

Week 1

5th Grade

Name:

Teacher:

Week 1 Assignment 1 Informational Text Response

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* Required

Read pages 286–287 in your textbook and select two features of an informational text. Hint: Use your anchor chart on page 287. *

2 points

- Text features such as headings, charts, and photographs.
- Science fiction characters and setting.
- Text structures may include description, problem/solution, and comparison/contrast.
- Includes talking snowmen like Olaf.

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Week 1, Assignment 2-Vocabulary Preview

Please use your book (pages 288-303) or a dictionary to write the correct definition in a complete sentence. Then use thesaurus.com to find 2 synonyms or make up your own.

Word	Correct Definition	Synonyms (2)
Convention (page 291)		
Delegates (page 291)		
Ratification (page 292)		
Petition (page 296)		
Violations (page 301)		

from

THE BILL OF RIGHTS

by Amie Jane Leavitt



AUDIO



ANNOTATE

BACKGROUND

In 1773, Patriots dumped tea into Boston Harbor to protest being taxed for it. The conflict between Britain and the colonies broke out in war in 1775. After the peace treaty, the new nation continued to use the Articles of Confederation adopted during the American Revolution but began work on a Constitution.

Interpret Text Structure

Underline a text feature that helps you determine how information is organized.

A New Government

- 1 Only four years had passed since the end of the Revolutionary War, yet during the hot summer of 1787, leaders of the states were already meeting to discuss a dramatic change in the government. In 1776, during the Revolutionary War, they had written a document called the Articles of Confederation. It explained how the government of the colonies would be organized and how laws would be made. After the war, it became clear that the government described in the Articles would not work for the new nation. It was the responsibility of these leaders—including George Washington, James Madison, Alexander Hamilton, George Mason, and Benjamin Franklin—to agree on how the government of the newly formed United States should be run.



Three patriots lead troops into battle in a painting titled *Spirit of '76* by Archibald M. Willard

Hot Topics

- 2 The Constitutional Convention lasted from May until September of 1787. During that time, the leaders discussed many important ideas and issues. In their discussions, they sought to answer many questions, such as:
- ★ Who should have more power, the national government or the states?
 - ★ How should presidents be elected?
 - ★ How should leaders in Congress be elected and how long should they serve?
 - ★ Who should have the right to vote?
- 3 For each of these questions and all the others that were talked about at the convention, there were many different answers and opinions. After much debate, however, a consensus—or agreement—was finally made on many of them. The delegates' final agreement became known as the U.S. Constitution.

The Rights of the People

- 4 Most of the important questions were agreed upon before the Constitution was finished. Surprisingly, one big question was not: “Should the Constitution protect the rights of the people?”
- 5 All the leaders at the convention agreed that the rights of people should be protected. After all, a democracy is by definition a government for and of the people. It was because England’s King George III abused the rights of the colonists during his rule that they had sought independence during the Revolutionary War. Two opposing groups had strong opinions about why the rights of the people should or should not be in the Constitution.

CLOSE READ

Interpret Text Structure

Underline the text that shows a cause-and-effect relationship between details.

convention a formal meeting of a group with particular interests

delegates people appointed to represent others

CLOSE READ

Interpret Text Structure

Underline sentences that show comparison.

6 One group of leaders, called the Federalists, did not think it was necessary to include a list of rights in the Constitution. In fact, the Federalists feared that by including some rights and not others, the government could actually limit the rights of the people. Another group of leaders, called the Antifederalists, believed the opposite. They felt that if the rights weren't listed in the Constitution, then the government would have the power to take away these rights at any time. By listing them in the Constitution, the rights of the people would be guaranteed and protected.



During King George's rule of the colonies, British sailors would force colonists to serve in the British navy. Called impressment, the practice was one of the ways the king abused individual rights.

ratification a formal act of approval or confirmation

7 Most people in the country agreed with the second group of leaders. They remembered what it felt like to have limited rights under King George's rule, and they didn't want that to happen to them again. They wanted a Bill of Rights included in the Constitution.

8 When the Constitution was sent to the states for ratification, many of the states voiced this opinion. New York, Massachusetts, and Virginia said they wanted a Bill of Rights. They even came up with their own lists of suggestions for the delegates to include. North Carolina and Rhode Island believed so strongly that the Constitution should have a Bill of Rights that they would not approve the Constitution at all unless one was added.

Drafting the Bill

- 9 Although James Madison was a Federalist, he was also a great writer. Because of this, he was placed on the committee to write the Bill of Rights.
- 10 Madison looked at many documents when he wrote his list of rights. He wanted to get ideas for what was important to people in his day and in the past. One was the Magna Carta, which was written in England in 1215. Another was the English Bill of Rights, which was written in 1689. He also looked at the lists that were written by some of the states, such as the Virginia Declaration of Rights, written by George Mason in 1776. All of these documents helped Madison come up with a list of rights that he thought would be important to the people of the United States.
- 11 By the time Congress met in 1789, Madison had a list of seventeen rights. The leaders in Congress talked about each one. They decided whether each was important or not, and if it was, why it was important. Finally, after talking about the list for the entire summer of 1789, Congress had agreed on twelve amendments to be added to the Constitution.
- 12 Before anything could be added to the Constitution, though, it had to be approved by the states. The delegates took the list to each of their state legislatures, where the amendments were debated again. In the end, not all twelve amendments were approved—the original amendments 1 and 2 were rejected. The original amendment 3 became amendment 1.

CLOSE READ

Summarize

Highlight information that should be included in a summary of the text.



Portrait of James Madison, by Gilbert Stuart, 1805

CLOSE READ

Summarize

Highlight details that summarize the main idea on this page.

One of the two amendments that did not make it into the Bill of Rights was never added to the Constitution. The other was added centuries later—in 1992. It is the 27th Amendment, which states that members of Congress cannot change their rate of pay for the current term.

- 13 New Jersey was the first state to approve the ten amendments, and Virginia was the eleventh—the last one needed for ratification. These first ten amendments to the Constitution have been known ever since as the Bill of Rights.

Ratification Dates of the Bill of Rights

STATE	DATE	VOTE
New Jersey	November 20, 1789	Rejected amendment 2
Maryland	December 19, 1789	Approved all amendments
North Carolina	December 22, 1789	Approved all amendments
South Carolina	January 19, 1790	Approved all amendments
New Hampshire	January 25, 1790	Rejected amendment 2
Delaware	January 28, 1790	Rejected amendment 1
New York	February 27, 1790	Rejected amendment 2
Pennsylvania	March 10, 1790	Rejected amendment 2
Rhode Island	June 7, 1790	Rejected amendment 2
Vermont	November 3, 1791	Approved all amendments
Virginia	December 15, 1791	Approved all amendments

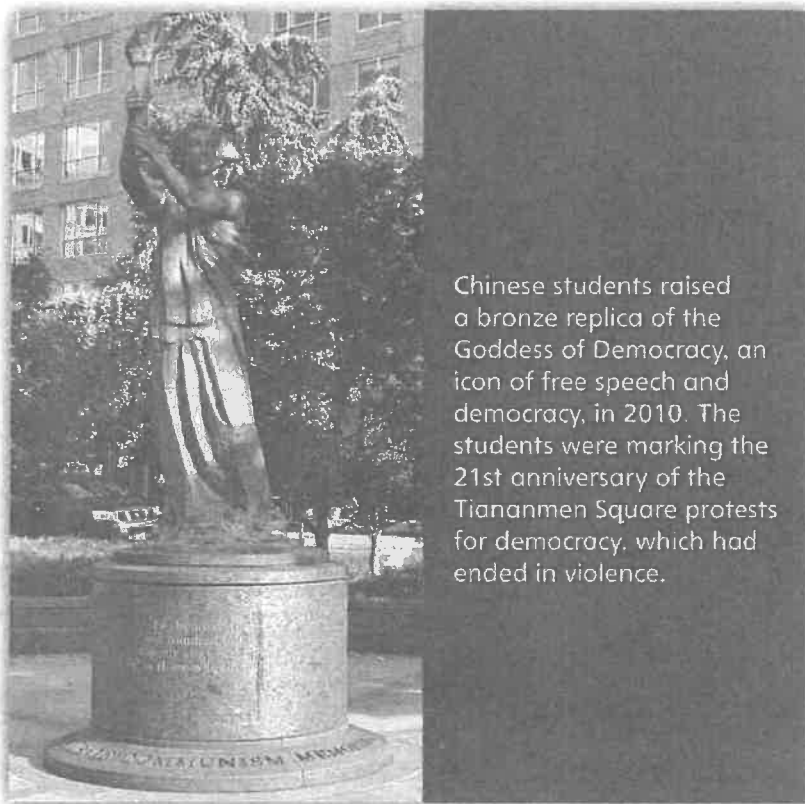
- 14 Only 11 states needed to approve the Bill of Rights for it to be ratified. Massachusetts, Connecticut, and Georgia did not vote to ratify the document until 1939, when the Bill of Rights was 150 years old. Vermont had become a state less than a year before ratification—on March 4, 1791.

Freedom to Believe, Speak, Worship, and Assemble

- 15 Have you ever wondered what it might be like to live in a place where you were only allowed to say, do, and believe things that a government agreed with? Believe it or not, many people today live in places that are like this. The First Amendment in the Bill of Rights gives U.S. citizens the right to speak, write, worship, and assemble without fear of punishment.

Freedom of Speech

- 16 In October 2010, a woman in China added a comment and retweeted her fiancé’s Twitter post. He had written about a Chinese protest against Japan; she had jokingly added the words, “Charge, angry youth.” Eleven days later—on the day they had planned to marry—both the woman and her fiancé were arrested. The fiancé was released five days later, but the woman was sentenced to one year in a labor camp. Her crime: disturbing social stability.



- 17 It is this exact type of situation that the framers of the Constitution feared. They did not ever want the U.S. government to have the ability to limit the things people can say. In order to protect the right to freedom of speech, they included it in the First Amendment to the Constitution:

CLOSE READ

Interpret Text Structure

Underline words in the caption and title that help you determine the author’s purpose for this section.

CLOSE READ

Summarize

Highlight details on both pages that should be included in a summary of the section about freedom of religion.

petition a formal request signed by many people

Amendment I

Congress shall make no law respecting an establishment of religion, or prohibiting the free exercise thereof; or abridging the freedom of speech, or of the press; or the right of the people peaceably to assemble, and to petition the Government for a redress of grievances.



In the 1940s, the Committee for the First Amendment, made up of people who included actors Humphrey Bogart and Lauren Bacall, was established to protest the witchhunt of individuals in Hollywood who were targeted as communists based on their beliefs. Standing in court from left: Danny Kaye, June Havoc, Bogart, and Bacall (seated).

18 Freedom of speech is just one of the rights protected by the First Amendment. Other rights include freedom of religion, freedom to worship, freedom to assemble peacefully, and freedom to make a complaint against the government.

Freedom of Religion

19 One of the reasons early settlers moved from Europe to North America was for

freedom of religion. The Pilgrims, for example, were not allowed to practice their religion freely in England. If they did, they faced persecution and sometimes imprisonment. They left their homes and braved the dangers of the New World so that they could worship without fear of punishment. In 1620, they founded Plymouth Colony.

CLOSE READ

Interpret Text Structure

Underline clues on both pages that help you determine chronological order.

- 20 Quakers came to Pennsylvania, a colony that William Penn set up for them in 1682. Many Catholics settled in Maryland because Lord Baltimore had founded the colony to protect those who believed in that faith.
- 21 The First Amendment actually protects several ideas associated with freedom of religion. First, it says: “Congress shall make no law respecting an establishment of religion.” This means that the U.S. government cannot make laws about religion. It also means that the government cannot make a “state religion” or say that everyone must follow a certain religion.
- 22 The second part says: “or prohibiting the free exercise thereof.” This simply means that the government cannot keep people from practicing their religion. The Constitution lets people believe in whatever religion they want to, and it protects people who don’t want to practice any religion at all. Because the government may not interfere with religious worship, the United States enjoys “separation of church and state.”

Freedom of the Press

- 23 “Freedom of the press” refers to the printing press. It is the freedom to print people’s ideas in magazines, newspapers, books, and other forms of media. People in the United States can read different ideas and viewpoints in newspapers or on the Internet. They can listen to news reporters describing events on television. Since things have always been that way in the United States, it may not sound like an important right, but there are many cases where people who have not had this right have suffered.

CLOSE READ

Interpret Text Structure

Underline a paragraph that is an example of a description of what happens when there is no freedom of the press.

Vocabulary in Context

Underline context clues around *persecute* in paragraph 25 that help you determine the word's meaning.

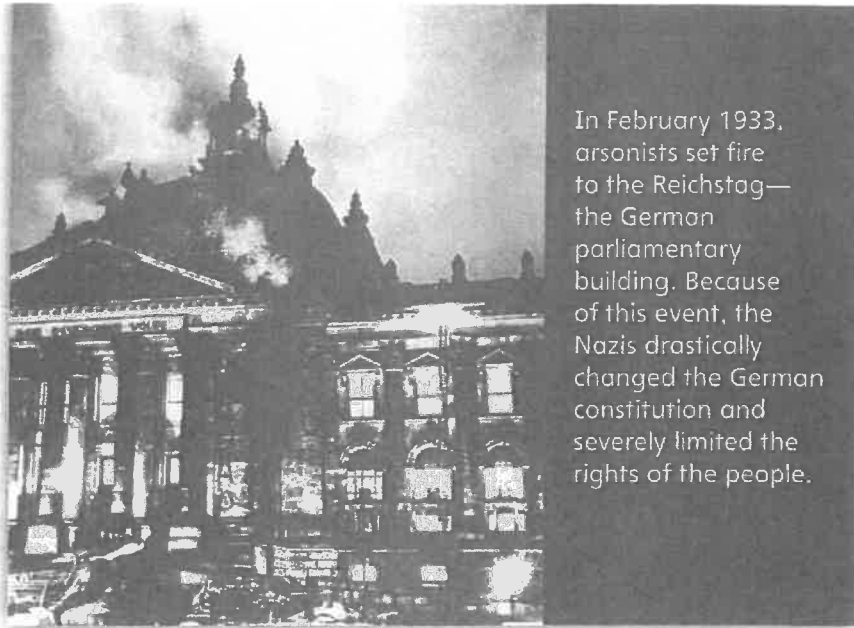
Summarize

Highlight the main idea that summarizes paragraph 26.

24 For example, just one month after Adolf Hitler rose to power in Germany, the lives of Germans began to change. It was February 1933, and a fire had broken out in an important government building. Even though no one knew for sure who had started the fire, the Nazis believed it was a group of communists trying to take over the government. Hitler and the other Nazi leaders said they had to act quickly to protect Germany and its people.

25 They changed the country's constitution and took away the civil liberties of the German people. Germans could no longer express their opinions. They could no longer write and print their ideas and beliefs. They could no longer gather in groups. They could no longer talk on the telephone or send mail without the government being able to listen in or read their words. The government could search their houses whenever they wanted and take anything they wanted. These new laws gave the Nazis almost unlimited power. They could now persecute and harm groups of people without technically breaking any German laws.

26 After the Nazis changed their constitution, they used the press to further control the population. People could no longer read any news except what the Nazis wanted them to read. What the Nazis approved was usually false. The way the news was written made the Nazis and their views look good and right, while people from different ethnic, religious, and political groups were portrayed as evil and inhuman. They also controlled what was broadcast over the radio and what was shown at movie theaters. They burned books they didn't agree with, including religious books, and artwork they thought was inappropriate.



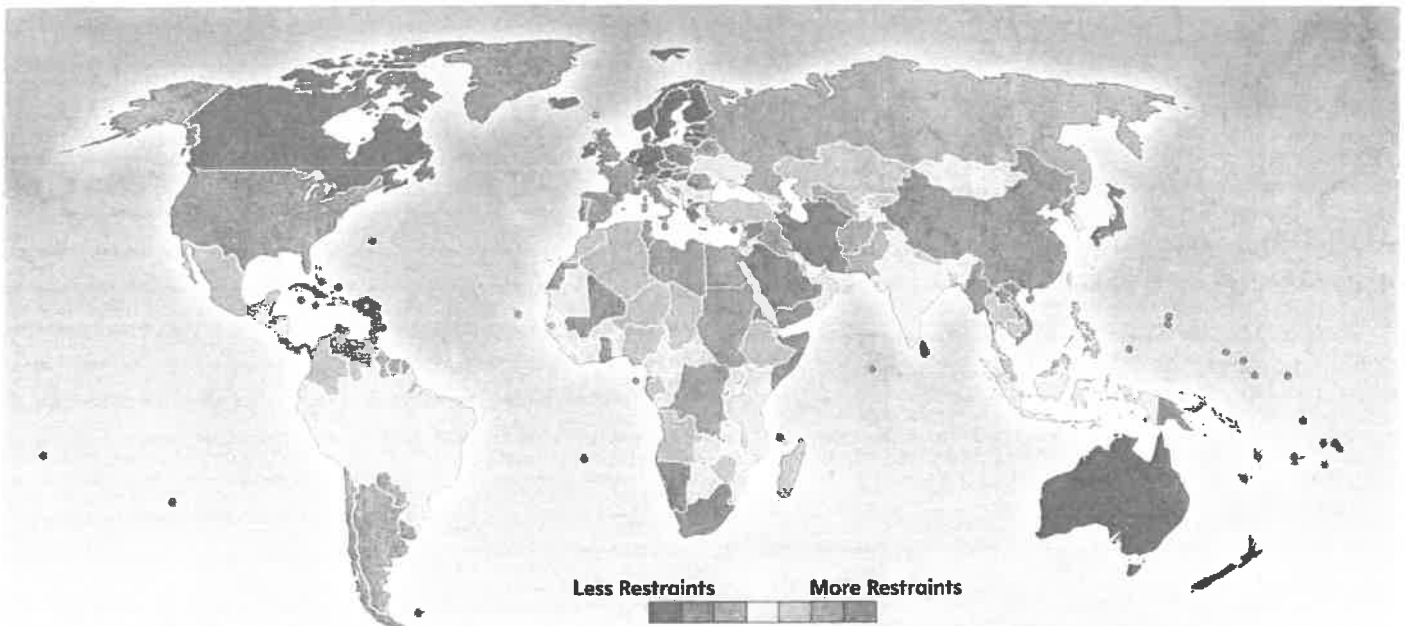
In February 1933, arsonists set fire to the Reichstag—the German parliamentary building. Because of this event, the Nazis drastically changed the German constitution and severely limited the rights of the people.

- 27 These changes helped the Nazis execute their plan of widespread persecution across Germany and the countries they conquered during World War II.
- 28 The Nazi government hasn't been the only one to try to control the press. Countries such as China, North Korea, Iran, and Vietnam do not allow freedom of the press for their people. Reporters Without Borders has assembled a map that shows what countries have the most and least restrictions on freedom of the press. The people who live in the countries in red and dark orange have very few freedoms to write what they want, and the government controls the information they receive.
- 29 Although people in the United States have the right to a free press, they do not have the right to print what they know is a lie. This type of writing is called libel, and because it can harm other people, it is against the law.

CLOSE READ

Interpret Text Structure

Underline details that reveal the author's purpose in comparing and contrasting the United States with other countries.



Source: Reporters Without Borders

The colors on this map indicate which countries have the least and most restrictions on freedom of the press. If you live in a country that is shaded blue, your government does not limit the information you can read and write. If you live in a country shaded in red or orange, you are severely limited.

CLOSE READ

Summarize

Highlight text features on both pages that summarize each section.

Freedom to Assemble

30 *To assemble* means “to gather in groups.” With this freedom, people can get together with other people and talk about ideas. They can protest things they don’t agree with—they just have to do so peacefully. Depending on where they want to gather, they may also need to get a permit.

Freedom to Petition the Government

31 If you live in the United States and the government does something you don’t like, you can tell the government how you feel. You can write a letter to any leader and express your feelings.

32 In the 1700s, the colonists tried to do this when they disagreed with the laws of King George III. Instead of listening to their grievances, the king passed more

laws to punish the colonists. Since the colonists didn't have any say in what laws were passed—they had no representatives in the British government—there was very little they could do. That was the main reason they fought for their freedom in the Revolutionary War.

- 33 Today, you can petition the government whenever you want. If you don't like something that has happened in your town, you can go to a city council meeting and speak in front of the leaders. You can also write a letter to the mayor and explain your views. Not only can you write to the leaders of your town, but you can also write or call the leaders of your county, state, or nation.

Preservation and Promotion

Global Impact of the Bill of Rights

- 34 The Bill of Rights, one of the most important documents in the U.S. government, has protected the rights of Americans for more than 200 years. Because it has been so successful, it has been used as the basis for similar bills of rights for other countries and for international law.

International Law

- 35 Because of the human rights violations that happened during World War II, after the war the leaders of the victorious nations agreed that a Bill of Rights was necessary for all people everywhere. The United Nations was established in 1945 in order to curb warfare and to protect human rights around the

CLOSE READ

Interpret Text Structure

Underline details that reveal how the author uses structure to organize the text.

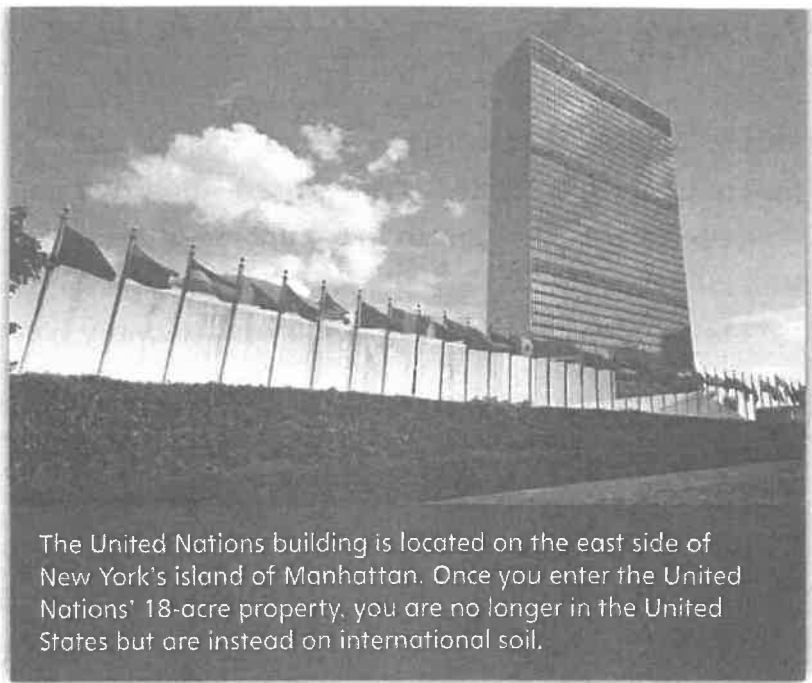
You can write to your senator or representative in Congress. Their addresses are available online.

violations acts that disregard an agreement, law, or rule

CLOSE READ

Interpret Text Structure

Underline the solution to the problem in paragraph 35.



The United Nations building is located on the east side of New York's island of Manhattan. Once you enter the United Nations' 18-acre property, you are no longer in the United States but are instead on international soil.

world. In December 1948, the General Assembly of the United Nations agreed on the Universal Declaration of Human Rights. It included 30 groups of rights, such as the following:

- ★ Everyone has the right to life, liberty and security of person.
- ★ No one shall be held in slavery.
- ★ No one shall be subjected to torture or to cruel, inhuman or degrading treatment or punishment.
- ★ Everyone has the right to recognition everywhere as a person before the law.
- ★ No one shall be subjected to arbitrary arrest, detention or exile.
- ★ Everyone is entitled in full equality to a fair and public hearing by an independent and impartial tribunal, in the determination of his rights and obligations and of any criminal charge against him.
- ★ Everyone has the right to leave any country, including his own, and to return to his country.
- ★ Everyone has the right to a nationality.

- ★ Men and women of full age ... have the right to marry and to found a family.
- ★ Everyone has the right to own property alone as well as in association with others.
- ★ Everyone has the right to freedom of thought, conscience and religion.
- ★ Everyone has the right to freedom of opinion and expression.
- ★ Everyone has the right to freedom of peaceful assembly and association.

36 Do some of these rights sound similar to the ones found in the U.S. Bill of Rights? How about the cruel punishment, fair hearing (trial), and freedom of religion, expression, and assembly?

37 This Universal Declaration of Human Rights has helped protect people around the world. However, there are still many countries that refuse to give people basic human rights. The goal of the United Nations is to eventually have every country on earth value the rights of its people more than the power of its own government.



First Lady Eleanor Roosevelt holds a copy of the United Nations Universal Declaration of Human Rights written in Spanish

38 It's likely the framers of the U.S. Constitution would be proud to know that their work has inspired freedom-loving people around the world. They'd probably also be pleased to know that after the Bill of Rights was ratified, seventeen more amendments were added. The ability to add new amendments to the Constitution allows the government to adapt to the times and the needs of the people. The difficult amendment process ensures that the Constitution remains unchanged unless absolutely necessary.

CLOSE READ

Summarize

Highlight information that should be included in a summary of the text.

Fluency

Read paragraphs 35–38 aloud with a partner to practice reading accurately. Focus on reading each word correctly.

Week 1 assignment 3 - read the story

Week 1 assignment 4

Answer the following about the weekly story "The Bill of Rights".

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Select all that apply about "The Bill of Rights."

0 points

- The first 10 amendments to the Constitution are known as The Bill of Rights.
- Freedom to assemble means you can say whatever you want.
- James Madison wrote the Bill of Rights.
- In 1933 German government took away the citizen's civil liberties.
- Looking at the map on page 300, the United States had the MOST restraints.

Send me a copy of my response.

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Week 1 assignment 5

Word Parts sub-

Read page 310 in your textbook.

Use your knowledge of word parts to read each word and infer its meaning. Use a dictionary to check your definition. Then write a sentence with the new word.

Follow the directions on page 310 in your textbook to complete the following:

1. Meaning: a huge store _____.

2. Meaning: an underwater ship _____.

3. Meaning: an area near a city _____.

4. Meaning: to take the place of something _____.

Week 1 Assignment 6 Summarize

Your email address (brigitta_nicoson@isd31.net) will be recorded when you submit this form. Not you? [Switch account](#)

Reread paragraphs 37 and 38 on page 303. Write a 3 sentence summary of these paragraphs.

Your answer

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Week 1 assignment 7 text structure

Your email address (brigitta_nicoson@isd31.net) will be recorded when you submit this form. Not you? [Switch account](#)

On page 299, reread paragraphs 27-29. What is one difference between the United States and other countries regarding their freedoms?

Your answer

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Week 1 assignment 8 Writing

Your email address (brigitta_nicoson@isd31.net) will be recorded when you submit this form. Not you? [Switch account](#)

Which freedom is most important to you? Explain your reason in 3 or more sentences.

Your answer

Submit

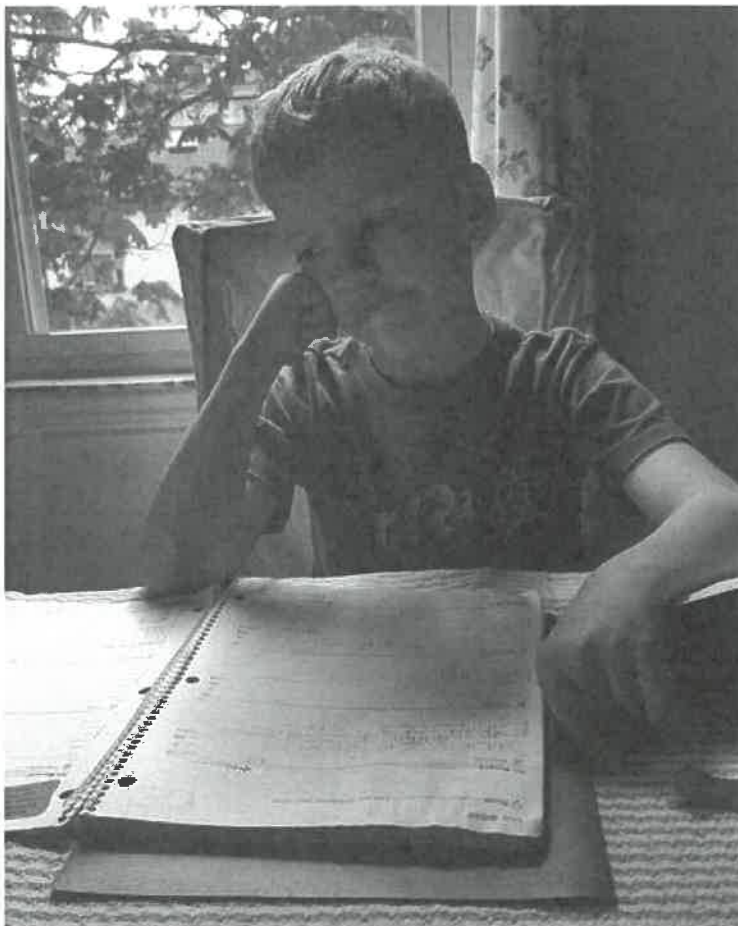
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The Homework Hubbub



Students are spending more time studying at home, but is that a good thing?

Homework is on the rise! Nine- to twelve-year-olds are spending 20 percent more time studying at home than they spent in 1997, according to a recent study from the University of Maryland. "Kids spend an average of 50 minutes to 75 minutes studying every day," says the study's author, Sandra L. Hofferth.

But is taking schoolwork home a good thing? Two recent books have education experts asking, is homework helpful?

In their new book, *The Case Against Homework*, writers Nancy Kalish and Sara Bennett write that homework keeps kids from participating in school sports and other after-school programs. "It's the youngest kids who seem to be getting the most homework," Bennett told *WR News*, "and they're the least ready to do it."

Alfie Kohn, the author of *The Homework Myth*, told *WR News* that "no scientific studies have shown that kids benefit in any way from homework before high school." Kohn thinks that too much homework can take the fun out of learning.

Many education officials say homework is good for learning. "It's important [for kids] to get used to doing homework," Harris Cooper of Duke University told *WR News*. Cooper is one of the country's leading researchers on homework. He says practicing homework now will help kids in high school. Cooper suggests that students should expect to do 40 minutes of homework each day.

Many teachers see the value of homework as well. "I think homework is helpful to most kids. It gives them more responsibility," fourth-grade teacher Pepper Schrock of Orlando, Florida, told *WR News*. "I try to give meaningful projects as homework."

Name: _____ Date: _____

1. Compared to 1997, students in 2006 do

- A. 20% less homework.
- B. 50% less homework.
- C. 20% more homework.
- D. 50% more homework.

2. In contrast to Nancy Kalish, Sara Bennett, and Alfie Kohn who believe there are negative effects to having too much homework, Harris Cooper states that

- A. homework takes away kids' sense of responsibility
- B. homework makes learning fun
- C. practicing homework in grade school will help kids in high school.
- D. homework cannot be meaningful.

3. Authors critical of homework argue that

- A. too much homework can take the fun out of learning.
- B. studies show no benefit from homework before high school.
- C. homework keeps kids from participating in after-school sports.
- D. all of the above.

4. In the passage the author seems to

- A. support kids having lots of homework.
- B. provide information from both sides of the argument.
- C. not support kids having lots of homework.
- D. support home-schooling.

5. What is your opinion about homework? Explain.

Chapter 9

Plane Geometry

This chapter covers the following MN 5 standard:



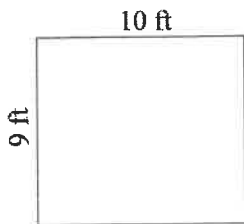
Geometry and Measurement

5.3.2.1

9.1 Area of Squares and Rectangles

Area is always expressed in square units, such as square inches (sq in), square feet (sq ft), and square meters (sq m). These measures can also be written as an exponent of 2: in^2 , ft^2 , or m^2 . The area, A , of squares and rectangles equals length (l) times width (w). $A = l \times w$.

Example 1: Deserie is buying carpet for her room. How much carpet will she need?



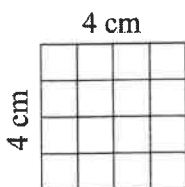
$$A = lw$$

$$A = 9 \times 10$$

$$A = \mathbf{90 \text{ square feet or } 90 \text{ ft}^2}$$

Deserie will need 90 square feet of carpet.

Example 2:



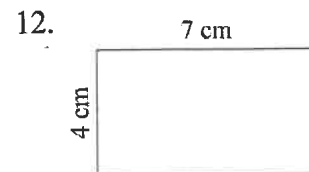
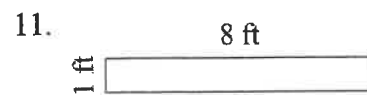
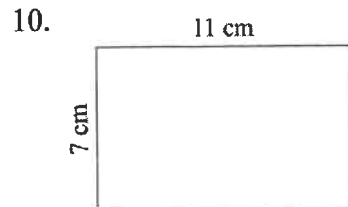
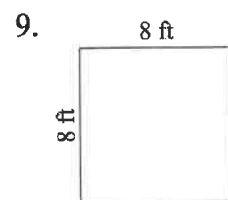
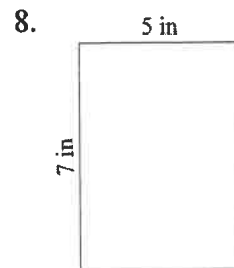
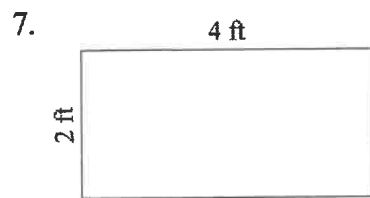
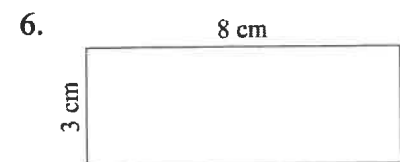
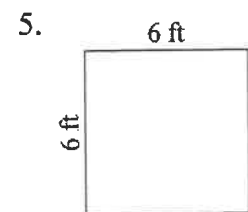
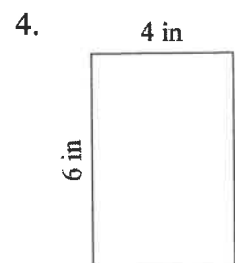
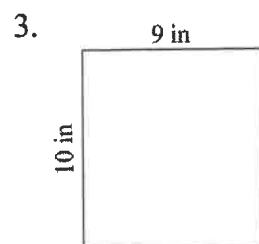
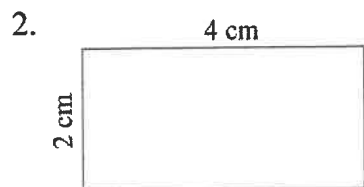
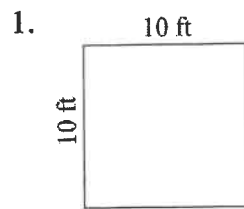
$$A = lw$$

$$A = 4 \times 4$$

$$A = \mathbf{16 \text{ square centimeters}}$$

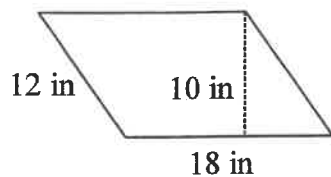
If a square has an area of 16 square centimeters, it means that it will take 16 squares that are 1 cm on each side to cover the area that is 4 cm on each side.

Find the area of the following squares and rectangles using the formula $A = lw$.



9.2 Area of Parallelograms

Example 3: Find the area of the following parallelogram.



The formula for the area of a parallelogram is $A = bh$.

A = area

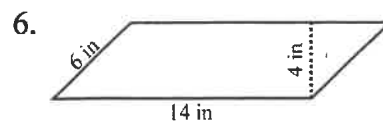
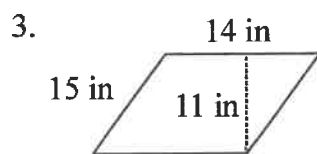
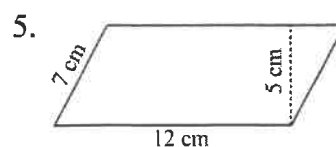
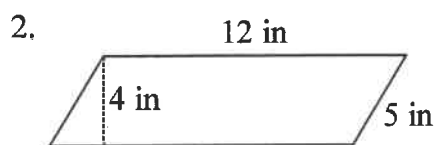
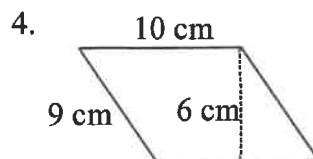
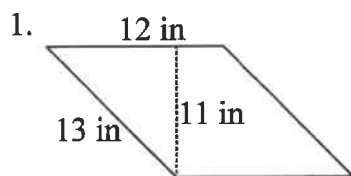
b = base In this example, the base is 18 inches.

h = height In this example, the height is 10 inches.

Step 1: Insert measurements from the parallelogram into the formula: $A = 18 \times 10$.

Step 2: Multiply. $18 \times 10 = 180$ square inches

Find the area of the following parallelograms.



9.3 Area of Triangles

Example 4: Find the area of the following triangle.

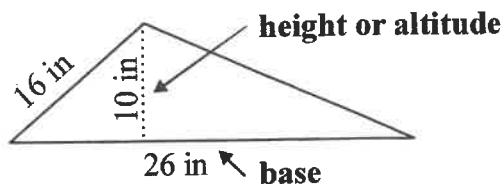
The formula for the area of a triangle is as follows:

$$A = \frac{1}{2} \times b \times h$$

A = area

b = base

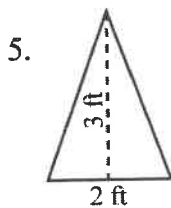
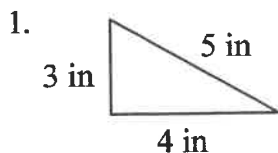
h = height or altitude



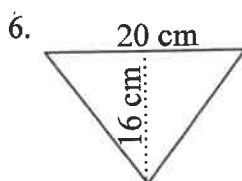
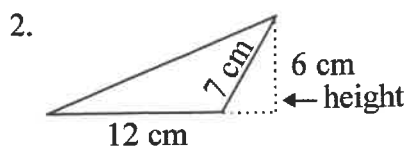
Step 1: Insert the measurements from the triangle into the formula: $A = \frac{1}{2} \times 26 \times 10$

Step 2: Cancel and multiply.
$$A = \frac{1}{2} \times \frac{26}{1} \times \frac{10}{1} = 130 \text{ square inches}$$

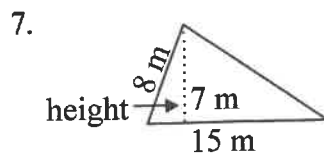
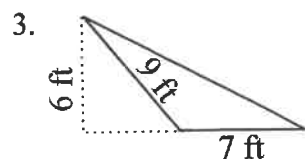
Find the area of the following triangles. Remember to include units.



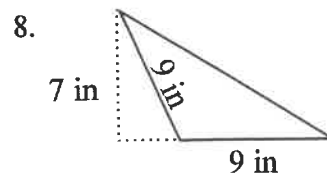
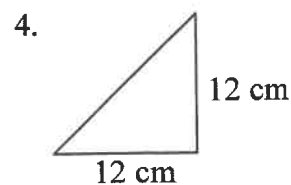
9. A triangle has a height of 2 feet. The base is 2 feet long. What is the area of the triangle?



10. A triangle has a height of 4 feet. The base is 6 feet long. What is the area of the triangle?



11. A triangle has a height of 10 feet. The base is 15 feet long. What is the area of the triangle?



12. A triangle has a height of 3 m. The base is 10 m long. What is the area of the triangle?

9.4 Area of Other Figures

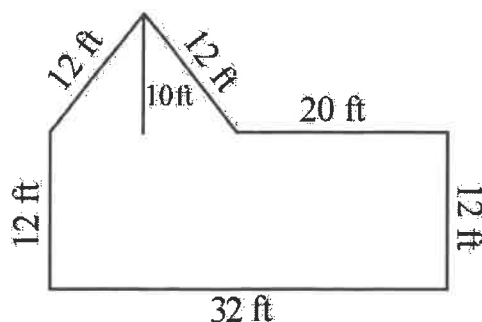
Find the area of an irregular figure by following these steps:

1st: Split the figure into regular shapes.

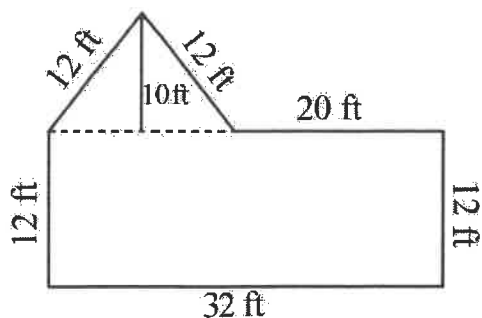
2nd: Find the area of each of the regular shapes.

3rd: Add up the area of all the regular shapes. Be sure to put the square units on the total.

Example 5: Find the area of the irregular figure below.



Step 1: Split the figure into regular shapes, 1 triangle and 1 rectangle.



Step 2: Find the area of each regular shape.

Sometimes, you will need to figure the base or height of the split figures. The base of the triangle isn't given, but you can see the length of the rectangle is 32 ft and the portion of the top of the rectangle is given: 20 ft. Subtract: $32 \text{ ft} - 20 \text{ ft} = 12 \text{ ft}$.

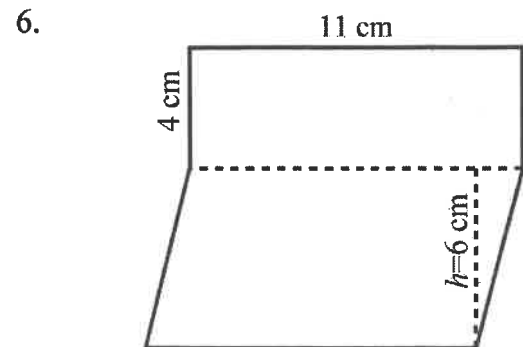
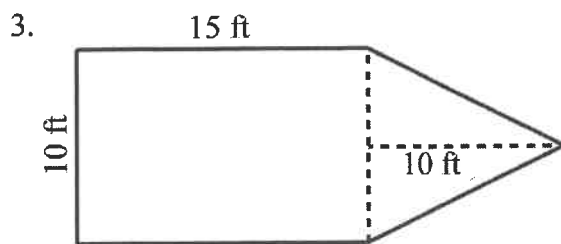
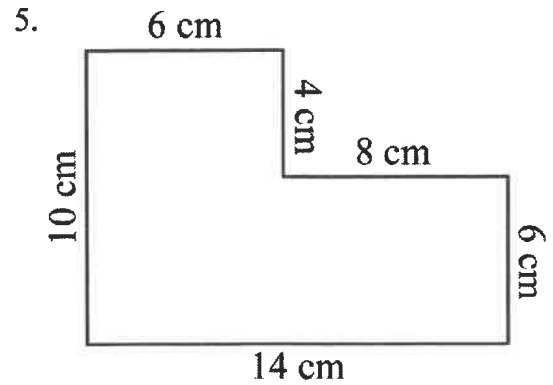
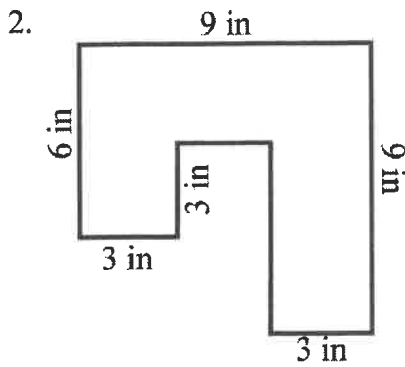
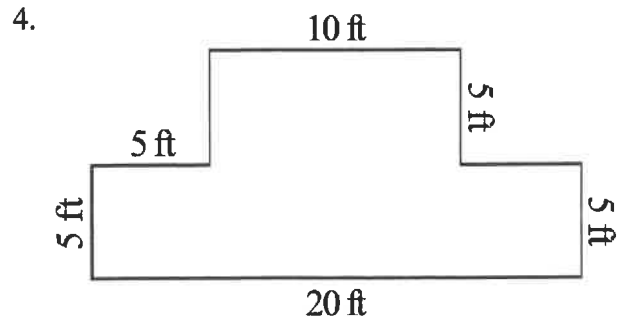
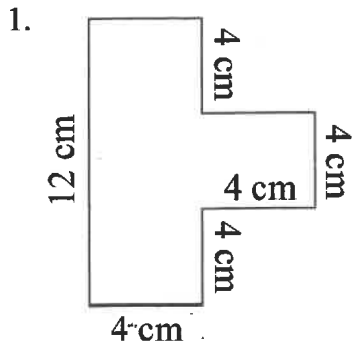
The formula for the area of a triangle is $\frac{1}{2}bh = \frac{1}{2} \times 12 \times 10 = 60$ square feet.
The formula for the area of a rectangle is $lw = 32 \times 12 = 384$ square feet.

Step 3: Add the areas of the regular shapes together: $60 + 384 = 444$ square feet.

Answer: 444 square feet

Find the area of the irregular figures below using the area formulas in the chart below.

Shape	Area Formula
Squares and rectangles	$A = lw$
Parallelograms	$A = bh$
Triangles	$A = \frac{1}{2}bh$

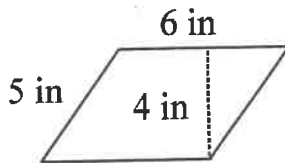


Chapter 9 Review

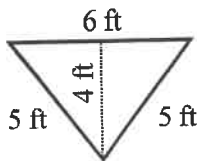
You may use this table of formulas to find the area and perimeters of figures in the problems below.

Shape	Formula
Squares and rectangles	$A = lw$
Parallelograms	$A = bh$
Triangles	$A = \frac{1}{2}bh$
Perimeter of any figure	Sum of all sides of the figure

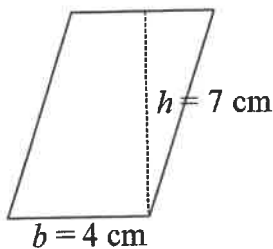
1. What is the area of a piece of paper measuring 4 inches by 7 inches?
2. What is the area of a plot of land measuring 500 feet by 200 feet?
3. Calculate the area of the parallelogram.



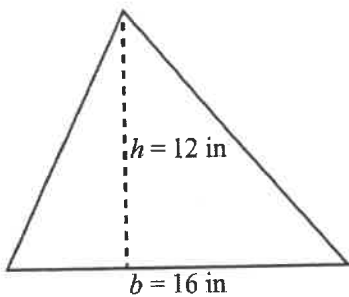
4. Calculate the area of the figure below.



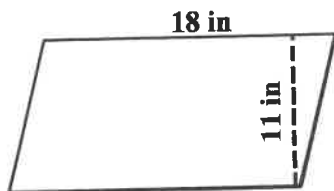
5. Find the area of the figure below.



6. Find the area of the figure below.



7. Find the area of the figure below.



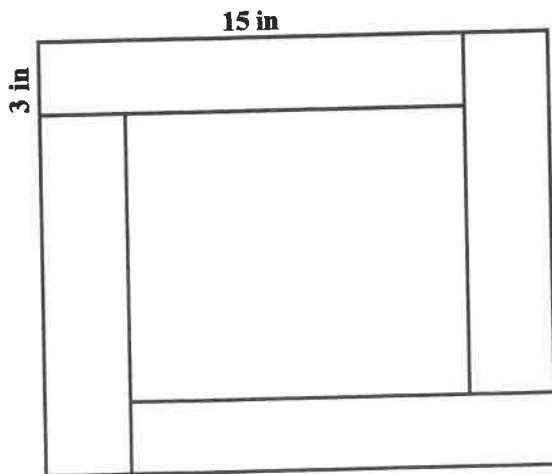
8. What is the area of a 7 centimeter square?

9. What is the area of a 12 inch square?

10. What is the area of a triangle with a base of 8 cm long and a height of 7 cm?

11. What is the area of a triangle with a base of 16 in long and a height of 4 in?

12. Melissa cut out 4 strips of tagboard to make a frame for a drawing she made.



Find the area of the frame only and the perimeter of the outside of the frame.

Fighting for Control

DIRECTIONS Number the sentences in the order in which the events happened.



Chief Pontiac

- 1 _____ To make up for Spain's losses, France gave Spain most of Louisiana.
- 2 _____ The British captured Fort Duquesne and several other French forts.
- 3 _____ The French and Indian War ended with the Treaty of Paris, giving Britain most of Canada, all French lands east of the Mississippi River, and Spanish Florida.
- 4 _____ King George III made the Proclamation of 1763. It said that all land west of the Appalachian Mountains belonged to the Native Americans.
- 5 _____ Colonial leaders met to talk about how to deal with the French forces.
- 6 _____ The French and Indian War began with the Battle of Fort Necessity.
- 7 _____ The French sent soldiers to the Ohio Valley to drive British traders out.
- 8 _____ The British Parliament passed the Sugar Act. It was designed to make colonists help pay for Britain's defense of the colonies.
- 9 _____ Chief Pontiac united Native American tribes and captured British forts.
- 10 _____ Benjamin Franklin's Albany Plan of Union was not approved.

Lesson



1750

1790

1754
The Battle of Fort Necessity is fought

1763
The French and Indian War ends

1764
Britain passes the Sugar Act



WHAT TO KNOW

How did the French and Indian War change relations between the colonists and Britain?

VOCABULARY

- alliance** p. 296
- delegate** p. 296
- Parliament** p. 297
- proclamation** p. 298
- budget** p. 299

PEOPLE

- Benjamin Franklin
- George Washington
- King George III

PLACES

- Fort Necessity
- Ohio Valley
- Albany



CAUSE AND EFFECT

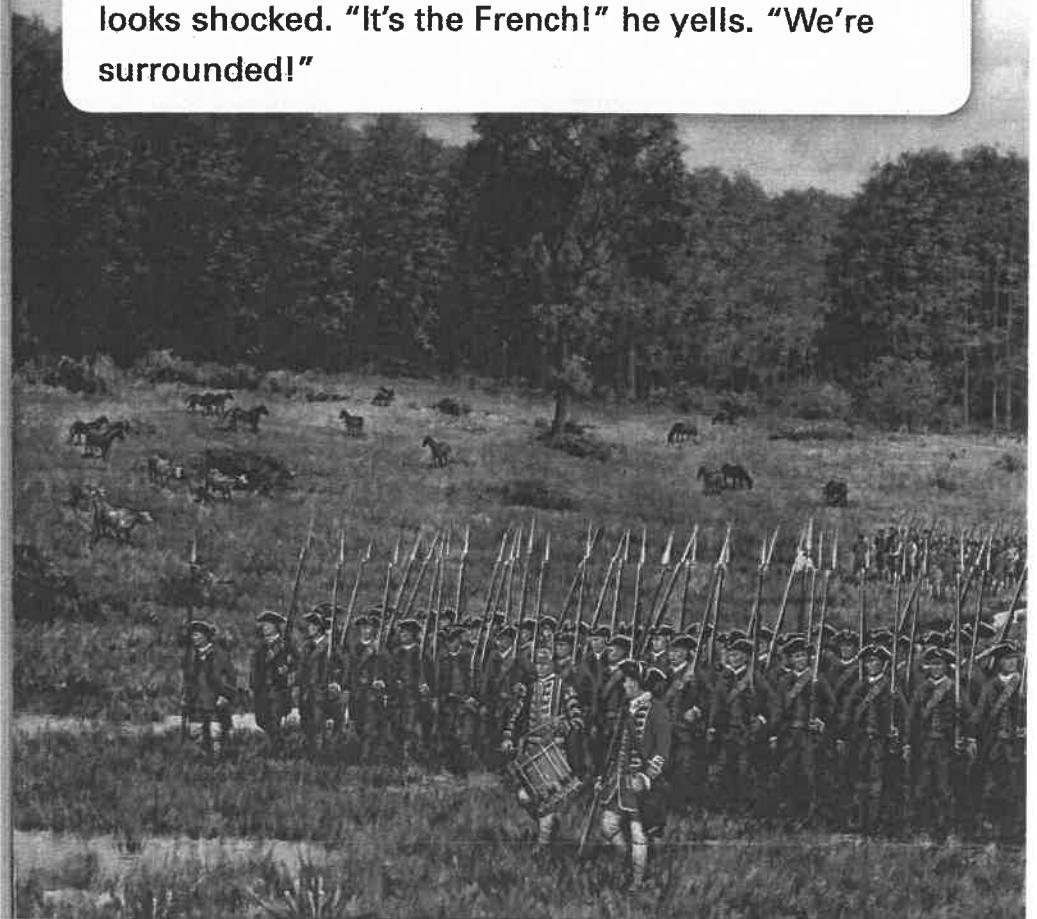
Cause	Effect

Fighting for Control



It's bright and sunny at **Fort Necessity**, but the Pennsylvania woods around you look dark and dangerous. Any minute now, your small fort may be attacked. You're scared, but you will fight to keep France from getting control of this land.

There is a shout as one of the other soldiers in your group runs into sight. He is out of breath and looks shocked. "It's the French!" he yells. "We're surrounded!"



Conflicting Claims

Spain, France, and Britain, as England became known, were trying to keep control of their lands in North America. Spain claimed mostly the southwestern lands and Florida. France claimed lands to the north and in the middle of what is now the United States. Most of the land that Britain claimed was along the Atlantic coast.

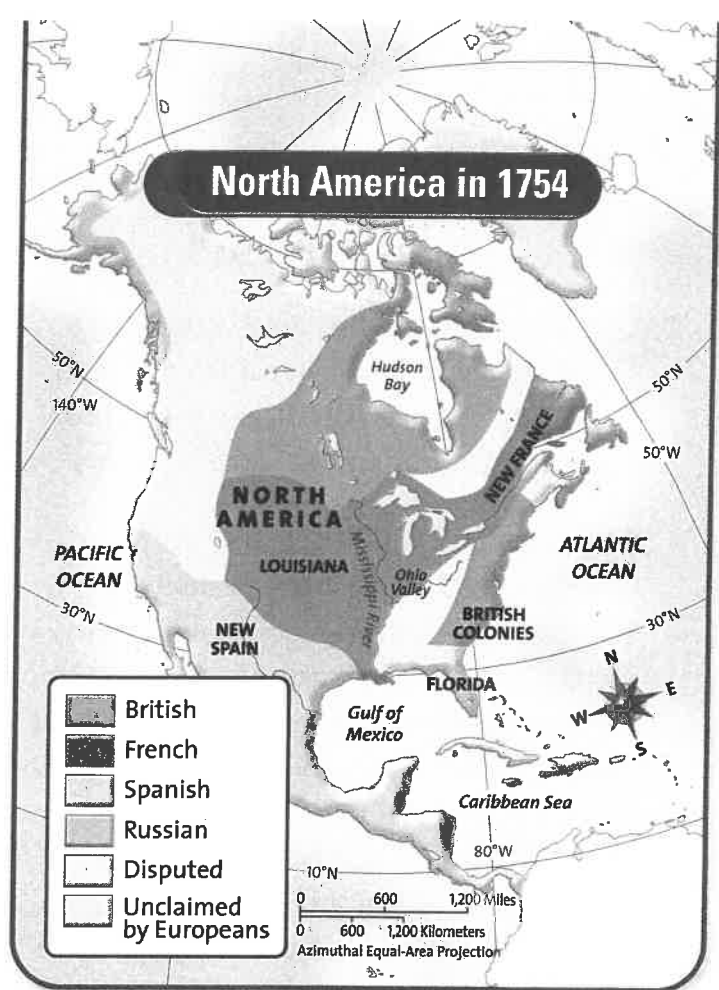
The Ohio Valley

Both Britain and France claimed the Ohio Valley. This region stretches along the Ohio River from the Appalachians to the Mississippi River. The British saw the Ohio Valley as an area for trade and growth. To the French, it connected their lands in New France and Louisiana.

By 1750, France sent soldiers to the Ohio Valley to drive out the British. The French also built forts near the eastern end of the valley. The British saw this as an act of war and decided to fight back.

READING CHECK CAUSE AND EFFECT

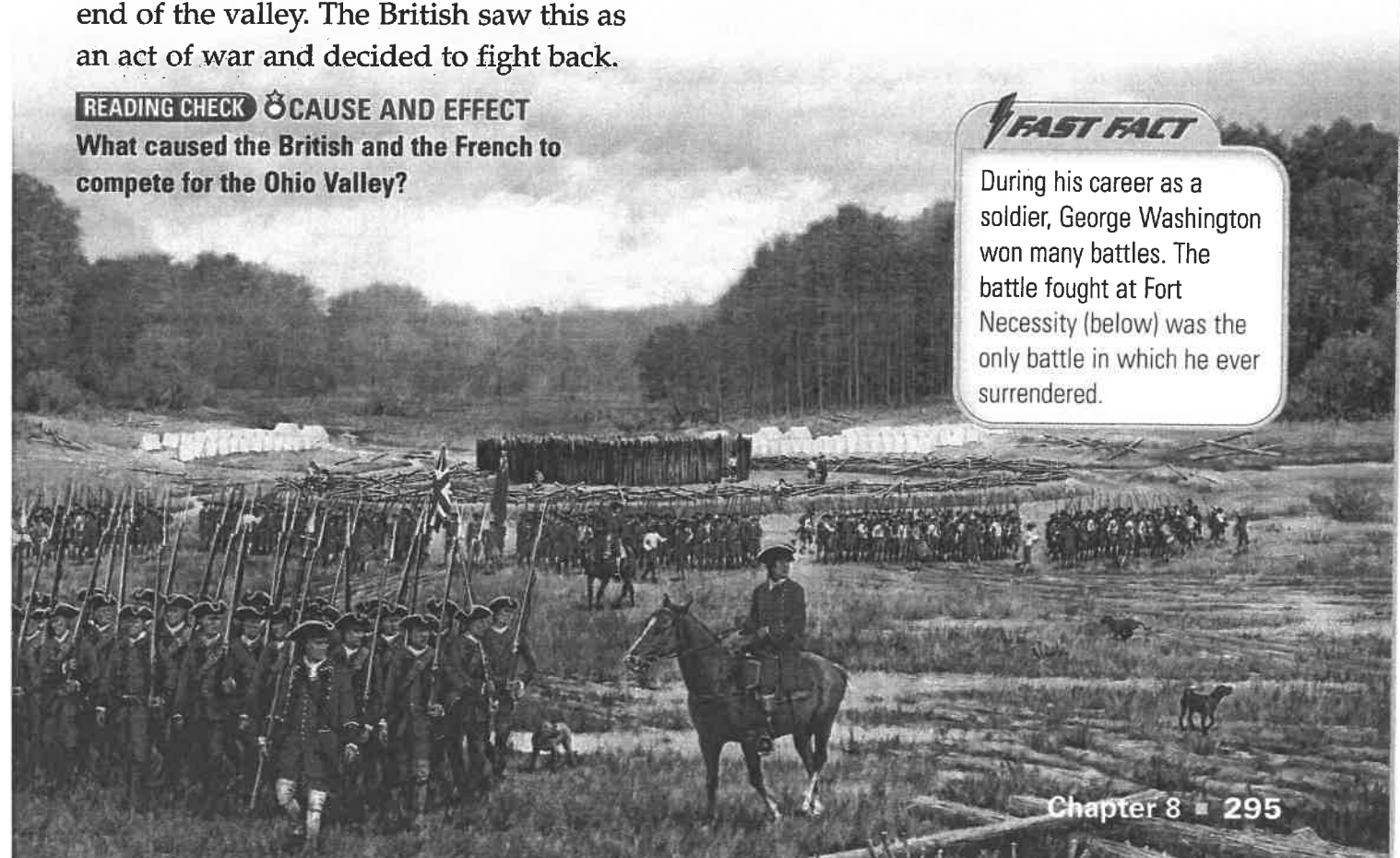
What caused the British and the French to compete for the Ohio Valley?



REGIONS Which two groups of Europeans claimed land east and west of the Ohio Valley?

FAST FACT

During his career as a soldier, George Washington won many battles. The battle fought at Fort Necessity (below) was the only battle in which he ever surrendered.



The French and Indian War Begins

The French and Indian War began in North America in 1754 and later spread to Europe. Native Americans fought for both sides, but mostly for the French.

Alliances and Fighting

By the mid-1700s, both France and Britain had formed alliances with many of the Native American tribes in the Ohio Valley. An **alliance** is a formal agreement among groups or individuals. Once fighting began, the French and the British asked their allies for help.

In June 1754, colonial leaders met at **Albany**, New York, to talk about how to deal with the French forces. Seven colonies sent **delegates**, or representatives, including **Benjamin Franklin**.

Franklin said that the colonies should unite to fight the French. His idea, which became known as the Albany Plan of Union, was not approved. The colonies were not yet willing to fight as one country.

A month earlier, the British governor of Virginia sent 150 soldiers to take the Ohio Valley from the French. **George Washington**, then only 21 years old, led the Virginians. On their way to a French fort, the Virginians fought some French soldiers. Afterward, the Virginians quickly built Fort Necessity. On July 3, 1754, the French and their Native American allies attacked. Outnumbered, the Virginians gave up. This battle turned out to be the start of the French and Indian War.

READING CHECK SUMMARIZE

What became known as the Albany Plan?

► **FIGHTING THE WAR** Red uniform jackets made the British easy targets.



More Troubles

The end of the French and Indian War did not end Britain's troubles in its colonies. Because the lands between the Appalachian Mountains and the Mississippi River were now under British control, many colonists wanted to settle there. However, these lands were already home to many Native American groups. These groups were determined to keep new settlers out of their lands.

► **FRONTIER SETTLEMENTS** Many British leaders blamed Pontiac (below) for attacks on frontier settlers.

In 1763, an Ottawa chief named Pontiac united groups along the Mississippi River. Together, the Native Americans captured some of the British forts. They also attacked the colonists' settlements around those forts.

The Proclamation of 1763

Britain's **King George III** tried to end the fighting. In 1763, the king made a **proclamation**, or public announcement. The Proclamation of 1763 said that all lands west of the Appalachian Mountains belonged to Native Americans. White settlers in those lands were told to leave.

Most colonists ignored the king's proclamation. They believed they had fought



Summary

Conflicting land claims in North America led to the French and Indian War. Britain defeated France in the war. After the war, Britain issued the Proclamation of 1763, but many colonists ignored it and kept moving west.

the war to keep the French from blocking their settlement of the western frontier. They did not like the British government telling them to stay out of those lands. As a result, fighting between the Native Americans and the settlers continued.

Paying for the War

Colonists were also angry about new taxes passed by Parliament. After the war ended, British leaders looked at their **budget**, or plan for spending money. They realized that Britain needed more money to pay off the cost of the war. They thought the colonists should help.

In 1764, Parliament passed the Sugar Act to raise money for Britain. This act taxed the sugar and molasses brought into the colonies from the West Indies.

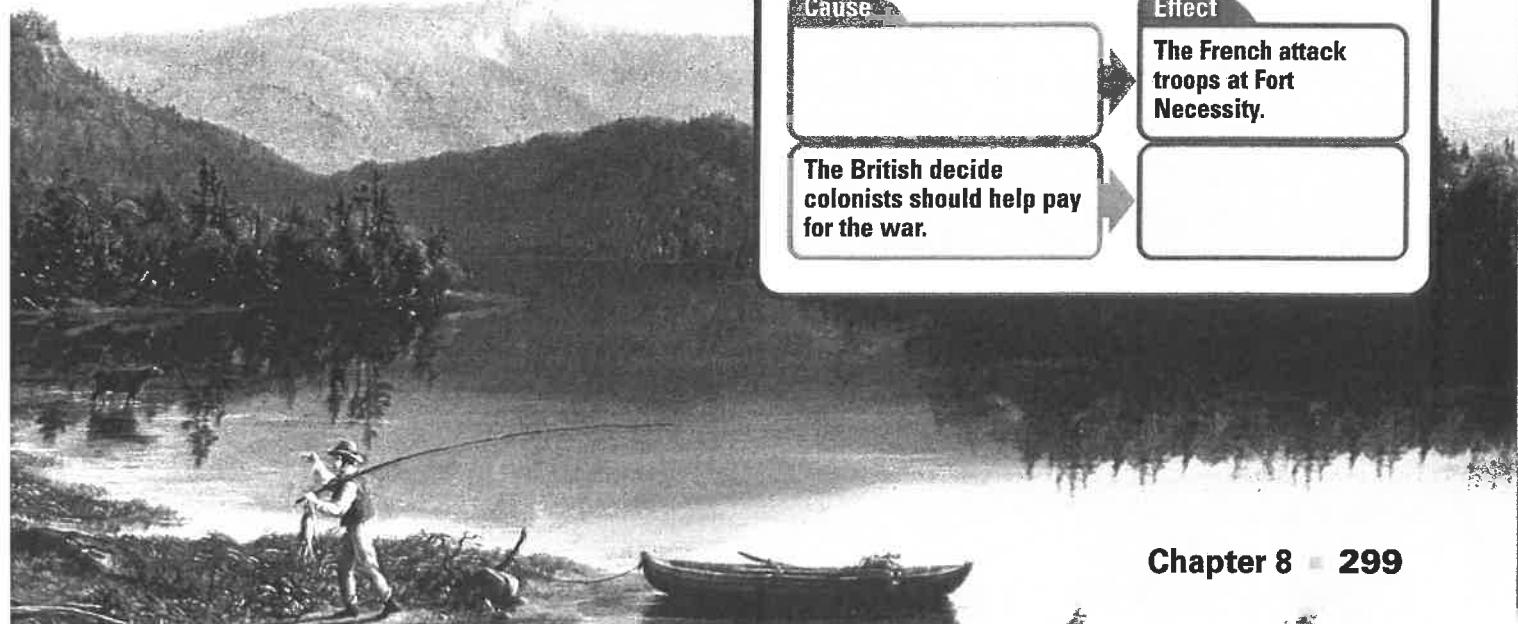
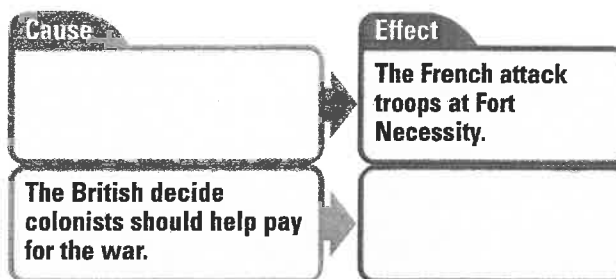
The Sugar Act mostly hurt shipping businesses in the New England Colonies. Many merchants objected to the tax. Still, the British government kept taxing the sugar. Soon it would pass more taxes.

READING CHECK CAUSE AND EFFECT

Why did Parliament pass new taxes for the colonists?

REVIEW

- 1. WHAT TO KNOW** How did the French and Indian War change relations between the colonists and Britain?
- 2. VOCABULARY** Use the term **alliance** in a sentence about the French and Indian War.
- 3. HISTORY** What events caused the French and Indian War?
- 4. CRITICAL THINKING** Why do you think French soldiers chose to fight in the same way as their Native American allies?
- 5. WRITE A NEWSPAPER STORY** Imagine you are a news reporter in 1763. Write a story describing colonists' concerns about the Proclamation of 1763.
- 6. CAUSE AND EFFECT** On a separate sheet of paper, copy and complete the graphic organizer below.



Essential Question

What Are Solids, Liquids, and Gases?

Engage Your Brain!

As you read the lesson, look for the answer to the following question and record it here.

Bottled water and the snow from this snow machine are both water. How are these forms of water different?

Active Reading

Lesson Vocabulary

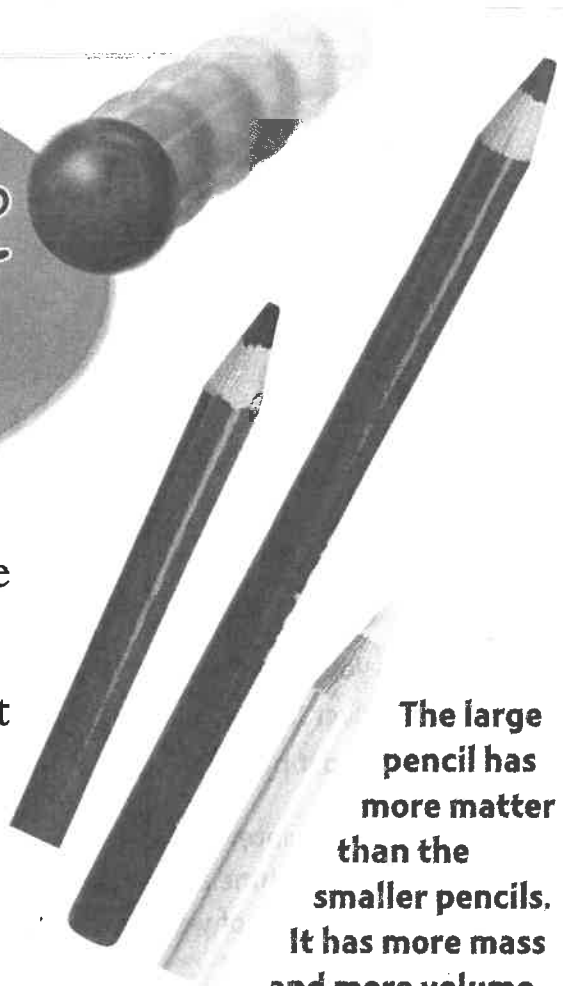
List the terms. As you learn about each one, make notes in the Interactive Glossary.

<hr/>	<hr/>
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Compare and Contrast

Many ideas in this lesson involve comparisons and contrasts—how things are alike and different. Active readers stay focused on comparisons and contrasts when they ask themselves, **How are these things alike? How are they different?**

What's the Matter?



The large pencil has more matter than the smaller pencils. It has more mass and more volume.

This book is made of matter, and so are you. You might think that matter can be seen and felt. But did you know that air is matter also? What is matter?

Active Reading As you read these two pages, draw two lines under each main idea.

Breathe in and out. Can you feel air hitting your hand? You can't see air, and you can't grab it. Yet air is **matter** because it has mass and it has volume. Matter cannot be created or destroyed. It might change form, but it is still matter.

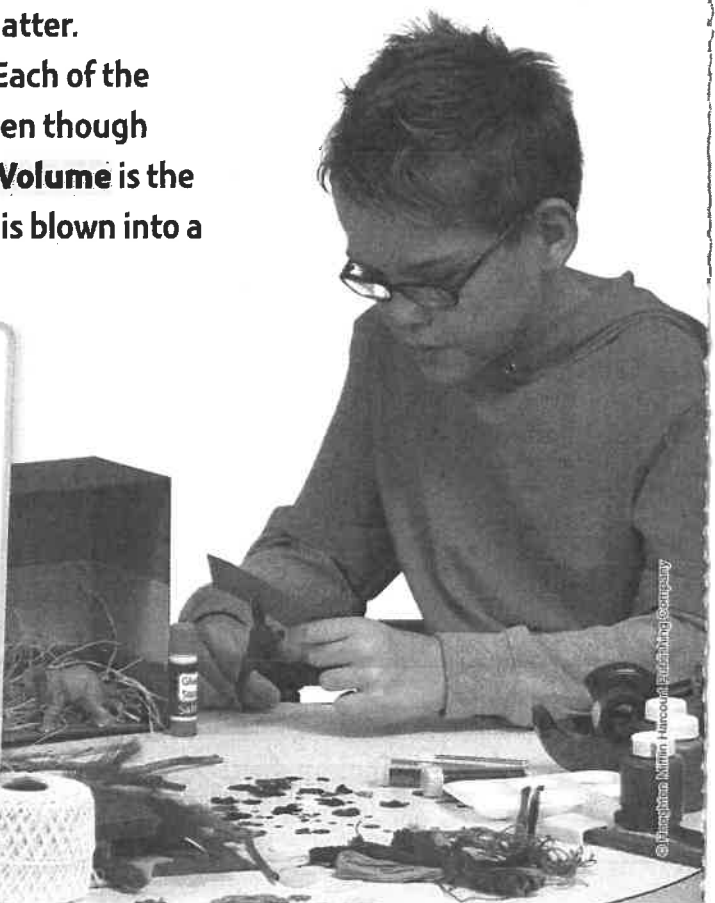
Mass is the amount of matter in something. Each of the tiny particles that make up matter has mass, even though the particles are so small you cannot see them. **Volume** is the amount of space something takes up. When air is blown into a balloon, you can see that it has volume.

Name That Matter

Look at the matter in this picture.

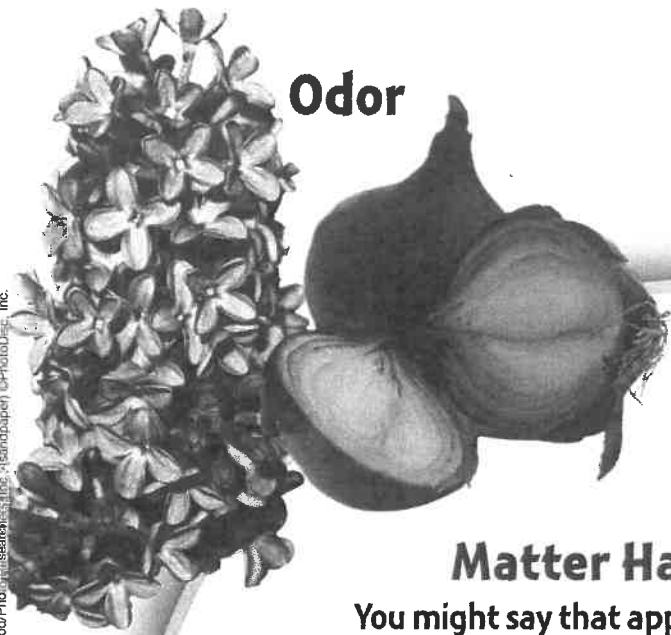
1. What matter is soft and sticky?

2. What matter is hard and sharp?

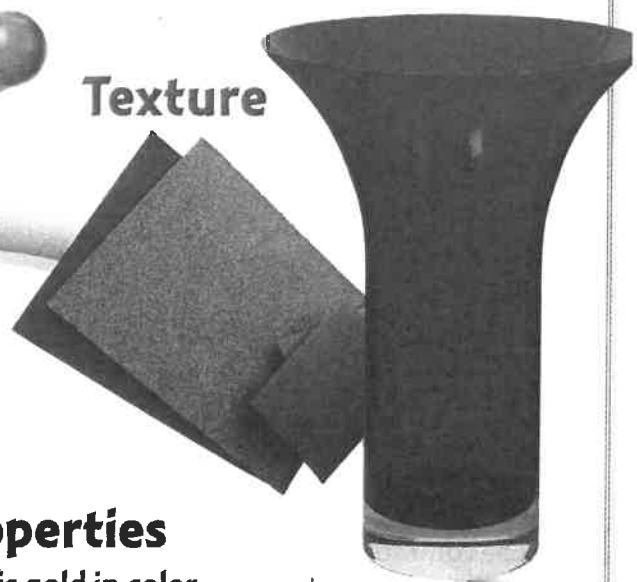


© Houghton Mifflin Harcourt Publishing Company (palette and paintbrush) © Corbis (ivory) © Getty Images (lily flowers) © Maria & Bruno Perigija/Photo Researchers, Inc. (onion) © William Lingwood/Photo Researchers, Inc. (sandpaper) © PhotoDisc, Inc.

Odor



Texture

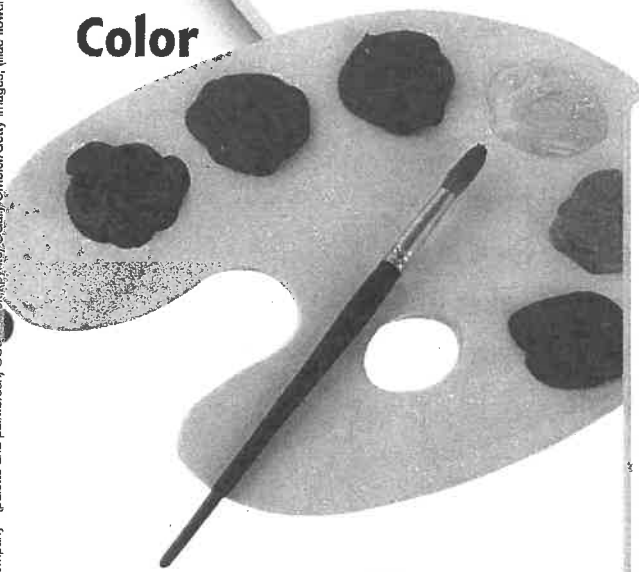


Matter Has Properties

You might say that apple juice is gold in color, tastes sweet, and pours easily. These are properties of the juice, which means they are characteristics used to describe or identify it. All matter has properties.

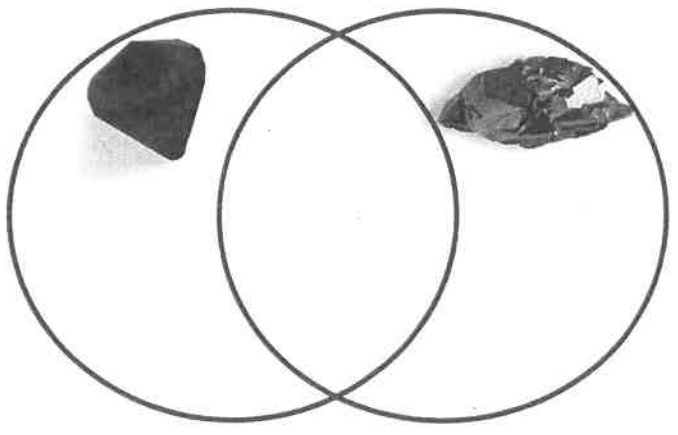
All the properties shown on this page are physical properties. You can observe a physical property without changing the matter into a new substance. For example, texture is how something feels. In observing that sandpaper has a rough texture, you don't change the sandpaper.

Color



Comparing Stones

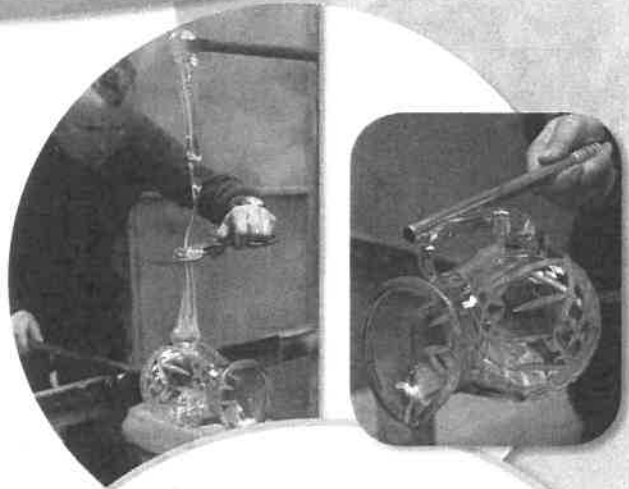
Complete the Venn diagram by comparing and contrasting the properties of the two stones.



More Properties

Color, texture, and odor are just a few physical properties. What are some other properties of matter?

Active Reading As you read these two pages, circle common, everyday words that have a different meaning in science.

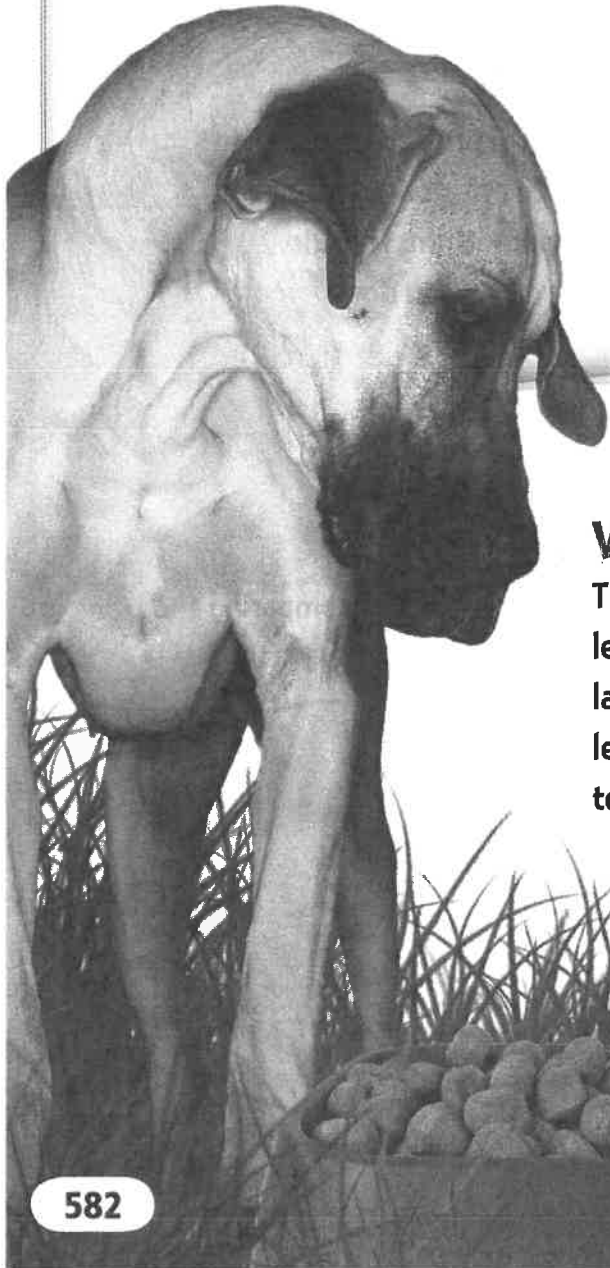


Temperature

Temperature is a measure of the energy of motion of the particles in matter. Melted glass has a very high temperature. Temperature can be measured by using a thermometer.

Volume

The food in the small bowl has less volume than the food in the large bowl because it takes up less space. Many tools can be used to measure volume.



© Houghton Mifflin Harcourt Publishing Company (top) © moodboard/Alamy (man making glass) © Stephen Power/Alamy



Mass

A bowling ball and a basketball have about the same volume. The bowling ball has a greater mass because it contains more matter. Mass can be measured by using a balance.



Density

Density is found by dividing the mass of an object by its volume. The density of the gas in this balloon is less than the density of the air around it. That is why the balloon "floats" in air.

Do the Math!

Use Division

Use the data to find the density of each of these foods.

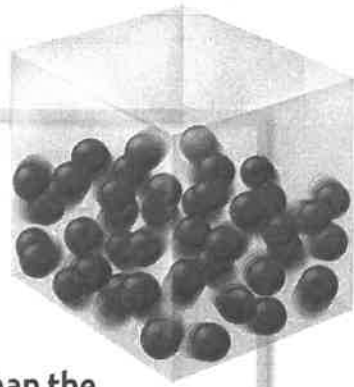
Determining Densities of Foods			
Food	Mass (g)	Volume (cm ³)	Density (g/cm ³)
gelatin	75	100	
pudding	90	100	
whipped cream	50	100	





Liquids

A liquid is a substance that has a definite volume but does not have a definite shape. The particles in a liquid move slower than the particles in a gas, and they slide by each other.



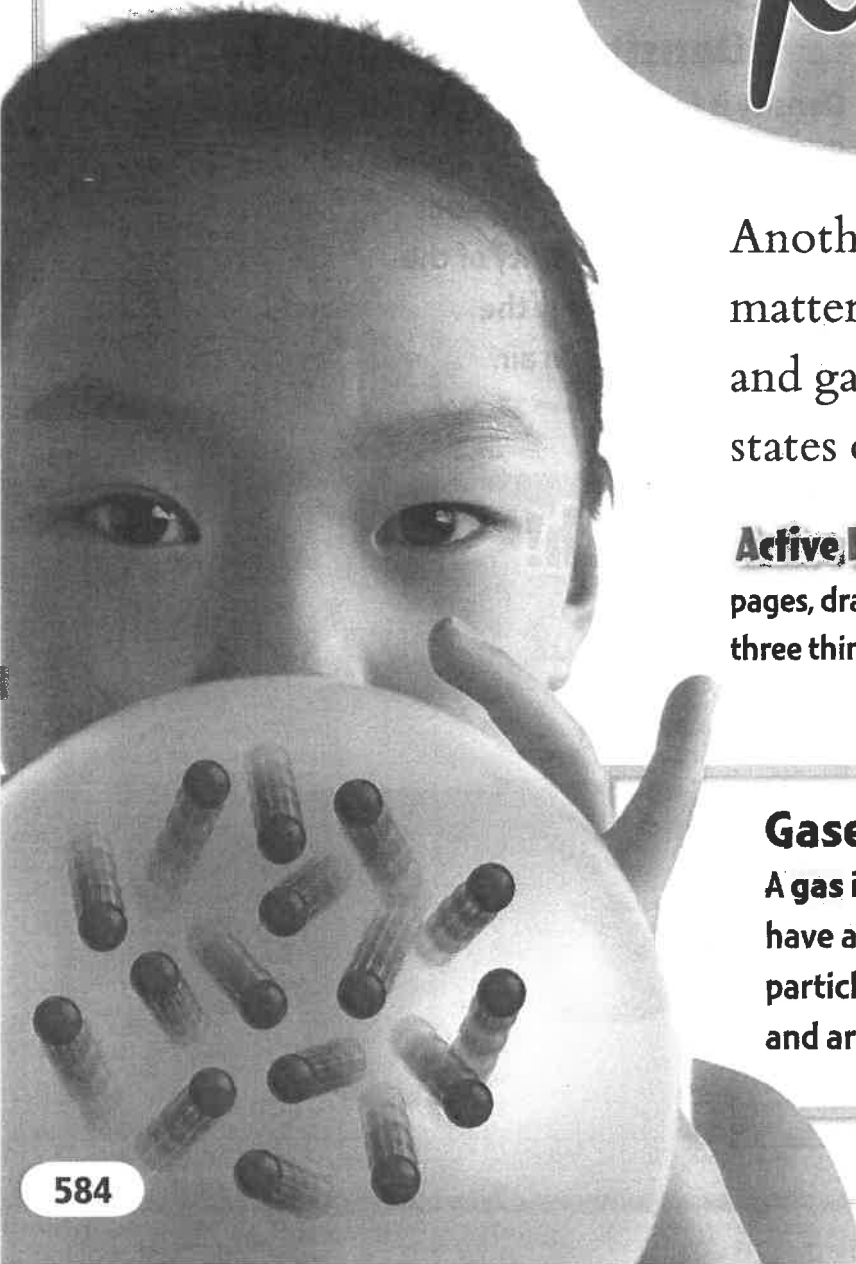
States of Matter

Another physical property of matter is its state. Solid, liquid, and gas are the most common states of matter on Earth.

Active Reading As you read these two pages, draw boxes around the names of the three things that are being compared.

Gases

A gas is a substance that does not have a definite shape or volume. The particles in a gas move very quickly and are far apart from each other.

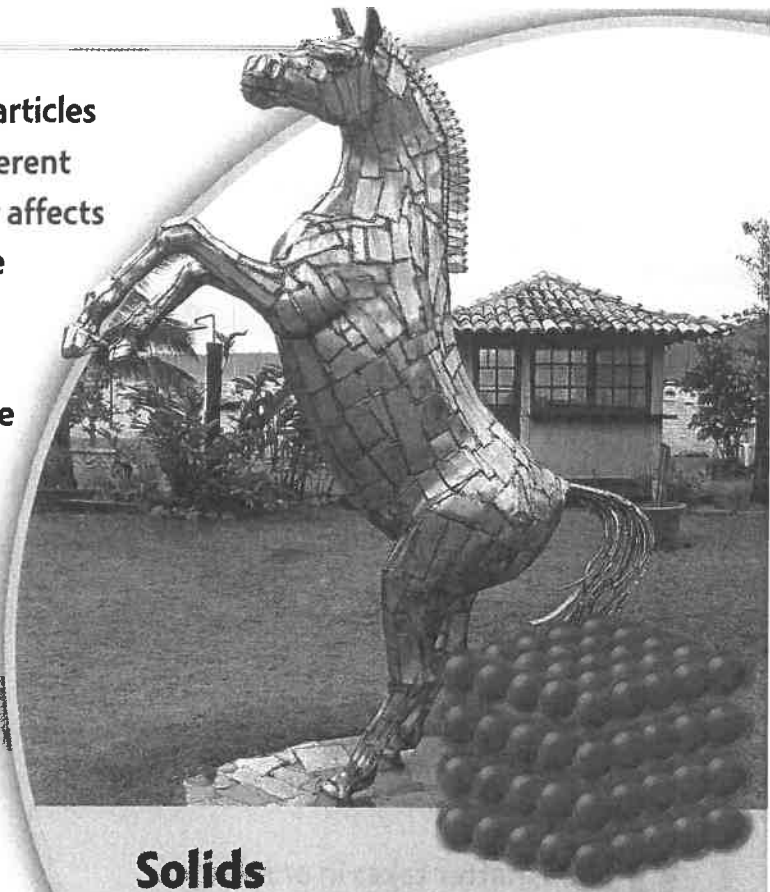


Matter is made of tiny particles. The particles in solids, liquids, and gases have different amounts of energy. The amount of energy affects how fast the particles move and how close together they are.

The shape and volume of something depends on its state. Because each particle in a gas is affected little by the other particles, gas particles are free to move throughout their container. Gases take both the shape and the volume of their container.

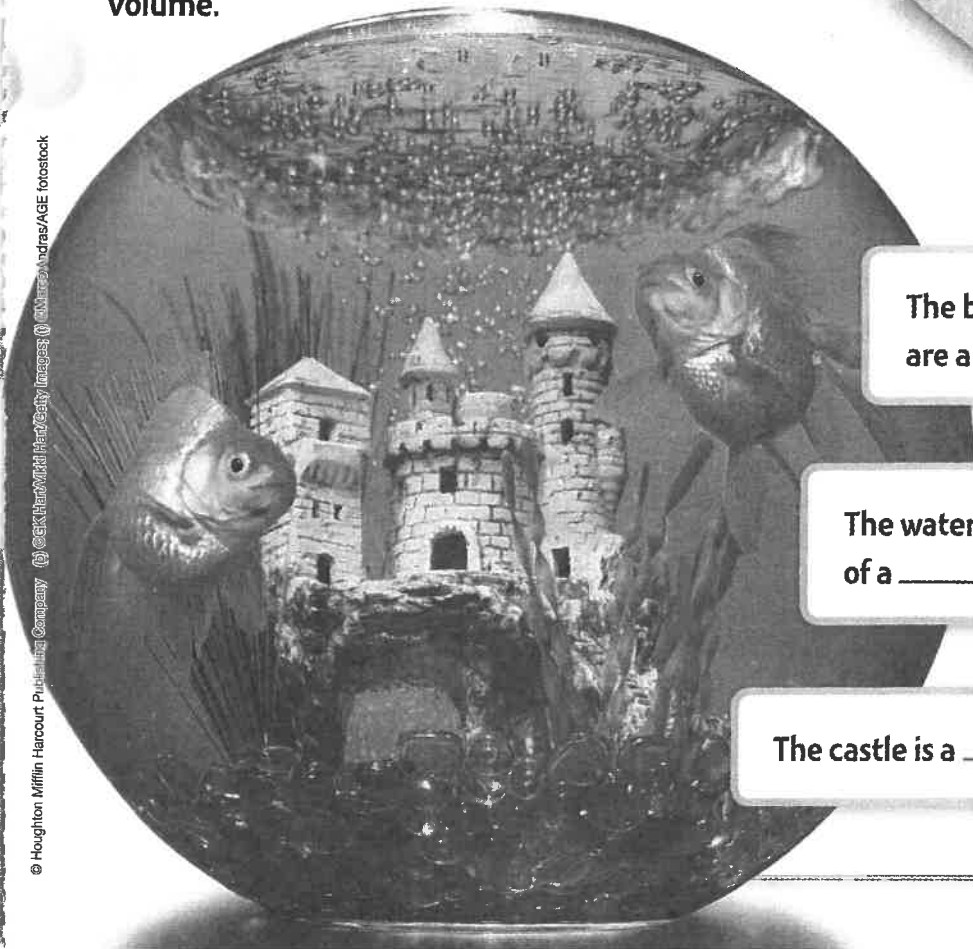
Particles in a liquid cannot move as freely. A sample of a liquid keeps the same volume no matter what container it is in. However because the particles slide by each other, a liquid takes the shape of its container.

The particles in a solid do not move from place to place, so solids keep the same shape and volume.



Solids

A **solid** is a substance with a definite shape and volume. The particles in a solid are very close to each other. They don't move from place to place. They just vibrate where they are.



The bubbles in the tank are a _____.

The water is an example of a _____.

The castle is a _____.

A Matter of Temperature



On a hot day, an ice cube melts. This change is caused by a change in temperature. When matter changes state, the type of matter is not changed.

Active Reading As you read these two pages, draw one line under a cause. Draw two lines under the effect.



When matter takes in or releases energy, its temperature changes. When enough energy is taken in or released, matter can change state.

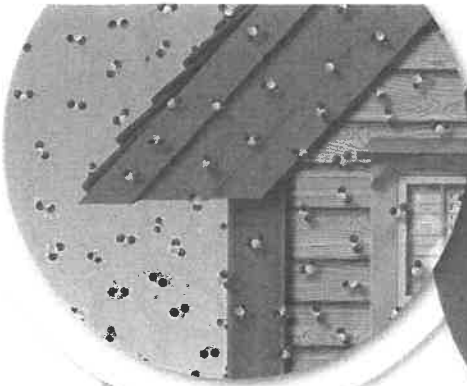
When a gas releases energy, its temperature goes down until it *condenses*, or changes to a liquid. When a liquid releases energy, its temperature goes down until it *freezes*, or changes to a solid.

When a solid takes in energy, its temperature rises until it *melts*, or changes to a liquid. When a liquid takes in energy, its temperature rises until it *evaporates*, or changes to a gas. Evaporation and boiling are similar—both turn liquids into gases. Evaporation is slower and happens only at a liquid's surface. Boiling is faster and happens throughout the liquid.

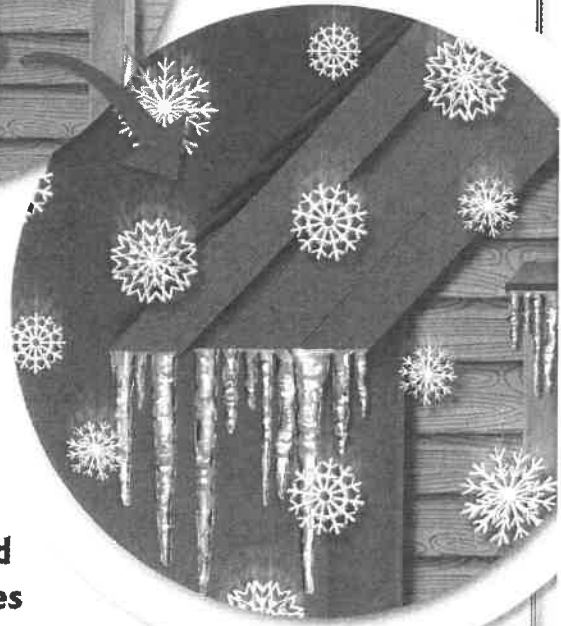
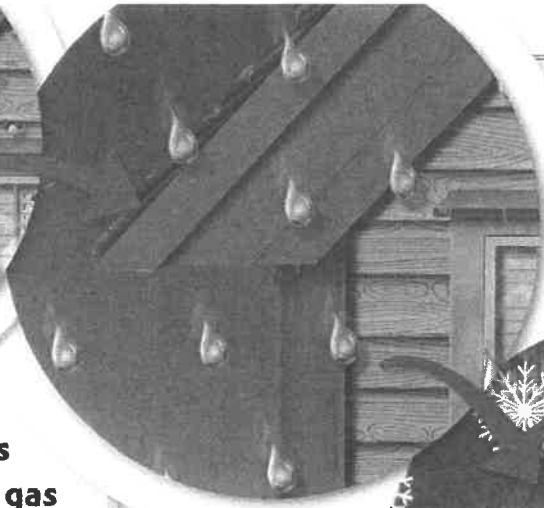
When a solid absorbs enough energy, the solid melts, changing to a liquid.

When a liquid absorbs enough energy, the liquid *boils*, or rapidly changes to a gas.





When a gas releases enough energy, the gas condenses, changing to a liquid. Particles of water vapor condense and form raindrops and dew.



When a liquid releases enough energy, the liquid freezes, changing to a solid. Dripping water that freezes can form icicles.

The temperature at which a certain type of matter freezes or melts is the same. The temperature at which a type of matter condenses or boils is also the same. For water, the melting and freezing points are 0°C . The condensation and boiling points are 100°C . Evaporation can happen at temperatures below the boiling point.

Lava is hot, melted rock that erupts from a volcano. Lava releases energy as it cools and becomes solid rock.

► Complete this graphic organizer.

As a solid takes in energy, its temperature _____, Eventually, it will _____, changing to a _____.



If the liquid takes in enough _____, it will _____, changing to a _____.

Properties of Solids, Liquids, and Gases

Each different material has its own unique properties. However, properties can change depending on the state of the material.

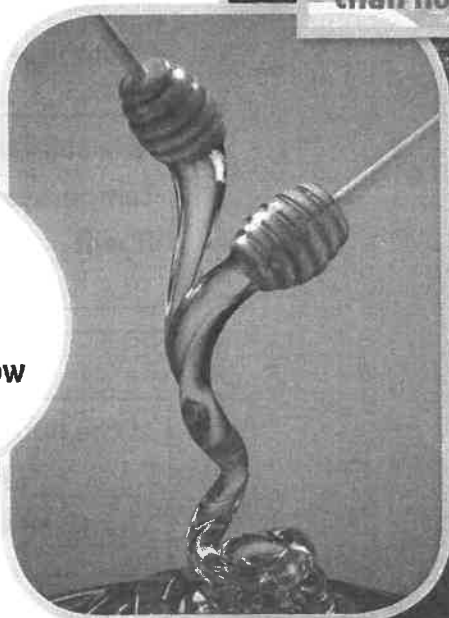
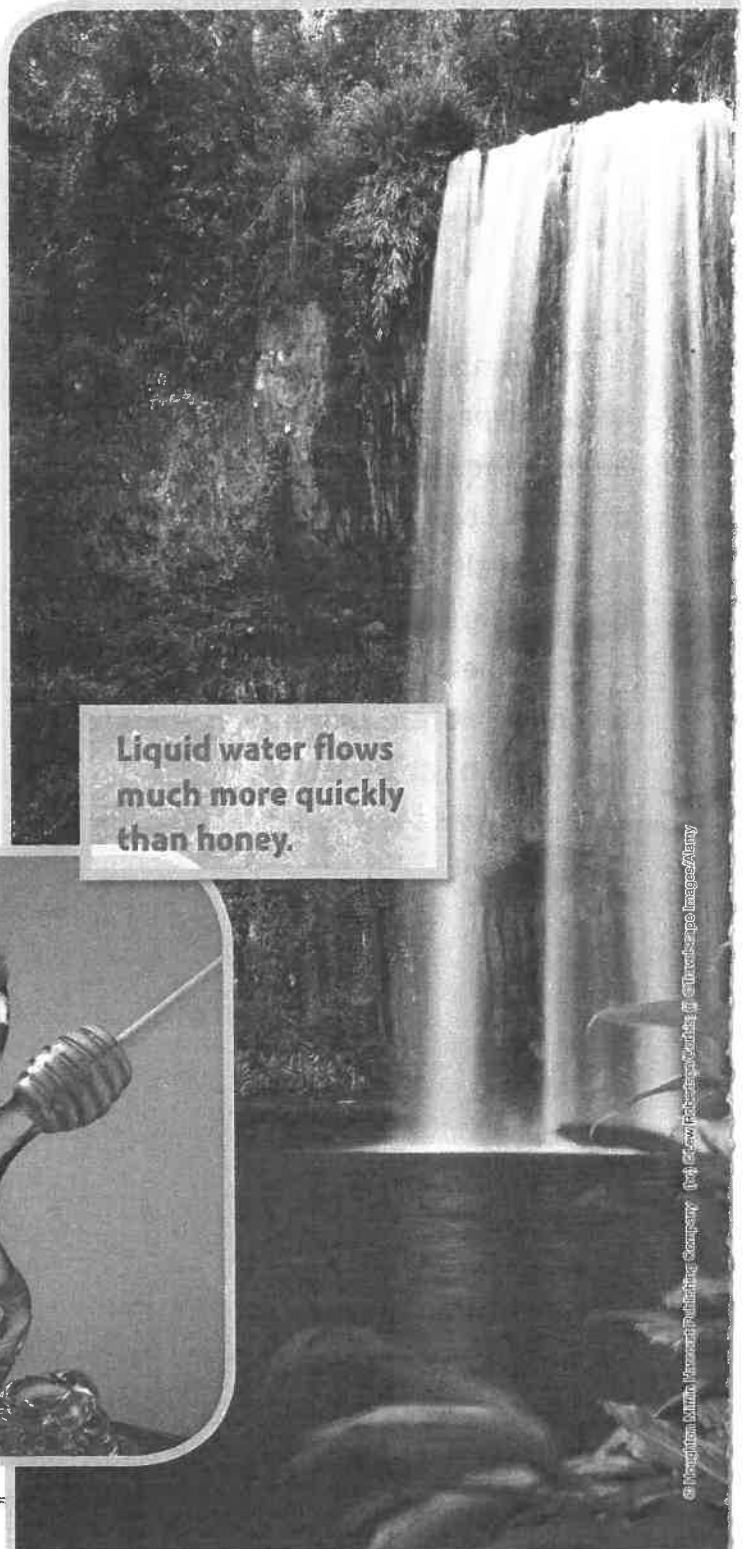
Active Reading As you read these two pages, find and underline facts about each state of matter.

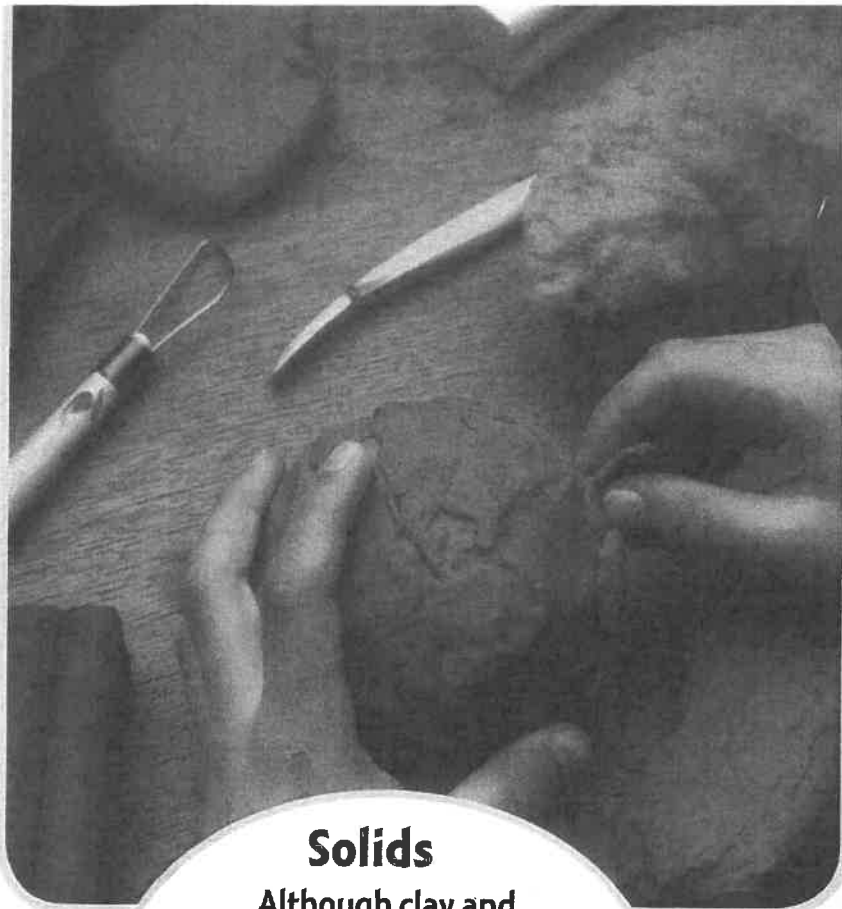
Each state of matter has different physical properties. Liquids and gases both flow, moving from place to place. Gases can expand, taking up more space, or compress, taking up less space. Solids have definite textures.

Liquid water flows much more quickly than honey.

Liquids

All liquids flow from one place to another. Different liquids may flow at different rates.





Solids

Although clay and a wooden table are both solids, each one feels different. All solids have a shape, but the shape of some solids can be changed easily.



Gases

A lot of gas has been compressed in this tank. It is under high pressure. Compressed gas from the tank expands, filling many balloons.



► Complete this main-idea-and-details graphic organizer.

Main Idea		

Liquids	Gases	_____
Motor oil and milk _____ at different rates.	When you push on the sides of a balloon, the gas inside is _____.	Glass and sandpaper have different _____.

Sum It Up!

When you're done, use the answer key to check and revise your work.

Read the summary statements below. Each one is incorrect. Change the part of the summary in blue to make it correct.

1. A property is a characteristic of matter that is used to determine the state of the matter.

2. A sample of ice has a volume of 1.0 cm^3 and a mass of 0.9 g . The density of the ice is 1.1 g/cm^3 .

3. The particles in a solid are close together, but they can slide past each other.

4. A solid changes to a liquid during a process known as freezing.

5. Solids and liquids can be compressed when put under pressure.

6. The mass of an object can be measured by using a measuring cup.

Summarize

Read the properties below. Write *S* for solid, *G* for gas, and *L* for liquid. Some properties may have more than one answer.

7. Has a definite texture and shape _____

12. Can condense _____

8. Can melt _____

13. Can flow _____

9. Can freeze _____

14. Takes the shape of its container _____

10. Can boil _____

15. Has a definite volume _____

11. Takes the volume of its container _____

Answer Key: 1. describe or identify matter 2. 0.9 g/cm^3 3. liquid 4. melting 5. Gases 6. balance 7. S 8. S 9. L 10. L 11. G 12. G 13. L 14. L 15. S, L

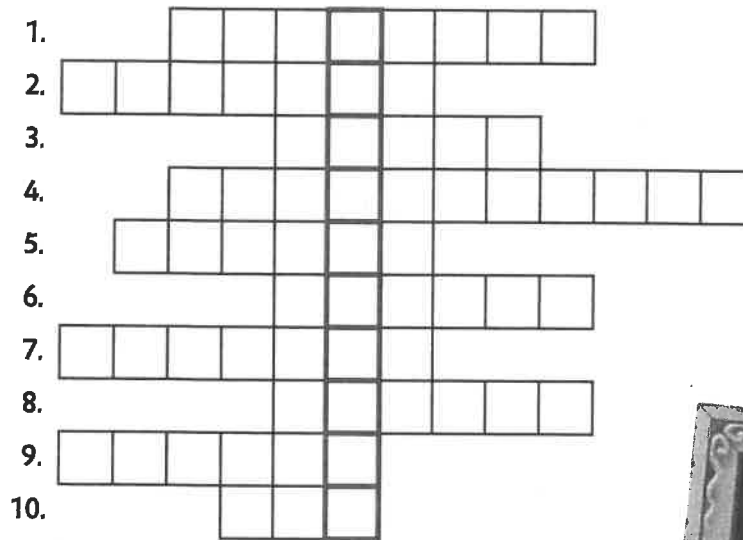
Name _____

Word Play

1

Use the clues below to fill in the words in the puzzle.

1. To squeeze a gas into a smaller space
2. A physical property that describes how something feels
3. The state of matter that keeps its shape and volume when it is placed in a different container
4. The measure of the energy of motion of particles of matter
5. Anything that has mass and volume
6. What happens to a liquid when it releases enough energy
7. Calculated by dividing mass by volume
8. The state of matter that has particles that slide by each other
9. The amount of space something takes up
10. The state of matter that expands to fill its container



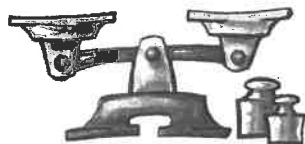
Read down the squares with red borders. The word you find will complete the riddle below.

Perry the porcupine's portrait perfectly portrayed his pestering personality and prickly _____.



Apply Concepts

2 Tell what property each of the following tools is used to measure.



3 Complete these descriptions of the different states of matter.

Examples: air; helium in balloons; oxygen in a tank

Particles are closer together and move past each other.

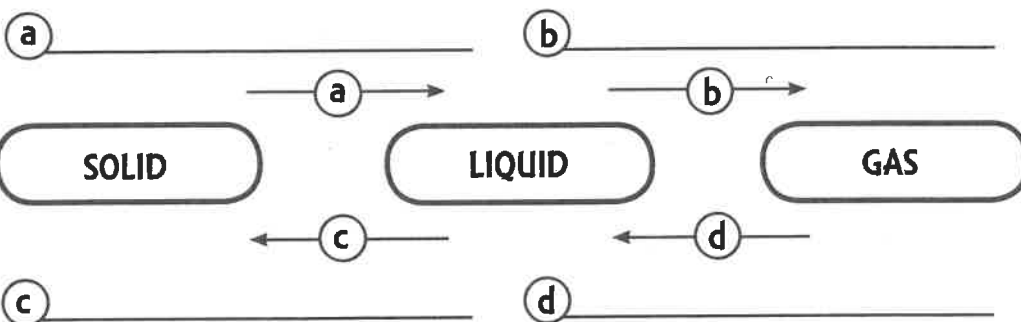
Examples: _____

Solids

Particles are very close and vibrate in place.

Examples: _____

4 Fill in the name of the processes (such as freezing) that are represented.



Play a game of 20 Questions with members of your family. Have them choose a simple item that you can see in the room. Try to guess what the item is by asking yes/no questions about the item's properties.

Essential Question

How Does Matter Change?

Engage Your Brain!

As you read the lesson, look for the answer to the following question and record it here.

A piece of iron can change in different ways. How is iron bending different from iron rusting?

Active Reading

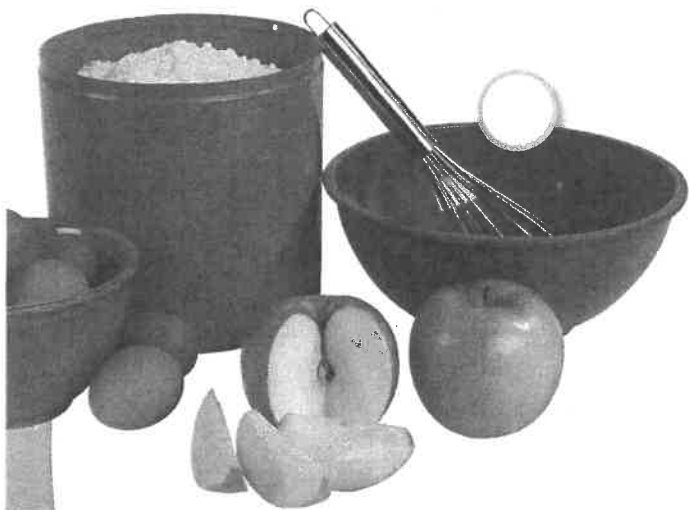
Lesson Vocabulary

List each term. As you learn about each one, make notes in the Interactive Glossary.

Main Idea and Details

Detail sentences give information about a topic. The information may be examples, features, characteristics, or facts. Active readers stay focused on the topic when they ask, What fact or information does this sentence add to the topic?

Classifying Change



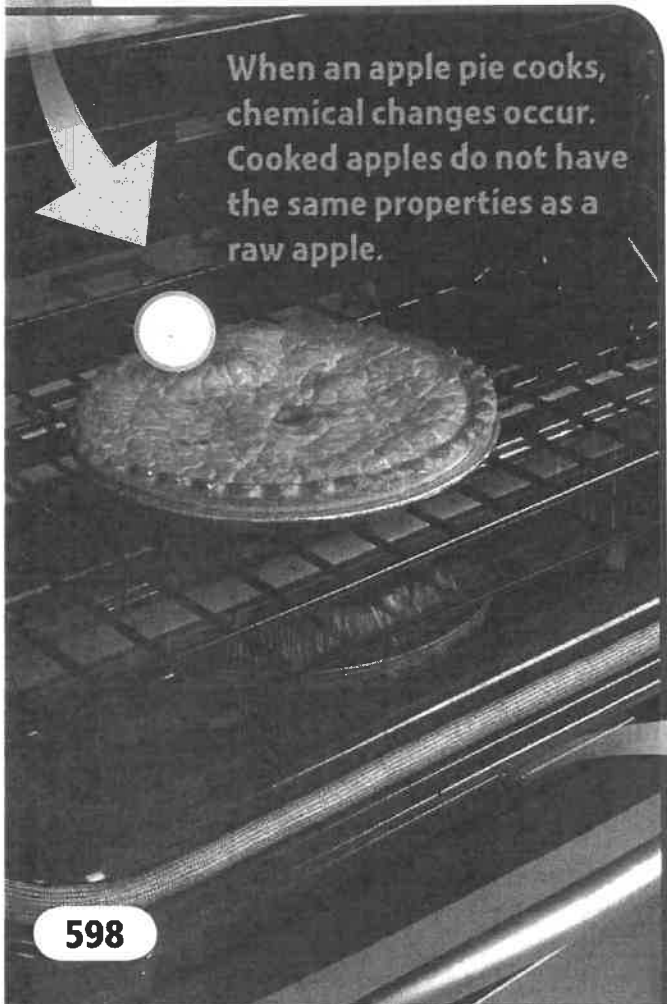
▲ Slicing apples and cracking eggs are physical changes.

Matter has properties, but matter also undergoes changes. How many different ways does matter change?

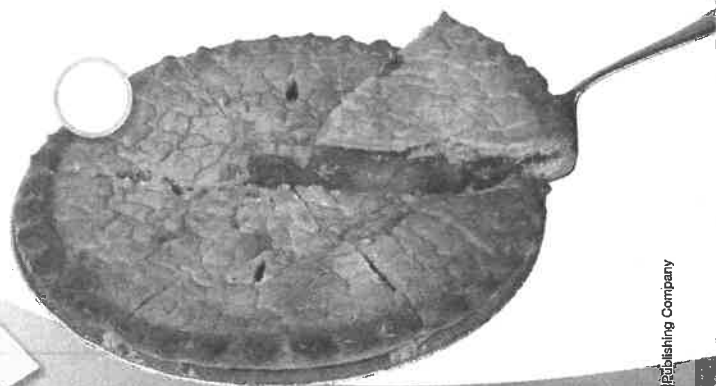
Active Reading Each visual on these two pages has an empty bubble. Write a *C* if the visual shows a chemical change. Write a *P* if it shows a physical change.

Matter has physical properties that can be observed without changing the type of matter. Matter can also change in ways that do not affect the type of matter. These changes are called **physical changes**.

When you sharpen a pencil, the pencil goes through a physical change. The wood shavings and bits of graphite don't look like a pencil any more. But the wood is still wood, and the graphite is still graphite.



When an apple pie cooks, chemical changes occur. Cooked apples do not have the same properties as a raw apple.



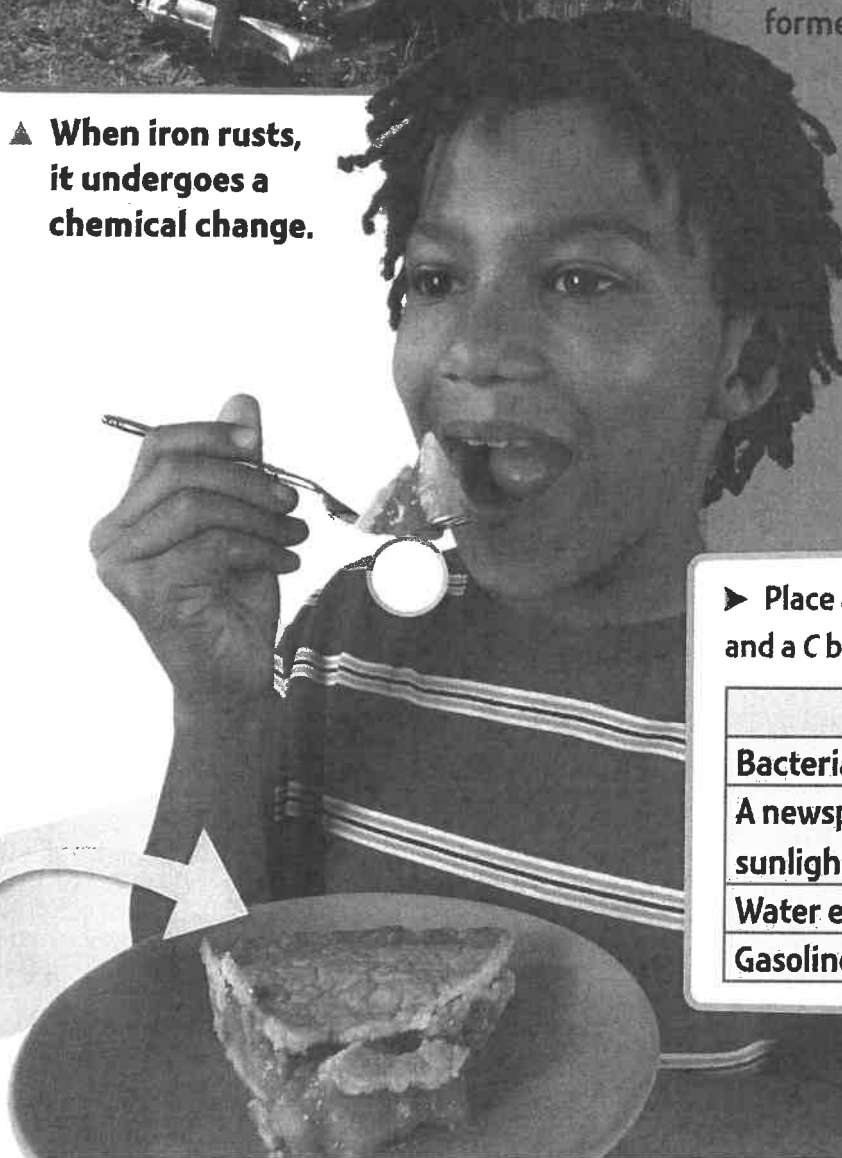
▲ Slicing a pie is another physical change.



▲ The properties of the ash and gases that form when wood burns are different from the properties of wood.



▲ When iron rusts, it undergoes a chemical change.



◀ When you eat apple pie, chemical changes in your body digest the food.

Matter has other properties that cannot be observed without changing the identity of the matter. These properties are chemical properties. For example, you don't know if a type of matter will burn unless you burn it. When matter burns, it changes identity.

In the same way, **chemical changes** result in a change in the identity of matter. When a strawberry rots, it undergoes chemical change. The rotten strawberry's properties are quite different from those of a fresh strawberry. A chemical **reaction** is the process in which new substances are formed during a chemical change.

► Place a *P* by each physical change and a *C* by each chemical change.

Change	Type
Bacteria decompose leaves.	
A newspaper turns yellow in sunlight.	
Water evaporates.	
Gasoline burns in a car engine.	

Swelling and Shrinking

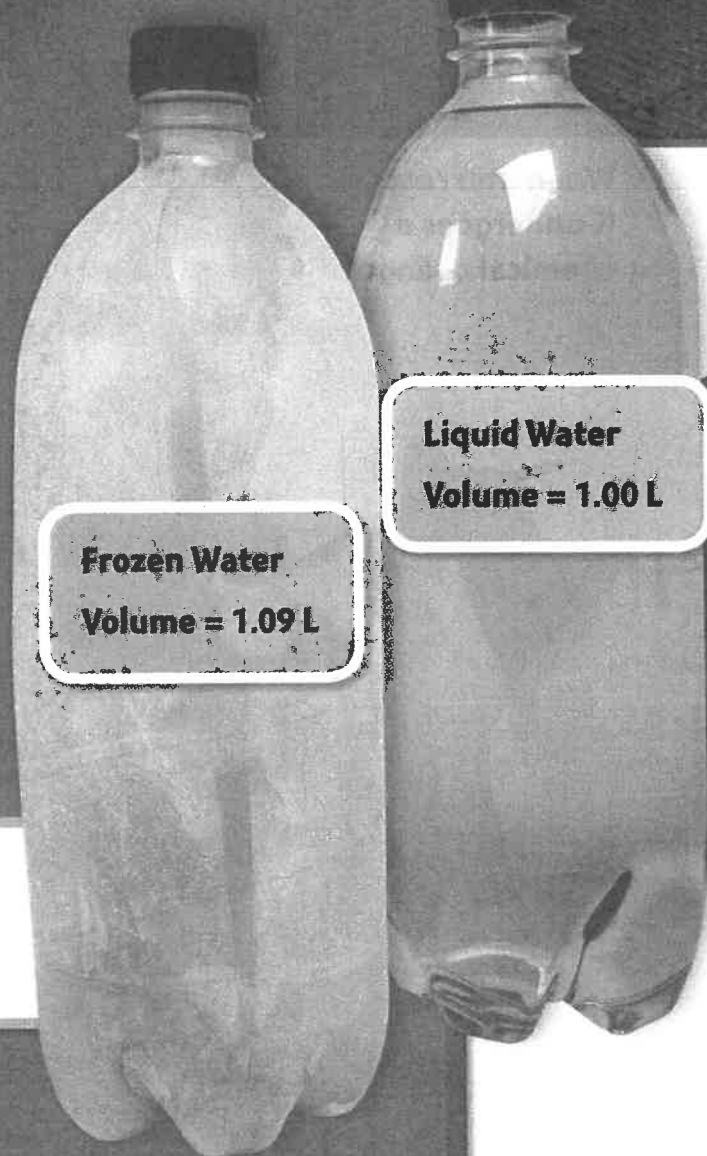
Why do you think many car owners use one tire pressure in summer and another one in winter? When temperature differs, volume often differs.

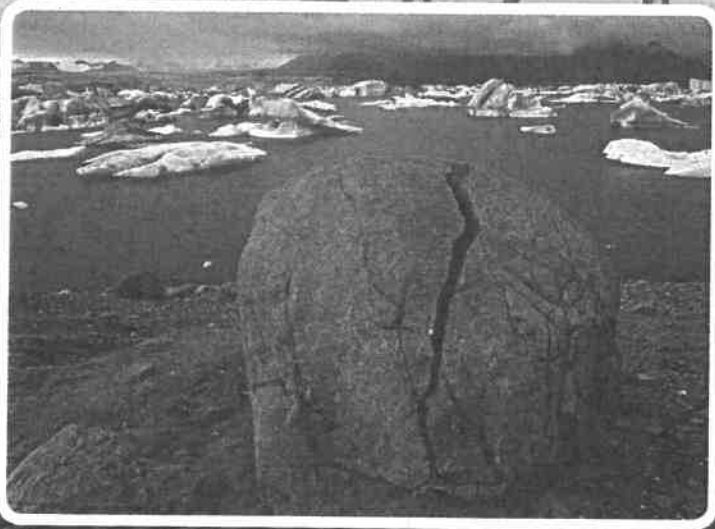
Active Reading As you read this page, draw two lines under each main idea. Circle an example of matter expanding when it becomes warmer.

Most matter expands when the temperature goes up and contracts when the temperature goes down. Some kinds of matter expand and contract more than others. People may run hot water over the metal lid of a glass jar. This expands the lid so that it's easier to take off the jar.

One exception is water. It expands when it freezes. Because ice takes up more volume than the same amount of liquid water, ice is less dense than water. That's why ice floats in a glass of water. In winter, ice first forms at the surface of a lake.

One of water's unique properties is that it expands when it freezes.





◀ Sometimes water flows into cracks in rocks and freezes. The expanding water makes the cracks in the rock larger and breaks large rocks into smaller pieces.

Expansion Joints

▶ Explain why bridges have expansion joints in them.

▶ This photo shows the same balloon at two different temperatures. The size of a sample of gas depends on its temperature. The gas in a balloon expands when it is warmed. The gas compresses when it is cooled.

Temperature = -80°C
Volume = 1.9 L

Temperature = 35°C
Volume = 3.0 L

Tampering with Temperature

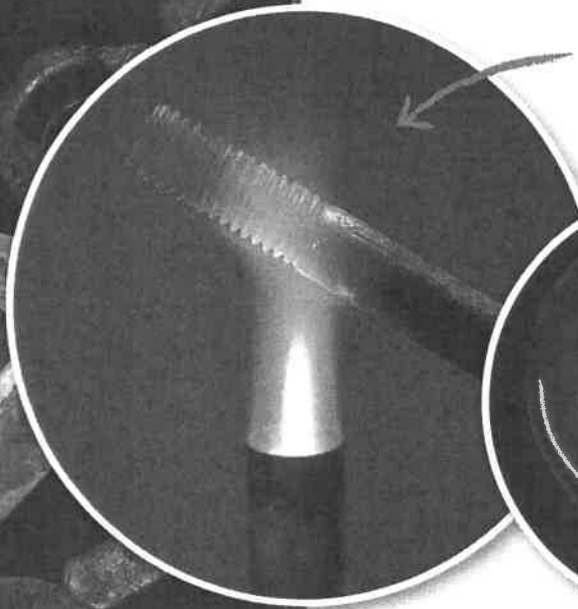
When a burner on a stove is really hot, it glows red. A change in color is just one way temperature can affect matter.

Active Reading As you read this page, underline examples of how temperature affects physical changes in matter.

Some physical changes, such as tearing a piece of paper, are not affected by temperature. Other physical changes happen faster or slower at different temperatures. How quickly a change occurs is called the rate of change.

For example, ice on a lake will melt if the air temperature is above 0°C . It will melt even faster if the air temperature is warmer. In the same way, water condenses more quickly on the outside of a very cold soft drink can than it does on a cool can.

Hot! Hot! Hot!
As iron is heated, it glows red or yellow.



WOW! This metal rod has been heated to more than 500°C (932°F).



OUCH! The filament of a light bulb is made of a metal called tungsten. It is glowing because it is heated to $2,500^{\circ}\text{C}$!

Do the Math!

Graph Data

The data table shows how long it takes identical ice cubes to melt when placed in equal amounts of water at different temperatures. Make a line graph of these data.

Temperature of water (°C)	Melting time of ice (sec)
14	450
19	300
27	170
42	140
48	90
70	25

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When grass and the air around it cool at night, water vapor in the air might condense, forming dew. As morning sunlight warms the air, the dew evaporates. In this photograph, the grass in the shade is wet but the grass in the sun has dried.

Adding it Up!

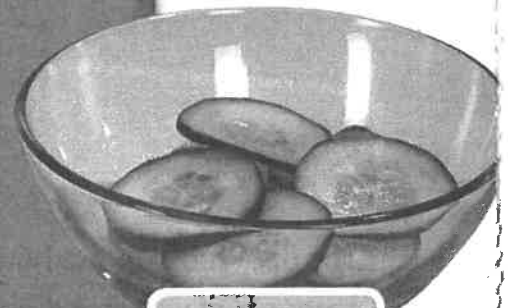
What happens to the mass of substances during physical or chemical changes?

Active Reading As you read these pages, underline examples of conservation of mass.

During physical and chemical changes, matter may change its appearance or its identity. In either type of change, the total mass of the matter before and after the change remains the same. This is called **conservation of mass**. To *conserve* means "to save."

For example, as water boils, it seems to disappear. However, the total mass of the particles of water vapor in the air equals the mass of the water that boiled away. Suppose you tear a 100-gram cardboard box into pieces. The total mass of all the pieces will also be 100 grams. The mass of the cardboard box stays the same. In this example, however, the volume of the cardboard box changes because tearing it into pieces causes it to lose its shape.

The total mass of the mixed salad is the sum of the masses of the vegetables in it.



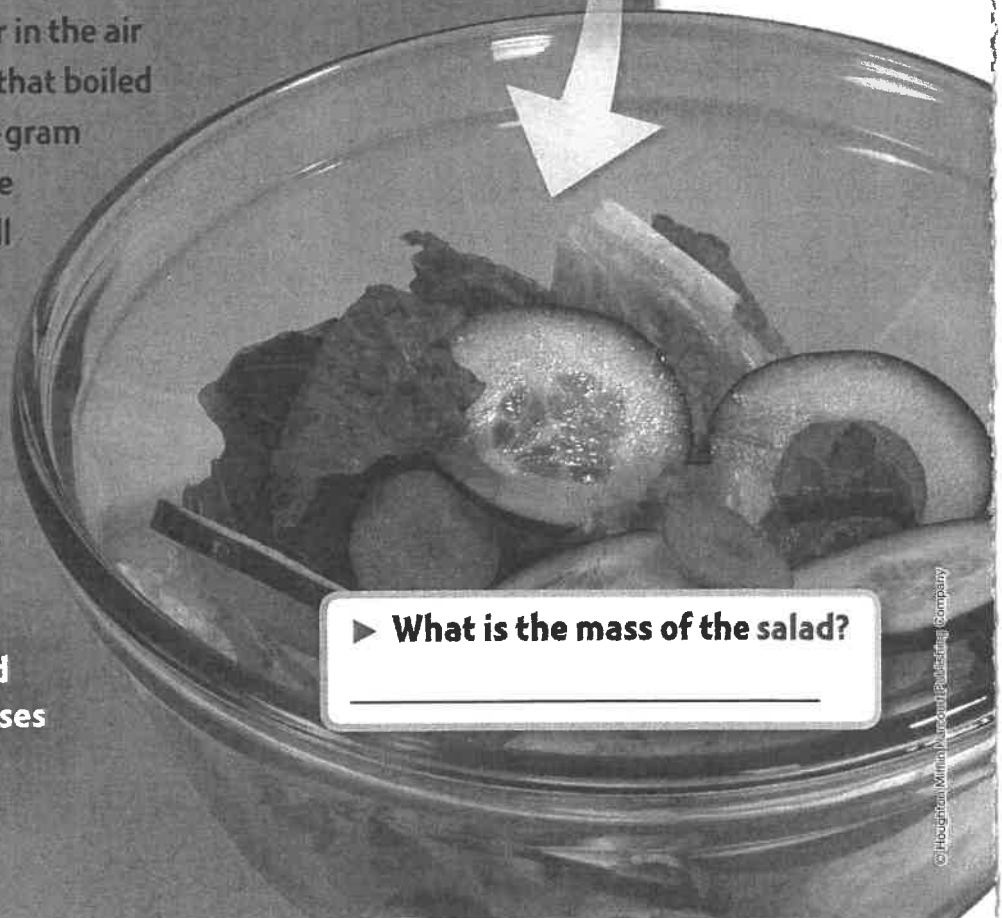
75 grams



110 grams



90 grams



► What is the mass of the salad?



During this chemical reaction, the flask is sealed. Nothing can enter or leave, so the final mass equals the starting mass.

A chemical change turns one kind of matter into another. However, the mass of the matter stays the same. It can be tricky to compare, though. First, you must collect and measure the mass of everything you begin with. Then, you must collect and measure the mass of everything you are left with.

When wood burns, it combines with oxygen from the air. Burning produces ashes, smoke, and other gases. The mass of the wood and oxygen equals the mass of the ashes, smoke, and gases that are produced.

Do the Math!

Solve Problems

In a physical change, sugar is dissolved in water to form sugar water. In a chemical change, iron combines with oxygen to form rust. Fill in the missing values in the table.

Physical Change	Mass (grams)
sugar	125
water	
sugar water	198
Chemical Change	
iron	519
oxygen	23
rust	

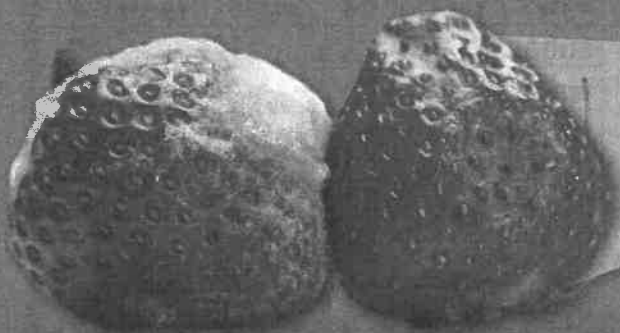
Faster or Slower?

Temperature affects the rate at which chemical changes occur, too. Read to find out how.

Active Reading As you read this page, circle two clue words or phrases that signal a detail such as an example or an added fact.

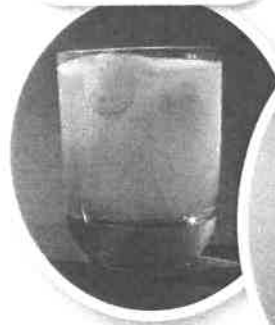
Increasing temperature often speeds up the rate of a chemical change. For example, increasing oven temperature speeds up the chemical changes that occur when a cake bakes or a potato cooks.

Decreasing temperature usually slows down the rate of chemical change. This is why food stays fresh longer when it is kept cool. Also, unused batteries stay charged longer when kept in the refrigerator.



The chemical changes that make food spoil are slowed down by keeping the food in the refrigerator.

cold water



warm water



An effervescent antacid tablet reacts more quickly with warm water than it does with cold water.



Fevers

You feel awful. Your head hurts, and you have a fever. Why might having a fever be a good thing?

When you have a fever, your temperature rises above your normal body temperature (about 37°C). A low fever is between 38°C and 39°C . A high fever is greater than 40°C . Low fevers help the body fight disease. High fevers can cause severe problems.

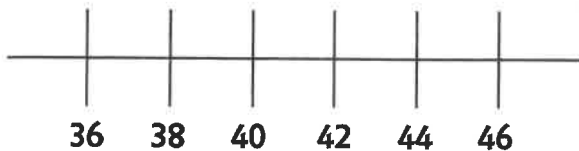
Temperature can increase for many reasons. For example, certain bacteria have materials that your brain identifies as harmful. The brain sends out signals that cause an increase in the chemical changes that produce energy. Your temperature increases. Bacteria cannot survive at this higher temperature.

Do the Math!

Use a Number Line

On the number line below, plot the following values in $^{\circ}\text{C}$.

- normal body temperature
- a slight fever
- a high fever



Sum It Up!

When you're done, use the answer key to check and revise your work.

The outline below is a summary of the lesson. Complete the outline.

I. Matter undergoes changes.

A. One type of change is a (1) _____.

1. Matter does not change identity.

2. Example: (2) _____

B. (3) _____

1. Matter changes identity.

2. Example: (4) _____

II. Temperature affects matter.

A. When temperature increases,

1. the speed of a chemical change (5) _____.

2. the rate of melting and boiling (6) _____.

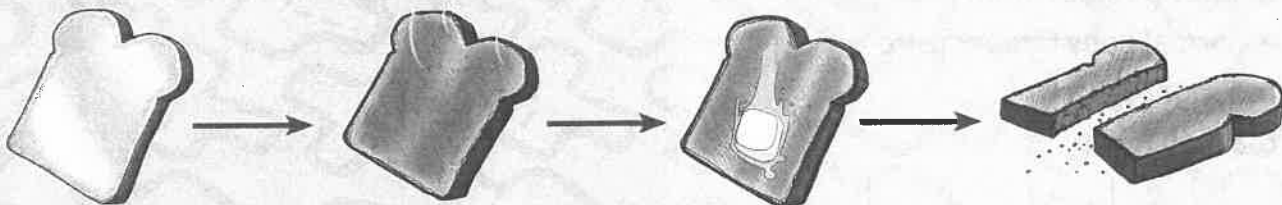
B. When temperature decreases,

1. the speed of a chemical change (7) _____.

2. the rate of freezing or condensing (8) _____.

III. During physical or chemical changes, the total mass of matter (9) _____.

Tell whether each change is a physical change or a chemical change.



(10) _____

(11) _____

(12) _____

Answer Key: 1. physical change 2. Sample answer: cutting paper 3. Another type of change is a chemical change. 4. Sample answer: wood burning 5. increases 6. increases 7. decreases 8. increases 9. stays the same 10. chemical change 11. physical change 12. physical change

Name _____

Word Play

1

It's easy to get tongue-tied when talking about how matter changes. Look at the statements below. Switch the red words from one sentence to another until each statement makes sense.

- A. In a chemical change, the identity of matter does not change. _____
- B. Water will melt faster on a very cold soft drink can than it will on a cool soft drink can. _____
- C. Another name for a chemical change is a chemical property. _____
- D. Ice will condense more slowly in cold water than in warm water. _____
- E. In a physical change, the identity of the matter changes. _____
- F. When water freezes, its mass decreases. _____
- G. A reaction of matter will stay the same during a physical change. _____
- H. When water freezes, it contracts. _____

Challenge The words in the boxes below are jumbled. Put them in the correct order to make a meaningful sentence.

changes are rusting and chemical burning

is physical and mass changes in chemical conserved

Apply Concepts

2 Each of the pictures shows a change. Write a *P* by the pictures that show physical changes and a *C* by the pictures that show chemical changes.



3 Make a list of physical changes and chemical changes that you observe or see the effects of in your school.

Physical Changes

Chemical Changes

4 What would make each of the following processes happen faster? On each line, write *increase in temperature* or *decrease in temperature*.

Ice cream melting

Boiling water to cook potatoes

Water condensing on
the outside of a glass

Water freezing
overnight on a street

5 Explain what is happening in these pictures. Tell whether the changes are physical or chemical.



6 Why is it important to follow the instructions on this jar of food?



7

Draw a picture of a chemical reaction. Then explain what happens and why mass is conserved during the reaction.

8

Explain why most sidewalks have built-in cracks every few feet.

9

Explain what happens in a campfire.

Wood is made of cellulose, lignin, and other substances.



The wood is set on fire, and a _____ change occurs.



The cellulose and lignin are changed into other substances, including _____ and _____.



Take It Home!

Ask an adult to help you practice taking the temperature of someone in your family. Determine whether any of your family members have a fever. Explain to family members why people get fevers.