxygen gas is made of two oxygen atoms. When the wax burns, the molecules break apart. They join together to make carbon dioxide and water.

Examples of Chemical Reactions

A chemical change is when one kind of matter changes into a different kind of matter with different properties. The products have different properties than the reactants.

Rust forms in a combination reaction. Iron atoms and oxygen atoms combine. They form a new substance made up of both elements. The new substance is iron oxide, or rust.
Lesson 4: How are chemical properties used?

Separating Mixtures
Physical properties are used to separate some mixtures. For example, a magnet separates pieces of iron from sand. But some mixtures cannot be separated using physical properties. So how can you separate these mixtures?
People use chemical properties to separate some mixtures. Scientists often find fossils stuck in limestone rock. Scientists use the chemical properties of limestone to separate the fossils from the rock. They pour vinegar on the limestone. The vinegar breaks down the limestone, but it does not break down the fossil. The fossil separates from the rock.

Separating Metals from Ores
Ore is a type of rock. Ore contains metals combined with other materials. People use chemical properties to separate the metal from the other material. Iron ore contains iron oxide. Hot temperatures make the iron separate from the oxygen in the ore.

Separating Solutions
People use chemical properties to separate some solutions. Lead can be removed from a solution that contains lead and water. This solution is mixed with iodine. The lead reacts with the iodine to make a yellow solid. The yellow solid is lead iodide. A filter separates the lead iodide from the liquid.

Identifying Substances
Scientists use physical properties to identify substances. They also use chemical properties to identify substances.
Chemical properties can identify acids and bases. Lemon juice and vinegar are acids. Some soaps are bases.
Universal indicator paper tells if a substance is an acid or a base. Acids and bases react with chemicals in the paper. Acids make the paper turn red or orange. Bases make the paper turn purple, blue, or green.
Universal indicator paper gives important clues to help identify a material. But it does not tell you exactly what material you have. Other tests are needed.
A flame test is when a material gets very hot in a flame. Different substances turn different colors when they are very hot. Scientists use flame tests to identify substances.
ALASKA

Alaska comes from the Aleutian word meaning "great land." The name is appropriate. Alaska is the largest of all the states. It is one-fifth of the size of the entire United States. Alaska is twice the size of Texas, the nation's second-largest state.

Alaska's nickname is the "Last Frontier." It was the first state to be added to the union after a 47-year gap. It became a U.S. territory in 1912. The first bill to admit Alaska into the Union was proposed in 1917. However, it was not until 1959 that it became the forty-ninth state. Alaska still has vast unsettled regions. The population of Alaska is about one person for every square mile. It is the nation's most sparsely populated state.

Alaska has some unusual natural phenomena. In Fort Yukon, the temperature once reached 100°F. The record low of -80°F occurred at Prospect Creek. Alaska receives a large amount of snow. An average of 20 feet falls in parts of the state. Within one day, 74 inches fell at Mile 47 Camp.

The aurora borealis, or northern lights, appear from August through April. It is a beautiful display of a band of shimmering light.

Alaska is often called the "Land of the Midnight Sun." At Barrow, on the northern border, the sun shines continuously for 84 days from May 10 to August 2. However, there is no sunshine at Barrow for 67 days from November 18 to January 14.

Thousands of years ago, several aboriginal tribes crossed from Siberia over the Bering Strait into Alaska. These tribes were the ancestor tribes of the Aleut, Eskimo, Tsimshian, and Tlingit civilizations. A Danish explorer, hired by the Russian government, discovered the Bering Strait. Only a few miles separate Alaska from Russia at this point.

The Russians set up fur trading posts, but did not establish large settlements in the territory due to the harsh climate. The Russians sold Alaska to the United States for $7.2 million in 1867. The sale became known as Seward's Folly. William Seward, Abraham Lincoln's Secretary of State, made the treaty for the transaction. Many thought it was silly, or a folly, because they did not think it was worth the money.

Fishing and fur trading continued to be the major industries of Alaska until the discovery of gold. Prospectors discovered gold in Alaska in 1880. In 1896, a major gold rush began in the Klondike region of Canada. About 60,000 prospectors traveled through Alaska in search of gold. After the gold discoveries, mining and timber became of major importance. Oil and natural gas deposits added to the state's economy. Workers completed the Trans-Alaska pipeline in 1977. The pipeline provided a good method to move oil from the interior of the state to the port of Valdez.

Pollution is a potential problem for the oil industry. The tanker Exxon Valdez ran aground in Prince William Sound in 1989. It spilled over ten million gallons of oil into the water. This caused great damage to the wildlife and ecology of the region.

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<td>Nicknames: Land of the Midnight Sun, The Last Frontier</td>
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<td>Motto: North to the Future</td>
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<td>Major Cities: Anchorage, Fairbanks, Juneau</td>
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<td>Population: 614,000 (est.)</td>
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<td>Area: 591,000 square miles, the largest state</td>
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<td>Major Industries: Fishing, lumber, oil</td>
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<td>Famous Citizen: William Egan</td>
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<td>Flower: Forget-me-not</td>
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<tr>
<td>Tree: Sitka Spruce</td>
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<td>Bird: Willow Ptarmigan</td>
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California

California has the nation's largest population. It is the nation's third largest state. Only Alaska and Texas are larger. California is a state of many contrasts. It has the nation's second highest peak, Mt. Whitney, at 14,494 feet. It also has the nation's lowest point, Death Valley, at 282 feet below sea level. The state's geography includes forests, deserts, mountain ranges, and fertile valleys. Yosemite Falls is the continent's highest waterfall. The world's oldest tree is over 4,600 years old. The world's tallest trees are the redwoods. One tree is 275 feet tall and over 100 feet around.

The state also has a diverse population. The minority population is over 43 percent. The population includes 25.8 percent Hispanic, 9.6 percent Asian-American, 7.4 percent African-American, and just under 1 percent Native American.

Native Americans lived in the California region for thousands of years. When the first Europeans arrived, natives spoke over 100 distinct dialects. In 1533, an expedition sent by Hernando Cortés first saw California. Cortés established a settlement two years later, but it was soon abandoned.

Sir Francis Drake claimed the northern part of the area for England in 1579. Several Spanish missionaries settled in the southern region beginning in 1769. The control of the area went from Spanish to Mexican in 1821. After the Mexican War, California came under the control of the United States.

The California gold rush began in 1848, when gold was discovered at Sutter's Mill. California became the nation's thirty-first state in 1850.

Settlers sailed around the tip of South America or came across prairie, desert, and mountains by wagon train to get to California. In 1869 the transcontinental railroad was completed linking California with the rest of the nation. Settlers could now come by rail, and products could more easily be shipped to the East.

California experiences many earthquakes. The most famous one was in San Francisco in 1906. Other large earthquakes occurred in Los Angeles in 1971 and San Francisco and Oakland in 1969.

Three presidents had California connections. Herbert Hoover lived much of his life in the state. Ronald Reagan also lived much of his life there and served as the state's governor before becoming president. Yorba Linda was the birthplace of Richard Nixon. Nixon represented the state as a representative in Congress before his election as vice president and president.

California is the nation's top manufacturing state. Major industries include electronics, electrical equipment, transportation equipment, food processing, printing, and motion pictures. It is also the leading state farm income. Milk, beef, cotton, fruits, and vegetables are all major farm products.

Capital: Sacramento
Nickname: Golden State
Motto: Eureka (I have found it)
Major Cities: Los Angeles, Sacramento, San Diego, San Francisco
Population: 32,667,000 (est.)
Area: 159,000 square miles, 3rd largest
Major Industries: Fruits, vegetables, motion pictures, computers, aerospace
Flower: Golden Poppy
Tree: California Redwood
Bird: California Valley Quail
COLORADO

Colorado has the highest average altitude of any state. It has 54 mountains over 14,000 feet high. Twenty-seven of these are higher than Colorado’s most famous mountain, Pike’s Peak.

The nickname of Colorado’s capital, Denver, is “the Mile-High City.” The thirteenth step of the state capitol is exactly one mile above sea level.

The world’s highest suspension bridge, the Royal Gorge bridge, crosses the Arkansas River.

Evidence exists that tribes of hunters roamed through Colorado about 20,000 years ago. About 100 B.C., basket-makers settled in the state. Later, both Pueblo and cliff-dwelling Anasazi tribes appeared in the state.

In 1888, a rancher discovered the cliff village at Mesa Verde. The city contained plazas and stone houses deserted for over 600 years. Some of the houses are two and three stories high. The Anasazi used ropes and ladders to climb from one story to the next.

By the time of the arrival of the Spaniards in the sixteenth century, Arapaho, Cheyenne, and Utes lived in the region.

Control of the region went back and forth between Spain and France until 1803. The Louisiana Purchase included part of Colorado. The rest of the state came under U.S. control after the Mexican War.

Colorado became the thirty-eighth state in 1876. One of its nicknames is the “Centennial State” since it became a state 100 years after the signing of the Declaration of Independence.

Early industries in the state included fur trade and agriculture. After their discovery, gold and silver mining became the most important influence in the state’s history and economy.

Prospectors discovered gold in 1858 at Cherry Creek and in 1891 at Cripple Creek. A silver rush began in 1878. Leadville and Aspen became important silver mining towns. The most famous silver mine was the “Matchless Mine” owned by Horace Tabor. Other important discoveries included uranium in 1946 and shale oil in 1974.

Tourism is an important industry for Colorado. Colorado Springs became a popular health spa in the 1860s. Today it is the site of the U.S. Air Force Academy and the U.S. Olympic training facilities.

Rocky Mountain National Park, Mesa Verde National Park, and Dinosaur National Monument are popular tourist destinations. Aspen and Vail are two of the country’s most popular ski resort areas.

The scenery in the state is spectacular. Katharine Lee Bates wrote the song “America the Beautiful” while visiting Pike’s Peak in 1893.

In 1995, Colorado elected Ben Nightdress Campbell to serve in the U.S. Senate. Mr. Campbell was the first Native American to serve there.
HAWAII

Hawaii's nickname is "the Aloha State." Aloha is the native word meaning "love." Hawaiians use it as a greeting for hello, good-by, welcome, or farewell.

Hawaii is the only state that is entirely made up of islands. About 135 islands make up the state. The islands are actually the peaks of volcanoes rising from the floor of the Pacific Ocean. The volcanoes formed the islands over 25 million years ago.

About 80 percent of the people of Hawaii live on the island of Oahu. The other larger islands include Hawaii, Maui, Lanai, Molokai, Niihau, and Kauai.

Hawaii is also the only state that was once an independent monarchy. Eight kings and queens ruled from 1795 until 1893. King Kamehameha I gained control over and united the islands. His grandson, King Kamehameha III, gave his nation its first written constitution. He based it on many government ideas of the Western nations. The last ruler of the island was Queen Liliuokalani. American business interests caused the overthrow of her government in 1893.

The first people to live on the islands were Polynesians who arrived in large canoes around A.D. 400. The trip was over 2,000 miles long. Others from Tahiti arrived a few centuries later. Hawaii continued to be a "melting pot" with the arrival of large numbers of Chinese, Japanese, Filipinos, Koreans, and Americans.

In 1778, Captain James Cook was the first European to visit the islands. He named them the Sandwich Islands in honor of his patron, the Earl of Sandwich. Cook returned to the islands the following year and was killed by the natives.

Missionaries from the United States arrived in the early 1800s. They established newspapers, churches, and public schools. Unfortunately, they also brought diseases to the island for which the natives had little resistance. Over half the native population died from these diseases.

The increased presence of U.S. citizens and businesses led to annexation by the United States in 1898. Two years later, Hawaii became a U.S. territory. Hawaii became the fiftieth state in 1959.

Hawaii is the site of Pearl Harbor. On December 7, 1941, the Japanese attacked a U.S. navy base located there. The attack destroyed over 18 warships, 200 airplanes, and cost over 4,400 lives. The attack led to the entrance of the United States into World War II.

Tourism is a major industry of Hawaii. It is famous for its beautiful scenery and beaches. Favorite destinations include Hawaii Volcanoes National Park, the USS Arizona Memorial at Pearl Harbor, Hulihee and Iolani Palaces, and the Waikiki resort area.

Early industries of Hawaii included sandalwood and whaling. Both sugar cane and pineapple became major crops in the nineteenth century. Sugar and pineapple still dominate Hawaii's exports.

Hawaii suffered a devastating hurricane, Iniki, in 1992, which caused over $1.4 billion in damages.

**Capital:** Honolulu  
**Nickname:** Aloha State  
**Motto:** The Life of the Land is Perpetuated in Righteousness  
**Major Cities:** Honolulu, Hilo, Kailua  
**Population:** 1,193,000 (est.)  
**Area:** 6,000 square miles, 47th largest  
**Major Industries:** Tourism, agriculture  
**Famous Citizens:** Queen Liliuokalani, Sanford B. Dole, Bette Midler  
**Flower:** Hibiscus  
**Tree:** Kukui (Candlenut)  
**Bird:** Nene (Hawaiian Goose)
IDAHO

When most people think of Idaho, they think of potatoes. Idaho's farmers grow more potatoes than any other state. Over 25 percent of the nation's potatoes come from Idaho. Other crops grown in the state include sugar beets, alfalfa, bluegrass seed, and hops. Idaho also has large cattle and timber industries.

Idaho has many artifacts of its ancient people including examples of cave and cliff writings and drawings. The largest preserved prehistoric drawing in the nation is near the Snake River.

Six major tribes lived in the region when the first Europeans arrived. Members of the Shoshone, Paiute, Kutenai, Coeur d'Alene, and Nez Perce tribes lived throughout the state.

Much of Idaho was part of the Louisiana Purchase of 1803. The first white men to enter Idaho were the members of the Lewis and Clark expedition. The expedition, sent by President Thomas Jefferson to explore the lands of the Louisiana Purchase, entered the state in August 1805. The Nez Perce Native Americans aided the expedition by providing food, canoes, and guides.

The first Europeans to live in the territory were fur traders. The North West Fur Company built a trading post in 1808. By 1840, the Hudson's Bay Company controlled most of the region.

Missionaries arrived in the 1830s, and Henry Spalding established a mission among the Nez Perce in 1836. As more whites moved into the region, a series of conflicts with the natives began. The Nez Perce War continued until the signing of a treaty in 1872.

The United States gained control of the Pacific Northwest region, including the portion of Idaho not included in the Louisiana Purchase, from Britain in 1846.

The opening of the Oregon Trail increased traffic through the state. Over 500,000 Americans traveled along the trail. Most of the people traveled through the state rather than settled there. Many began to stay after the discovery of gold, however, and Idaho became a territory in 1863 and the forty-third state in 1890.

One of Idaho's many nicknames is "the Gem State." Numerous discoveries of gems and precious metals led to this name. Major discoveries included gold in 1860 and silver in 1880.

Gem stones found in the state include diamonds, rubies, sapphires, agates, aquamarines, beryl, opals, and topaz.

Idaho contains many natural wonders. It has 42 mountains over 10,000 feet high. It is a major recreational region. Idaho has over 3,200 miles of white water rivers, more than any other state. Popular activities include boating, fishing, hunting, skiing, and camping. It is the location of 11 national forests, parks, and recreational areas. The most famous of these include part of Yellowstone National Park, Craters of the Moon National Park, and Hell's Canyon National Recreation Area. Idaho also contains a large number of state parks and recreation areas for both summer and winter activities.

Capital: Boise
Nickname: Gem State
Motto: It's Perpetual
Major Cities: Boise, Idaho Falls, Pocatello
Population: 1,229,000 (est.)
Area: 84,000 square miles, 13th largest
Major Industry: Agriculture
Famous Citizens: Ezra Pound, Lana Turner, Chief Joseph, Sacajawea
Flower: Syringa
Tree: Western White Pine
Bird: Mountain Bluebird
MONTANA

Montana’s nickname is the “Treasure State.” This refers to the state’s deposits of valuable minerals. These include gold, copper, silver, zinc, oil, and coal.

Grassland great plains cover the eastern two-thirds of the state. The Rocky Mountains cover the western third of the land. Montana is a Spanish word meaning “mountain.”

Numerous Native American tribes lived and hunted in the region. Members of the Arapaho, Assiniboine, Apsaroke, Bannock, Blackfoot, Cheyenne, Crow, Kalispel, Salish, and Shoshone lived in the state. The Nez Perce, Sioux, and Mandan hunted in the region. Today, members of 12 tribes live in Montana. The state contains seven reservations. Two famous battles between the U.S. government and Native American tribes occurred in Montana. On June 25, 1876, 15,000 Sioux and Cheyenne warriors under Chief Crazy Horse defeated 700 soldiers under Lieutenant Colonel George Custer. Custer and 265 of his men were killed. The battle at the Little Big Horn River became known as “Custer’s Last Stand.” Soldiers and settlers defeated Nez Perce warriors under Chief Joseph on October 5, 1877. At the time of his defeat, Chief Joseph said, “The little children are freezing to death. My heart is sick and sad. From where the sun now stands, I will fight no more forever.”

Eastern Montana was part of the Louisiana Purchase. Great Britain ceded the remainder of the state to the United States under the 1846 Oregon Treaty.

French fur traders came through the region in 1743. Members of the Lewis and Clark Expedition of 1805 crossed through Montana. They also visited the area on their 1806 return trip. The expedition identified many plants and animals during the trip. They were the first Europeans to note the state bird (western meadowlark), flower (bitterroot), fish (cutthroat trout), grass (bluebunch wheatgrass), and tree (Ponderosa pine). After the Lewis and Clark Expedition, fur traders and later miners settled in the region. Fort Benton was the first permanent settlement. Established in 1847, it was an outpost of the American Fur Company.

Prospectors discovered gold near Drummond in 1858 and at Grasshopper Creek in 1862. Montana’s cattle industry began in 1860. Ranchers drove longhorns from Texas into the region.

Montana became part of the Idaho Territory in 1863. President Lincoln established the Montana Territory the following year. Montana became the forty-first state in 1889.

Montana sent the first woman, Jeanette Rankin, to the U.S. House of Representatives in 1916.

Tourism is an important part of Montana’s economy. The northern part of Yellowstone National Park is in Montana. Yellowstone was the first national park ever established. Montana also contains Glacier National Park, Little Bighorn National Monument, The Bighorn Canyon National Recreation Area, and several national forests and monuments.

Tourism, mining, and cattle remain among Montana’s major industries. The state is also an important producer of sheep, wheat, lumber, and wood products.
NEVADA

Nevada is a Spanish word for “snow-covered.” The name came from the snow-topped Sierra Nevada mountain range. These mountains are on the western border of the state. The mountains are tall enough that they block clouds from the West. Without the rain from these clouds, much of Nevada remains a desert.

The first Europeans to visit the region did not arrive until 1775. The Spanish priest Father Francisco Garoés was the first white to explore the southern part of the state. Others soon explored the state including British and American trappers. Mexico controlled the region until after the Mexican War. The first official expeditions were those of Capt. John C. Frémont between 1843 and 1845. The U.S. government gained control of the territory as part of the 1848 Treaty of Guadalupe Hidalgo.

Mormons established the first permanent white settlement, Mormon Station (now Genoa), in 1850. Seven years later, they moved from Nevada to resettle in Utah. Nevada was originally part of the Utah territory. It became the Nevada territory in 1861. Nevada became the thirty-sixth state in 1864. Abraham Lincoln’s supporters rushed through the statehood process to get two more votes to pass the thirteenth amendment to the Constitution, which abolished slavery.

A famous gold and silver discovery, the Comstock Lode, occurred in 1859. The Comstock was the richest discovery in the nation’s history. The gold and silver rush brought many settlers into the state. Nevada’s nickname is “the Silver State.” Nevada’s economy suffered when the Comstock Lode was mined out. Many towns such as Virginia City and several sites near Ely became ghost towns after the mines failed. Interest in mining revived after the discovery of ore at Tonopah and Goldfield in 1900.

In the early twentieth century, irrigation of mountain valleys began. Raising sheep and some crops began. Today, cattle, sheep, and hog production account for over half of the state’s agricultural income.

Workers completed construction on Boulder Dam (now Hoover Dam) in 1935. It was the world’s highest dam at the time of its construction. In addition to providing flood control, the dam generates large amounts of electrical power.

Nevada legalized gambling in 1931. Gambling soon became the state’s largest industry. The gambling industry contributed to the fact that from 1960 to 1980 Nevada was the nation’s fastest-growing state. Las Vegas and Reno became leading gambling and entertainment centers. In recent years, Las Vegas has been the site of many new hotels. The MGM Grand, built in 1993, has 5,000 rooms. It is the largest hotel in the world. Tourism continues to be a major industry. One out of three jobs in Nevada is related to tourism.

Nevada became a testing site for the federal government in 1951. It is the site of the Nellis Air Force Range and the Atomic Energy Commission Nuclear Testing Area.

Capital: Carson City  
Nickname: The Silver State  
Motto: All for Our Country  
Major Cities: Carson City, Las Vegas, Reno  
Population: 1,747,000 (est.)  
Area: 110,500 square miles, 7th largest  
Major Industries: Gambling, mining, concrete  
Famous Citizens: Walter Van Tilburgh Clark, Pat McCarran, Andre Agassi, Sarah Winnemucca Hopkins  
Flower: Sagebrush  
Tree: Single-leaf Piñon and Bristlecone Pine  
Bird: Mountain Bluebird
Chapter 1 Extra Practice

Lessons 1.1 - 1.2
Complete the sentence.
1. 300 is 10 times as much as _________.
2. 400 is \(\frac{1}{10}\) of _________.

Write the value of the underlined digit.
3. 45,130
4. 8,123,476
5. 153,471
6. 6,583,450

Lesson 1.3
Complete the equation, and tell which property you used.
1. \((18 \times 2) \times 5 = 18 \times (2 \times ________)\)
2. \(64 + 58 = ________ + 64\)

Lessons 1.4 - 1.5
Find the value.
1. \(10^2\)
2. \(10^5\)
3. \(6 \times 10^3\)
4. \(8 \times 10^7\)
5. \((6 \times 7) \times 10^3\)
6. \((5 \times 4) \times 10^2\)
7. \((3 \times 9) \times 10^6\)
8. \((5 \times 8) \times 10^0\)

Lessons 1.6 - 1.7
Estimate. Then find the product.
1. Estimate ________ - 2. Estimate ________
2. \(429 \times 5\)
3. \(1,785 \times 8\)
4. \(81 \times 22\)
5. \(558 \times 44\)
6. \(9 \times 802\)
7. \(3,699 \times 7\)
8. \(678 \times 87\)
Chapter 2 Extra Practice

Lessons 2.1 - 2.2

Divide.

1. 8)346
2. 6)1,914
3. 8)1,898

4. 4)952
5. 3,629 ÷ 9
6. 2,961 ÷ 7

7. 3)4,276
8. 6)3,251
9. 1,664 ÷ 5

Lessons 2.3 - 2.6

Estimate. Then divide.

1. 19)1,425
2. 2,384 ÷ 23
3. 378 ÷ 56
Chapter 3 Extra Practice

Lessons 3.1 - 3.2

Complete the sentence.
1. 0.7 is 10 times as much as _____.
2. 0.003 is \( \frac{1}{10} \) of _____.

Write the value of the underlined digit.
3. 3.872
4. 0.194
5. 11.776
6. 4.001

Lessons 3.3 - 3.4

Order from greatest to least.
1. 5.006, 5.917, 5.08, 5.99
2. 0.823, 1.823, 0.732, 0.832

Write the place value of the underlined digit. Round each number to the place of the underlined digit.
3. 0.829
4. 7.918
5. 11.507

Lessons 3.5 - 3.9

Estimate. Then find the sum or difference.
1. Estimate: _____
   8.5
   + 1.8
   _____
2. Estimate: _____
   26.42
   - 9.8
   _____
3. Estimate: _____
   8.26
   + 0.47
   _____

4. Estimate: _____
   7.06 - 1.95
   _____
5. Estimate: _____
   24 - 5.392
   _____
6. Estimate: _____
   3.6 + 2.16 + 1.34
   _____
Chapter 4 Extra Practice

Lesson 4.1

Complete the pattern.

1. \(3.04 \times 1 = \) _________
2. \(1 \times 70 = \) _________
3. \(10^0 \times 0.57 = \) _________

\(3.04 \times 10 = \) _________
\(0.1 \times 70 = \) _________
\(10^1 \times 0.57 = \) _________

\(3.04 \times 100 = \) _________
\(0.01 \times 70 = \) _________
\(10^2 \times 0.57 = \) _________

\(3.04 \times 1,000 = \) _________
\(10^3 \times 0.57 = \) _________

Lesson 4.2

Use the decimal model to find the product.

1. \(4 \times 0.07 = \) _________
2. \(5 \times 0.20 = \) _________
3. \(13 \times 0.03 = \) _________

Find the product. Draw a quick picture.

4. \(7 \times 0.06 = \) _________
5. \(8 \times 0.12 = \) _________
Chapter 5 Extra Practice

Lesson 5.1
Complete the pattern.

1. \(274 + 1 = \) ________  
   \(274 + 10 = \) ________  
   \(274 + 100 = \) ________  
   \(274 + 1,000 = \) ________

2. \(83 + 1 = \) ________  
   \(83 + 10 = \) ________  
   \(83 + 100 = \) ________  
   \(83 + 1,000 = \) ________

3. \(12 \div 10^0 = \) ________  
   \(12 \div 10^1 = \) ________  
   \(12 \div 10^2 = \) ________  
   \(12 \div 10^3 = \) ________

Lessons 5.2, 5.4
Use the model to complete the number sentence.

1. \(1.2 \div 4 = \) ________

2. \(3.75 \div 3 = \) ________

3. \(2.4 \div 6 = \) ________

4. \(4.9 \div 7 = \) ________

5. \(4.92 \div 4 = \) ________

6. \(7) 9.24 \) ________

7. \(4) 7.64 \) ________

8. \(52) 140.4 \) ________
Chapter 6 Extra Practice

Lessons 6.1 - 6.2

Use fraction strips to find the sum or difference. Write your answer in simplest form.

1. $\frac{5}{8} + \frac{1}{4}$
2. $\frac{7}{10} - \frac{3}{5}$
3. $\frac{1}{9} + \frac{5}{6}$
4. $\frac{3}{4} - \frac{5}{8}$

Lesson 6.3

Estimate the sum or difference.

1. $\frac{6}{10} + \frac{7}{12}$
2. $\frac{5}{12} + \frac{7}{8}$
3. $1\frac{3}{8} - \frac{8}{9}$

Lesson 6.4

Use a common denominator to write an equivalent fraction for each fraction.

1. $\frac{1}{2} \cdot \frac{1}{3}$
2. $\frac{7}{8} \cdot \frac{3}{10}$
3. $\frac{2}{3} \cdot \frac{3}{4}$

Common denominator: 

Use the least common denominator to write an equivalent fraction for each fraction.

4. $\frac{1}{4} \cdot \frac{5}{6}$
5. $\frac{1}{2} \cdot \frac{1}{8}$
6. $\frac{3}{5} \cdot \frac{2}{7}$
Chapter 7 Extra Practice

Lesson 7.1

Use a model to solve.

1. \( \frac{2}{5} \times 10 = \) ____
2. \( \frac{1}{4} \times 24 = \) ____
3. \( \frac{3}{7} \times 28 = \) ____

4. \( \frac{4}{9} \times 18 = \) ____
5. \( \frac{2}{3} \times 21 = \) ____
6. \( \frac{4}{11} \times 22 = \) ____

Lessons 7.2 - 7.4, 7.6

Find the product. Write the product in simplest form.

1. \( \frac{3}{7} \times 9 = \) ____
2. \( 8 \times \frac{1}{5} = \) ____
3. \( \frac{4}{9} \times 11 = \) ____
4. \( 2 \times \frac{2}{5} = \) ____

5. \( \frac{3}{4} \times 5 = \) ____
6. \( 3 \times \frac{6}{8} = \) ____
7. \( \frac{1}{3} \times \frac{4}{5} = \) ____
8. \( \frac{2}{7} \times \frac{3}{8} = \) ____

9. \( \frac{4}{9} \times \frac{1}{3} = \) ____
10. \( 3 \times \frac{1}{9} = \) ____
11. \( \frac{5}{7} \times \frac{5}{9} = \) ____
12. \( \frac{1}{8} \times \frac{2}{4} = \) ____

13. At the aquarium, \( \frac{3}{4} \) of the animals are fish. Of the fish, \( \frac{1}{3} \) are clown fish. What fraction of the animals at the aquarium are clown fish?

14. Four hamburgers each contain \( \frac{1}{3} \) pound of beef. Altogether, how much beef do the hamburgers contain?
Chapter 8 Extra Practice

Lesson 8.1

Divide. Draw a number line or use fraction strips.

1. \(2 + \frac{1}{4} = \) _____  
2. \(\frac{1}{7} + 3 = \) _____  
3. \(4 + \frac{1}{5} = \) _____

4. \(3 + \frac{1}{2} = \) _____  
5. \(\frac{1}{8} + 5 = \) _____  
6. \(\frac{1}{9} + 3 = \) _____

7. \(5 + \frac{1}{6} = \) _____  
8. \(8 + \frac{1}{3} = \) _____  
9. \(\frac{1}{5} + 5 = \) _____

Lesson 8.2

Draw a diagram to solve.

1. A baker has 6 small bags of flour. Each bag weighs 1 pound. She divides each bag into thirds. How many \(\frac{1}{3}\)-pound bags of flour does the baker have?

2. Merril cuts 6 apple pies into halves. How many \(\frac{1}{2}\)-size pie pieces does she have?