2020

Erie Rise Leadership
Academy Charter School

Parent Lesson Plan

[PARENT LESSON PLAN]

7th & 8th Grade, Week of 3/23

Contents

INTRODUCTION

Hello Parents!

Included in this packet is a week's worth of printed ELA, Mathematics, and Science/Social Studies work for your students while they are at home. Each day is separated into the 3 content areas for the printed material. If you have access to the digital curriculum, a pacing guide is also provided outlining the digital component assigned for each specific day. If you need technology, please contact the school and we can make it available to you. Also remember, USATestPrep is always an option!

We know some of this material maybe be challenging, but try your best to complete it! Hopefully we will see you back in the classroom soon and will be able to go over all the information.

Printed materials may be turned into to the distribution centers once completed, but it is not a requirement.

Mrs. Will will be available on Youtube Live every day from 10AM-11AM to assist with curriculum questions and/or any resource questions for parents or students.

Stay safe and healthy everyone!

Missing seeing everyone's smiling face! Remember to wash your hands!

Educationally Yours ,
Mrs. Veronica Will

Distribution Sites/Information

Food/Curriculum distribution will take place at:

Erie Rise Leadership Academy Charter School
1006 West 10th Street
Erie, PA 16502

Monday and Wednesday from 9AM until 12PM

Leadership Team

Mr. Terry Lang, CEO: 814 812-0503
Mrs. Veronica Will, Principal: 814 873-5158
Mr. Aubrey Favors, HR: 814 812-3026
Mr. Kirk Paskell, Transportation: 814 566-0002
Mr. Homer Smith, PR: 814 392-3413
Mrs. Pearl Jeffries, Social Services: 814 722-5056

DIGITAL LESSON PACING GUIDE

ConnectED Instructions

Please see attached instructions for accessing the digital curriculum.

USATestPrep Instructions

Please see attached instructions for accessing this test-prep site.

If you have access to high speed internet, below are the assignments the teachers have assigned for the various content areas:

Digital Pacing Guide

	Monday	Tuesday	Wednesday	Thursday	Friday
ELA/Writing 7th and 8th grade	Complete all previously assigned work in Study Sync.	→	→	→	→
Math	USA Test Prep	USA Test Prep	USA Test Prep	USA Test Prep	USA Test Prep
Science	Complete USA Test assignments	Complete USA Test assignments	Complete USA Test assignments	Complete USA Test assignments	Complete USA Test assignments
Social Studies * There is additional online Social Studies material available on Connect Ed.	Lesson: Monday March 23- Alimahmoodi	Lesson: Tuesday March 24th- Alimahmoodi	Lesson: Wednesday March 25th- Alimahmoodi	Lesson: Thursday March 26th- Alimahmoodi	Lesson: Friday March 27th- Alimahmoodi

ELA PRINT MATERIAL

ELA- Mrs. Norgard

- The packet provided is arranged in the order it is to be completed.
- Should the school extend another week, more from this packet will be assigned.

Monday 3/23

7th grade- Lesson 11 part 1 and 2- Pages 184-190- Writing Foundations and "On the Slopes-or Not?" with questions 1-4

8th grade- Lesson 11 part 1 and 2- Pages 184-191- Writing Foundations and "Tears of Fear, Tears of Joy" with questions 1-4

Tuesday 3/24

7th grade- Lesson 11 Part 3- Pages 191-195- Lesson Practice "Snowboarding 101" with questions 1-5

8th grade- Lesson 11 Part 3- Pages 192-196- Lesson practice "From Dream to Reality" with questions 1-5

Wednesday 3/25

7th grade- Writing extension from Lesson- Pages 196-199

8th grade- Writing extension from Lesson 11 # 6- Pages 197-199

Thursday 3/26

7th grade- Lesson 12 Part 1 and 2- Pages 200-205- Write a Text-Dependent Analysis and poems "A Linnet in a Gilded Cage" and "A Song of Flight with questions 1-4

8th grade- Lesson 12 Part 1 and 2- Pages 200-205- Write a Text-Dependent Analysis and "Frankenstein" with questions 1-4

Friday 3/27

7th grade- Lesson 12 Part 3- "The Story of an Hour" Pages 206-211- Lesson Practice with questions 1-5

8th grade- Lesson 12 Part 3- "The Rebellious Robot"- Pages 206-211- Lesson Practice with questions 1-5

MATH PRINT MATERIALS

GRAYSON-WAYNE
Math
All 7th Graders
• Chapter 7 Packet:
Monday 3/23: Lesson 7-1
Tuesday 3/24: Lesson 7-1
Wednesday 3/25 Lesson 7-2
Thursday 3/26 Lesson 7-2
Friday 3/27 Lesson 7-2
Monday 3/30: Lesson 7-3
Tuesday 4/1: Lesson 7-3
Wednesday 4/2: Lesson 7-4
Thursday 4/3: Lesson 7-4
Friday 4/4: Lesson7-4
ALL 8TH GRADERS
• Chapter 6 Packet
Monday 3/23: Lesson 6-1
Tuesday3/24: Lesson 6-1
Wednesday 3/25: Lesson 6-2
Thursday 3/26: Lesson 6-2
Friday 3/27: Lesson 6-2
Monday 3/30: Lesson 6-3
Tuesday 4/1: Lesson 6-3
Wednesday 4/2: Lesson 6-4
Thursday 4/3: Lesson 6-4
Friday 4/4: Lesson 6-4

• Should we be out any longer, please continue the same pattern of work until packets are complete. Also utilize the online program, USATest Prep.

SCIENCE/SOCIAL STUDIES PRINT MATERIAL

Social Studies-Alimahmoodi:

*The packet provided is arranged in the order that it is to be completed.

Chapter 18: Civilizations of Korea, Japan, and Southeast Asia

Day 1 (Monday 3/23)

1. Read Lesson 1
2. Answer 6 Review Questions at the end of the reading
3. Completed Lesson 1 Guided Reading

Day 2 (Tuesday 3/24)

1. Complete *Geography and History Activity: Lesson 1*
2. Complete Lesson 1 Study Guide (pages 217-220)
3. Complete Lesson 1 Quiz (please utilize all material you have available to complete this)

Day 3 (Wednesday 3/25)

1. Read Lesson 2
2. Answer 6 Review Questions at the end of the reading
3. Complete Lesson 2 Guided Reading

Day 4 (Thursday 3/26)

1. Complete Lesson 2 Study Guide (pages 221-224)
2. Complete Lesson 2 Quiz (please utilize all materials you have available to complete this)

Day 5 (Friday 3/27)

1. Read Lesson 3
2. Answer the 6 Review Questions at the end of the reading
3. Complete Lesson 3 Guided Reading

There is more work available then what I have broken down. If we are out of school an additional week, follow the directions below.

Day 1 (Monday 3/30)

1. Complete Lesson 3 Study Guide (pages 225-228)
2. Complete Lesson 3 Quiz (please use all materials you have available to complete this)

Day 2 (Tuesday 3/31)

1. Read Lesson 4
2. Answer the 6 Review Questions at the end of the reading

Day 3 (Wednesday 4/1)

1. Complete Lesson 4 Guided Reading
2. Complete Lesson 4 *Economics of History Activity: The Rise of Angkor*

Day 4 (Thursday 4/2)

1. Complete Lesson 4 Study Guide (pages 229-232)
2. Complete Lesson 4 Quiz (please use all materials you have available to complete this)

Day 5 (Friday 4/3)

1. Complete Vocabulary Builder activity (use all materials, especially the readings, to help you with this activity)

Science-Ms. Gunther

8 B /G

Monday-Selective Breeding-Charles Darwin-Homework

Tuesday-Naturally Selected to Survive-Homework

Wednesday-When Fish First Walked/ DNA and the Genetics-Homework

Thursday-Animal Over Time/Dinosaurs-Homework

Friday-Different Diseases-Homework

Wordsearch

USATestprep LLC- Physical Sciences

Elements and Compounds -Quiz

Fill in the Blanks worksheet with word bank.

Website: **ReadWorks.org**

7G&B

Monday- Cleaning Up the Ocean/Energy Production- Homework

Tuesday-What is the Big Deal with Carbon- Homework

Wednesday-Reduce Waste/Carbon Monoxide- Homework

Thursday-Energy for Life/Air Pressure- Homework

Friday-Meet the Microbes/Global Weather- Homework

USATestprep LLC

Website: **ReadWorks.org**

Fill in the Blank-Worksheet

Wordsearch/Quiz

4. "The rain cloud means that today it is going to rain all day. And here it says the**temperature**: 85 degrees Fahrenheit."

5. The oil and gas could soon become easier to reach. **Temperatures** in the Arctic are rising. That is causing the sea ice there to melt.

6. A reptile is an animal that has hard, dry skin. Reptiles are cold-blooded. Their body **temperature** changes as the temperature of the air or water they live in changes.

7. Other scientists say hotter **temperatures** are to blame. They say the weather is warmer for longer periods now, so plants bloom longer. Plants release pollen (left), which is a common allergen.

8. Some people find that when the **temperature** goes down, so do their spirits. Those people sometimes feel sad for no reason. They eat more and gain weight. They have trouble sleeping. They can't think clearly.

9. Ice cubes and water have differences, but they are made out of the same stuff. So why do they look and feel different? The answer is **temperature**. Temperature is how hot or cold something is.

10. Our bodies are covered with skin tissue. Our skin receptors deliver messages to our brains when our skin comes into contact with different surfaces. These receptors allow us to feel things like pain, **temperature**, pressure and vibrations.

Print

Located between two powerful civilizations—Japan and China—Korea has forged its own cultural identity over the centuries.

Location of Korea

Why is Korea described as a bridge between China and Japan?

Korea is slightly larger than the state of Minnesota. It lies on a mountainous peninsula in East Asia. The Korean Peninsula juts out to the southeast from northeastern China. It points toward the western tip of the islands of Japan.

Korea has been seen as a bridge between China and Japan. Being close to these two powerful Asian neighbors has greatly affected Korea's development. Throughout their long history, the people of Korea have adopted features of Chinese and Japanese civilizations. The Koreans have blended these features with their own traditions and created a unique civilization.

Early Koreans

Legend says that Tangun, the son of a bear and a god, founded the first Korean kingdom. Historians today believe that the first Koreans were nomads. They came to the peninsula from northern or central Asia. These groups were organized into tribes. The early Koreans lived in scattered villages with no central government. They grew rice and made tools and weapons of bronze. Later, they used iron to make these items.

Early Koreans believed in shamanism (SHAH • muh • nih • zuhm). They thought that certain people could communicate with spirits. These people, known as shamans, acted as a connection between humans and spirits. Many shamans were women. They carried out rituals—songs, dances, and chants—to convince the spirits to help people. Shamans were thought to have the ability to cure illnesses.

The Three Kingdoms

According to tradition, the earliest kingdom in Korea was founded in 2333 B.C. Historians know that the Chinese took over the northern part of the Korean Peninsula in 109 B.C. The Koreans drove them out in the A.D. 200s. Eventually, three kingdoms emerged: Koguryŏ (koh • goo • ryeoh) in the north, Paekche (payk • cheh) in the southwest, and Silla (sheel • lah) in the southeast. Historians call the years from about A.D. 300 to A.D. 700 the Three Kingdoms period.

Chinese culture spread from Koguryŏ to the other Korean kingdoms. The people of all three kingdoms used the Chinese writing system and adopted Buddhism and Confucianism. They began using Buddhist sacred writings in Chinese translation. They applied Confucian principles to political life. Each Korean kingdom modeled its government on China's government. In addition, each kingdom was ruled by a powerful monarch with the help of scholarly officials and noble families.

During the Three Kingdoms period, influences from Japan also reached the Korean Peninsula. Paekche in the southwest was located closer to Japan than the other two Korean kingdoms. As a result, it developed trade with the Japanese. Japanese merchants, artisans, and scholars settled in Paekche and introduced elements of Japanese culture there.

Although the Koreans adapted many outside ideas and practices, they also made their own unique contributions. For example, in the A.D. 300s, Koguryŏ artists created enormous cave art paintings. In Silla, a queen built an astronomical observatory that still stands today. This stone structure is considered the oldest observatory in Asia.

The Silla Kingdom

Despite their close cultural ties, the three Korean kingdoms were hostile to one another. In the A.D. 500s and 600s, they fought wars for control of the Korean Peninsula. In one conflict during the A.D. 660s, the Tang dynasty of China sided with the Silla kingdom. With Chinese help, Silla conquered Paekche and Koguryŏ.

The rise of Silla brought a time of peace to Koreans as the Silla kings tried to create an ideal Buddhist kingdom. Society was made up of a few nobles at the top and a large group of farmers below. The government made some vital improvements. It gave land to farmers and helped build irrigation systems for rice fields. As a result, more food was produced, trade increased, and the economy prospered.

Silla kings also supported cultural advances. They wanted to employ educated people. To make that easier, they used an examination system to hire government officials. They also encouraged the arts, especially the building of many Buddhist temples. One temple was a nine-story wooden tower. This was perhaps the tallest structure in East Asia at the time. The printing of Buddhist sacred texts with wooden blocks was another Silla achievement.

Determining Cause and Effect How did outside influences affect early Korea?

Korean Civilization

How did Korea build a civilization?

Answer the Guiding Questions

2. ***Identifying*** What is the physical location of Korea, and how did its location affect China and Japan?

3. ***Summarizing*** What did the first Koryo rulers do to establish a lasting civilization?

4. ***Explaining*** Why was the period of Silla rule considered a time of peace?

5. ***Describing*** Describe the achievements of Sejong that led him to be called one of the greatest Yi kings.

6. **NARRATIVE** Review the description of the Korean turtle ships. Write a letter to a friend describing the ships.

NAME _____ DATE _____ CLASS _____

Guided Reading

networks

Civilizations of Korea, Japan, and Southeast Asia

Lesson 1 *Korea: History and Culture*

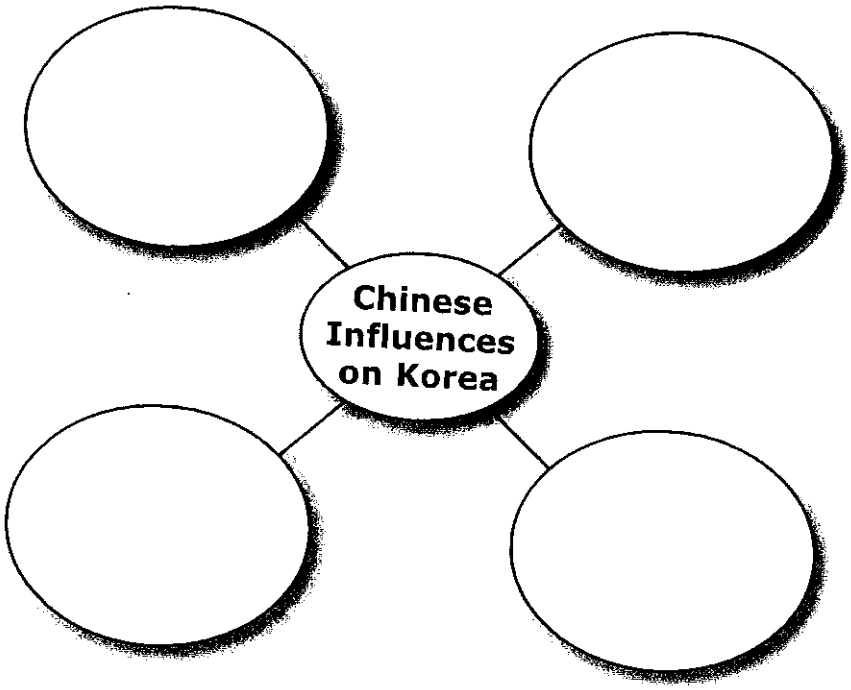
Location of Korea

1. **Listing** List the three kingdoms that emerged on the Korean Peninsula.

_____

_____

2. **Identifying** List four ways that Chinese culture influenced the Korean people during the Three Kingdoms period.



3. **Explaining** Silla defeated Paekche and Koguryo in the A.D. 660s with the help of the Chinese. Afterward, in the time of peace, how did Silla kings help farmers? How did Silla kings encourage the arts?

_____

_____

NAME _____ DATE _____ CLASS _____

Guided Reading *Cont.*

networks

Civilizations of Korea, Japan, and Southeast Asia

8. Sequencing Complete the following graphic organizer showing the events that took place after Japan's invasion of Korea.

Invasions of Korea

Japan invades Korea in 1592.

Who won? How did they win?

What happened to Korea as a result?

Who invaded Korea next? What happened?

NAME _____ DATE _____ CLASS _____

Geography and History Activity

networks

Civilizations of Korea, Japan, and Southeast Asia

Lesson 1 *Korea: History and Culture*

Understanding Borders:
Korea

The Yalu River forms part of the northern border between modern North Korea and China. It flows some 500 miles (800 km) from its source in the Changbai Mountains, emptying into Korea Bay. The river became a political boundary in the 1300s near the end of the Koryŏ dynasty.

In addition to creating a political boundary, the Yalu also divides Chinese and Korean cultures. In the sixteenth century, a tribe called the Yojin was driven out of Korea and into Manchuria. Since that time, only Koreans have lived on the Korean side of the river. Manchu and Han Chinese populate the opposite side of the river in China.

The upper Yalu Rver has fast currents and many waterfalls. It flows through deep valleys with mountains rising from either bank. The middle section of the river, on the other hand, is so shallow in places that during the dry season even rafts carrying timber cannot pass downstream. As it nears Korea Bay, the current slows. Deposits of sediment form a huge delta with numerous islands.

In modern times, the Yalu River serves as a transportation route and supplies fish to people living along its banks. Its most important use, however, is as a resource for hydroelectric power. The largest dam on the river is 320 feet (100 meters) high and 2,880 feet (880 meters) long. This dam creates a reservoir of 133 square miles (345 square km), generating about 7 million kilowatts of electric power.

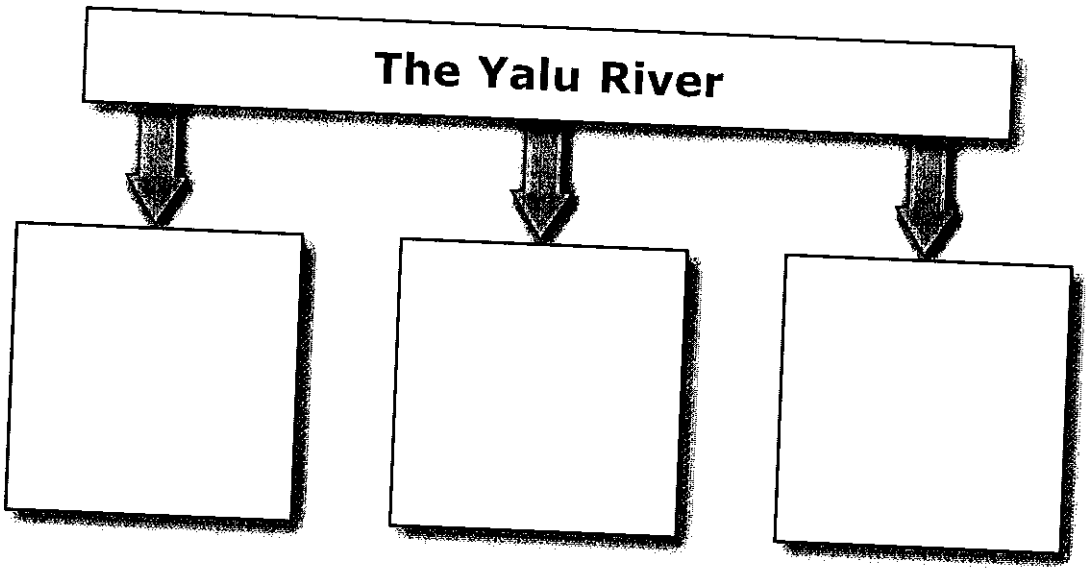
NAME _____ DATE _____ CLASS _____

Geography and History Activity *Cont.*

networks

Civilizations of Korea, Japan, and Southeast Asia

3. **Identifying** What are the three principal uses of the Yalu River in modern times? Write your answers in the graphic organizer below.



Applying the Concept

4. **Analyzing** How has the importance of the Yalu River changed over time?

_____

_____

5. **Making Connections** What are some other rivers you have learned about that form boundaries between nations or states?

_____

_____

NAME _____ DATE _____ CLASS _____

networks

Civilizations of Korea, Japan, and Southeast Asia

Lesson 1 Korea: History and Culture

ESSENTIAL QUESTION

Why do people form governments?

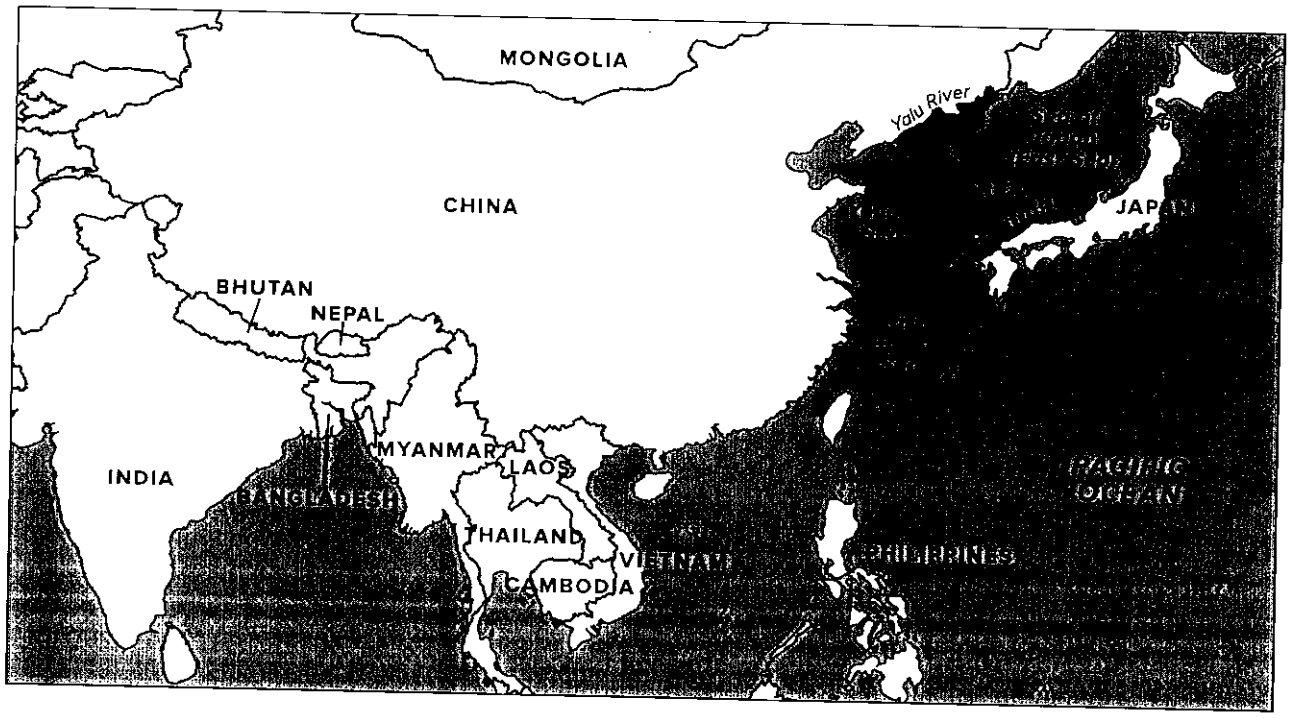
GUIDING QUESTIONS

1. *Why is Korea's location a bridge between China and Japan?*
2. *How did Korea's culture develop?*

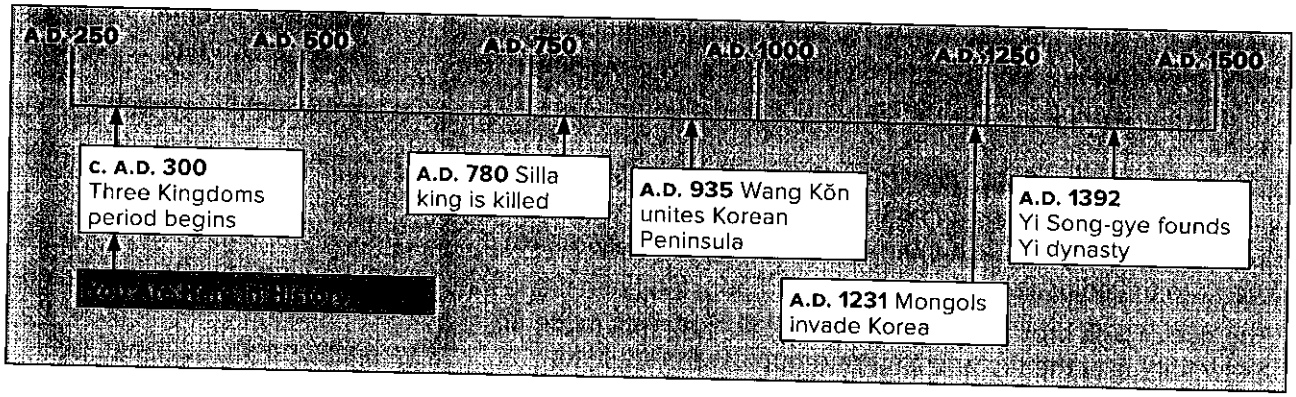
Terms to Know

shamanism belief in gods and spirits; shamans communicate with these spirits

Where in the world?



When did it happen?



Reading Check

4. How did outside influences affect early Korea?

_____

_____

_____

Determining Cause and Effect

5. What was the effect of giving land to the farmers and building irrigation systems during the Silla kingdom?

_____

_____

_____

Marking the Text

6. Underline the names of the generals responsible for founding Korean dynasties.

Identifying

7. Name two of Sejong's achievements.

_____

_____

The government gave land to farmers. It also built irrigation systems for rice fields. More food was produced, trade increased, and the economy grew.

Silla kings also encouraged the arts, mainly the building of Buddhist temples. One temple was a nine-story wooden tower, one of the tallest structures in East Asia at the time. Another achievement by the Silla was printing Buddhist sacred writings with wooden blocks.

Korean Civilization

After years of conflict, the Silla kingdom collapsed. Nobles in the north fought to claim power. By A.D. 935, a general named Wang Kŏn had won. He was the first Korean ruler to unite all of Korea. He founded the Koryŏ dynasty. It stayed in power for 400 years.

The Koryŏ rulers set up a code of laws. Like China, they based their civil service system on examinations. Buddhism continued to spread under their leadership. Korean artisans developed movable metal type. They printed one of the world's oldest books using metal type. They also perfected the art of making celadon, a fine porcelain pottery known for its green color.

In A.D. 1231, the Mongols invaded the northern part of Korea. After 25 years of struggle, the royal family surrendered to Mongol rule. The Korean people suffered greatly under the rule of the Mongols. Thousands of Koreans were forced to build ships for Kublai Khan's attempts to invade Japan.

Korea Under the Mongols

- Invaded northern Korea in A.D. 1231
- Royal family surrendered after 25 years of conflict
- Korean people suffered greatly under Mongol rule
- Forced to build ships for Kublai Khan's attempts to invade Japan

In 1392, the Korean general Yi Song-gye founded a new dynasty. The new ruling family was known as the Yi dynasty. It lasted for over 500 years. Yi rulers set up their capital at Hanseong. This site is now Seoul, the modern capital of South Korea.

One of the greatest Yi kings was Sejong. He ruled from 1394 to 1450. Sejong was interested in science and technology. He used bronze to make the first instruments that people used to measure the amount of rainfall. He was also involved in producing sundials and globes. The globes showed the position and motion of the planets.

NAME _____ DATE _____ CLASS _____

Lesson Quiz 18-1

networks

Civilizations of Korea, Japan, and Southeast Asia

DIRECTIONS: Completion Enter the appropriate word(s) to complete the statement.

1. Early Koreans believed that _____ could communicate with spirits.

2. With the help of the _____, the Silla finally were able to conquer Paekche and Koguryo.

3. _____, the writing system developed by Sejong and his advisers, is still used in Korea today.

4. During the Koryo kingdom, a new type of green-colored pottery, called _____, was developed.

5. Hanseong was the capital of the _____, which was one of the world's longest ruling families.

DIRECTIONS: Multiple Choice Indicate the answer choice that best completes the statement or answers the question.

_____ **6.** Korea has been most greatly influenced by which of the following?

A. China and Japan
B. the Yamato
C. Ashikaga
D. Mongol invaders

_____ **7.** The Three Kingdoms of Korea were the Koguryo, Paekche, and

A. Hanseong.
B. Manchu.
C. Silla.
D. Yi Song-gye.

_____ **8.** General Wang Kon united the Korean Peninsula and set up the

A. Kaya kingdom.
B. Manchu kingdom.
C. Koryo kingdom.
D. Silla kingdom.

_____ **9.** Which group invaded Korea in A.D. 1231?

A. Chinese
B. Japanese
C. Mongols
D. Buddhists

Print

Many of the characteristics of modern Japanese culture can be traced back to Shinto and to the samurai.

Geography and Settlement

How did geography shape Japan's early society?

Japan (juh • PAN) lies to the east of Korea and China. Japan is an archipelago (ahr • kuh • PEH • luh • goh), or a chain of islands, that runs north to south in the Pacific Ocean. For centuries, most Japanese have lived on the four largest islands: Hokkaido (haw • KY • doh), Honshu (HAHN • shoo), Shikoku (shee • KOH • koo), and Kyushu (KYOO • shoo).

The islands of Japan are actually the tops of mountains that rise from the ocean floor. Earthquakes occur in Japan due to its position along an unstable part of the earth's crust. Because of the mountains, only a small amount of Japan's land can be farmed. Local armies have fought over this limited land for centuries.

Many Japanese turned to the sea to make a living. They built villages along the coast and fished. The Japanese also traveled by ship among their many islands. Still, the seas around Japan kept the Japanese isolated, or separated, from the rest of Asia. As a result, Japan developed a strongly independent civilization.

The First Settlers

The first people to settle in Japan probably came from northeastern Asia around 20,000 years ago. About 300 B.C., a new group of people, the Yayoi (YAH • yoy), brought farming to Japan and were the ancestors of the Japanese. They made pottery and grew rice and were skilled metalworkers. By A.D. 300, the Yayoi had organized themselves into clans, each headed by warrior chiefs. The clan's warrior chiefs protected the people.

The Yamato

During the A.D. 500s, a clan called the Yamato (YAH • mah • taw) ruled most of Japan. Other clans had to give their loyalty to the Yamato chief. Yamato chiefs claimed that they were descended from a sun goddess who sent her grandson to rule over the people of Japan. Japanese legend states that a Yamato leader named Jimmu (jeem • moo) was the great-grandson of this goddess. This gave him the right to rule Japan. Jimmu took the title "emperor of heaven" and became the first emperor of Japan.

Identifying What skills did the Yayoi bring to Japan?

Shinto: Way of the Spirits

Why did the early Japanese believe that nature was important?

The early Japanese believed that humans, animals, plants, rocks, and rivers all have their own spirits. This idea is known as animism (A • nuh • mih • zuhm). People believed they could call on the *kami* (KAH • mih), or the nature spirits, for help. To show respect to the *kami*, the Japanese worshipped at holy places.

Early Japanese beliefs developed into a religion called Shinto. The word *Shinto* means "way of the spirits." Shinto later became linked to Japan's rulers. Their duties included taking part in Shinto rituals to ensure the well-being of Japan.

The practice of Shinto affects the Japanese people today. It has contributed to the Japanese love of nature. It also has influenced their striving for simplicity, cleanliness, and good manners.

Explaining How did the Japanese show respect to the *kami*?

Prince Shotoku

How did Prince Shotoku reform Japan's government?

About A.D. 600, a Yamato prince named Shotoku (shoh • TOH • koo) ruled Japan on behalf of his aunt. He wanted to give Japan a strong, well-organized government, so Shotoku created a constitution (kahn • stuh • TOO • shuhn), or a plan of government. Shotoku's constitution stated that the emperor was an all-powerful ruler. The Japanese were expected to obey him. Specific rules in the constitution, based on the ideas of Confucius, stated how they should perform their duties.

Shotoku admired Chinese civilization and wanted the Japanese to learn from it. Officials and students studied Buddhism, as well as Chinese art, philosophy, and medicine.

NAME _____ DATE _____ CLASS _____

Guided Reading

networks

Civilizations of Korea, Japan, and Southeast Asia

Lesson 2 *Early Japan*

Geography and Settlement

1. **Describing** In the appropriate columns below, describe the ways in which the mountains and islands of Japan influenced its development as a nation.

How Japan's Geography Influenced Its Development	
Mountains	**Islands**

2. **Identifying** Where did the first settlers to Japan come from? When did they arrive?

_____

_____

3. **Summarizing** What innovations did the Yayoi people bring to Japan?

_____

_____

NAME _____ DATE _____ CLASS _____

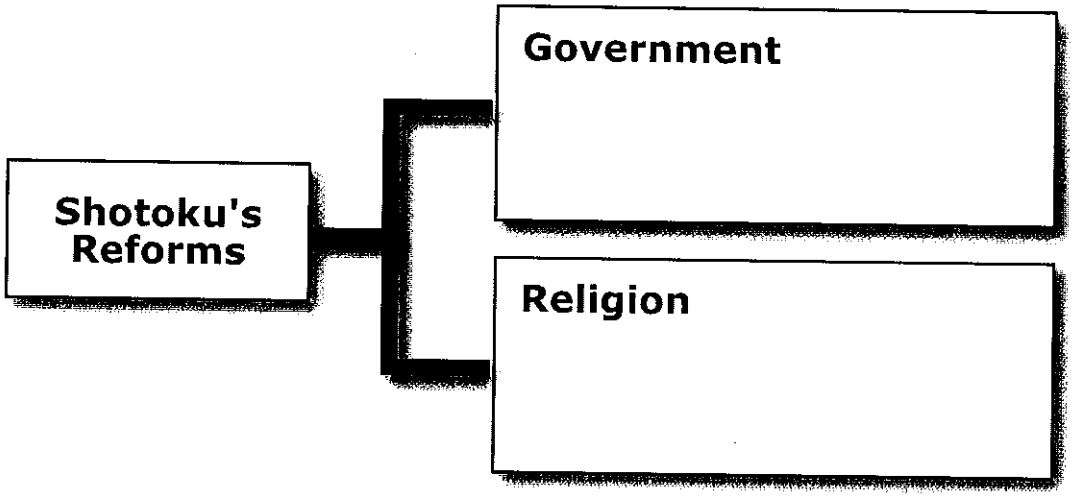
Guided Reading *Cont.*

networks

Civilizations of Korea, Japan, and Southeast Asia

Prince Shotoku

7. Summarizing Fill in the diagram below by listing Shotoku's main reforms.



8. Explaining What was the Taika?

_____

_____

_____

9. Determining Cause and Effect What was the result of the Taika reforms?

_____

_____

The Nara Period

10. Comparing How would you describe the new capital city, Nara?

_____

_____

11. Assessing How did Buddhism reach Japan?

_____

_____

NAME ______________________ DATE ____________ CLASS ________

networks

Civilizations of Korea, Japan, and Southeast Asia

Lesson 2 Early Japan

ESSENTIAL QUESTION

How does geography influence the way people live?

GUIDING QUESTIONS

1. [illegible]
2. [illegible]
3. [illegible]
4. [illegible]

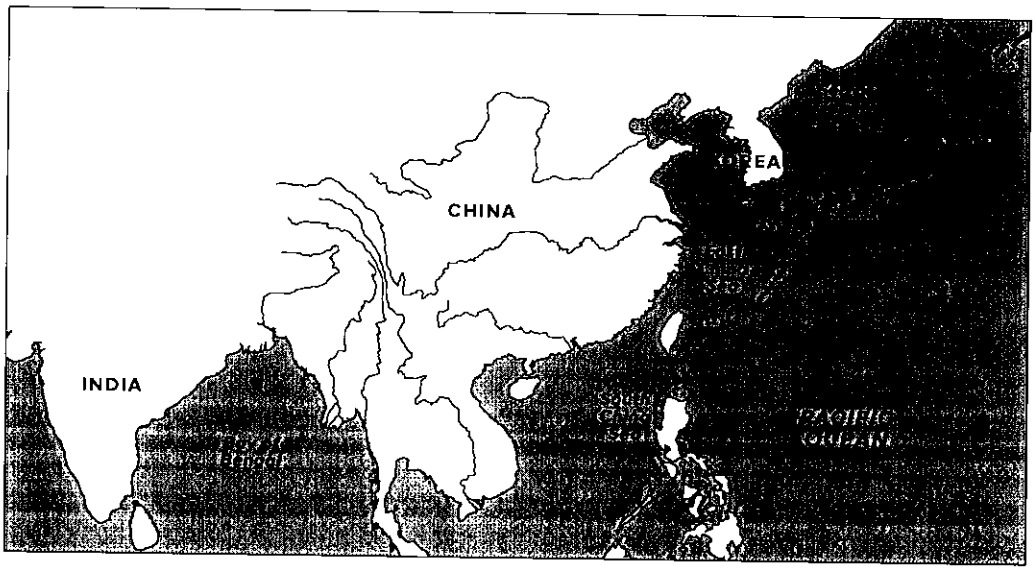
Terms to Know

archipelago an expanse of water with many scattered islands

animism belief in spirits that are outside the body

constitution set of basic laws that define the role of government

Where in the world?



When did it happen?

A.D. 300 — A.D. 400 — A.D. 500 — A.D. 600

- **c. A.D. 300** Yayoi people organize into clans in Japan
- **A.D. 500s** Yamato clan controls Japan
- **c. A.D. 600** Prince Shotoku rules Japan

Reading Check

5. How did the Japanese show respect to the *kami*?

_____

_____

_____

Identifying

6. What clan was Prince Shotoku from?

_____

_____

Drawing Conclusions

7. Why did Shotoku model the Japanese government on that of China?

_____

_____

_____

Reading Check

8. What was the goal of Shotoku's constitution?

_____

_____

_____

Shinto became closely linked to Japan's monarchy. The emperor's duties included taking part in Shinto rituals. These actions were intended to help protect Japan and make sure the country was successful.

Shinto still affects the Japanese people. Because of it, they have a love of nature. It also has influenced their desire for simplicity, cleanliness, and good manners.

Prince Shotoku

About A.D. 600, a Yamato prince named Shotoku ruled Japan. He wanted to give Japan a strong, well-organized government. He created a **constitution,** or a plan of government. The constitution made the emperor an all-powerful ruler.

The Japanese were expected to obey the emperor. The constitution laid out specific rules about how people should do their duties. These were based on the writings of Confucius.

Shotoku admired Chinese civilization. He wanted the Japanese to learn from it. Officials and students studied Buddhism as well as Chinese art, philosophy, and medicine.

Shotoku's Reforms

- Created a constitution
- Made emperor an all-powerful ruler
- Modeled government on that of China

Even after Shotoku died, Japanese officials used China as a model. In A.D. 646, the Yamato began the Taikà. *Taika* is a word that means Great Change.

Under this plan, Japan was divided into provinces, or regional districts. Officials in the provinces reported to the emperor. All farmland was placed under the emperor's control.

While clan leaders could still direct farmer's work, they could no longer collect taxes. Government officials took over that job. The Taika reforms created the first strong central government in Japan.

NAME _____ DATE _____ CLASS _____

Lesson Quiz 18-2

networks

Civilizations of Korea, Japan, and Southeast Asia

DIRECTIONS: Matching Match each item with the correct statement below.

_____ **1.** a people who brought farming to Japan

_____ **2.** Yamato leader who took the title "emperor of heaven"

_____ **3.** nature spirits

_____ **4.** plan of government

_____ **5.** capital city of Japan in the A.D. 700s

A. kami

B. constitution

C. Yayoi

D. Jimmu

E. Nara

DIRECTIONS: Multiple Choice Indicate the answer choice that best completes the statement or answers the question.

_____ **6.** People who follow Shinto believe

A. in one god.

B. everything in nature has a spirit.

C. in Buddhism.

D. they should follow a vegetarian lifestyle.

_____ **7.** What did the Yamato do during the Taika, or Great Change?

A. created a strong central government

B. reduced the emperor's power

C. built many Buddhist temples

D. gave civil service examinations

_____ **8.** Government officials during the Nara period were hired because they

A. were nobles from powerful families.

B. were friends of the emperor.

C. did well on examinations.

D. were related to the emperor.

_____ **9.** The four largest Japanese islands are Honshu, Shikoku, Kyushu, and

A. Hokkaido.

B. Kamakura.

C. Kyoto.

D. Tokyo.

_____ **10.** Prince Shotoku looked to this country as an example of successful government.

A. China

B. Egypt

C. Italy

D. Korea

Print

Japanese society was transformed under the shoguns. The cultural influences from this time period still influence Japan and the world.

Samurai and Shoguns

Why did military leaders rise to power in Japan?

In A.D. 794, the emperor of Japan moved the capital from Nara to a new city called Heian-kyo (HAY • ahn kyoh). This city later became known as Kyoto (KYOH • toh). The city of Heian-kyo looked much like a major Chinese city.

Nobles Rise to Power

During the A.D. 800s, emperors continued to rule Japan, but their power greatly weakened. Why did this happen? After a period of strong emperors, a number of weak emperors came to the throne. Court officials known as regents governed for them. A regent is a person who rules for an emperor who is too young or too sick to govern.

The regents handled the city's day-to-day government, leaving the Japanese emperors to turn to learning and the arts. Emperors studied Buddhism or wrote poetry in their palace at Heian-kyo.

At the same time, other nobles took control in the outlying provinces of Japan. The government gave these nobles land in return for their support. It also let them stop paying taxes. It made the nobles responsible for governing the lands under their control. To pay for the local government, the nobles increased the taxes on the farmers working the land.

The Samurai and Their Code

The nobles gave land to warriors who agreed to fight for them. These warriors became known as samurai (SA • muh • ry). In battle, samurai fought on horseback with swords, daggers, and bows and arrows. They wore armor made of leather or steel scales and helmets with horns or crests.

A few Japanese women were outstanding warriors. Perhaps the most famous was Tomoe. She fought in the A.D. 1100s during a time of civil war in Japan. One account from the A.D. 1200s describes her:

"[S]he was a fearless rider whom neither the fiercest horse nor the roughest ground could dismay, and so dexterously [skillfully] did she handle sword and bow that she was a match for a thousand warriors and fit to meet either god or devil. . . . and so in this last fight, when all the others had been slain or had fled, among the last seven there rode Tomoe."

—from *Heike Monogatori (The Tale of Heike)*

The word *samurai* means "to serve." The samurai lived by a strict code of conduct. This code was called Bushido (BU • shih • doh), or "the way of the warrior." It demanded that a samurai be loyal to his master. The samurai must also be brave and honorable. Samurai were not supposed to be concerned about riches. They viewed merchants as lacking in honor.

Bound to these principles, a samurai would rather die in battle than betray his master. He also did not want to suffer the disgrace of being captured in battle. The sense of loyalty that set apart the samurai lasted into modern times. During World War II, many Japanese soldiers fought to the death rather than accept defeat or capture. The Japanese have since turned away from the beliefs of the samurai.

Shoguns Assume Power

By the early 1100s, a period similar to the Middle Ages in Europe, noble families of Japan used their samurai armies to fight one another. They fought over land and to gain control of the emperor. In 1180, a civil war broke out between the two most powerful families: the Taira and the Minamoto. In a sea battle in 1185, the Taira were defeated. The commander of the Minamoto forces was Minamoto Yoritomo (mee • nah • MOH • toh yoh • ree • TOH • moh).

After Yoritomo won the civil war, the emperor feared that the Minamoto family would take the throne. To avoid this, he decided to reward Yoritomo to keep him loyal. In 1192, he gave Yoritomo the title of shogun (SHOH • guhn), or commander of the military forces.

This created two governments in Japan. The emperor remained in his palace at Heian-kyo with his advisers. He was Japan's official leader. Meanwhile, the shogun set up his own government in the small seaside town of Kamakura (kah • MAH • kuh • rah). This military government was known as a shogunate. For about the next 700 years, shoguns ran Japan's government.

Mongol Attacks

In the late 1200s, Japan was twice invaded by China's Mongol emperor. During both attempts, violent storms called typhoons destroyed many ships. The Mongols who made it to shore were defeated by the Japanese.

The victorious Japanese named the typhoons *kamikaze* (kah • mih • KAH • zee), or "divine wind," in honor of the spirits they believed had saved their islands. During World War II, Japanese pilots deliberately crashed their planes into enemy ships. They were named kamikaze pilots after the typhoons of the 1200s.

Explaining Why did Japan's wealth increase under the rule of the shoguns?

Religion and the Arts

How did religion and the arts relate to each other under the shoguns?

During the time of the shoguns, religion and the arts flourished in Japan. Many Japanese monks, artists, scribes, and traders visited China. This led to a borrowing of ideas and practices. Much of this borrowing from the Chinese affected Japan in the areas of government and philosophy. Chinese culture also influenced Japan's art, literature, science, and religion.

The Religions of Japan

Under the shoguns, religion influenced every part of daily life in Japan. Most Japanese came to believe in both Shinto and Buddhism. They worshipped at Shinto shrines and at Buddhist temples. To them, each religion met different needs. Shinto was concerned with daily life. It linked the Japanese to nature and their homeland. Buddhism promised spiritual rewards to the good. It prepared people for the life to come. In shogun Japan, religious ideas inspired many Japanese to write poems and plays and produce paintings. They also built shrines and temples.

Mahayana Buddhism, which teaches that the Buddha is a god, began in India and spread to China and Korea. By the time Buddhism reached Japan, it had formed into many different sects (SEHKTS), or small groups. One of the major sects in Japan was Zen. Buddhist monks brought Zen to Japan from China during the 1100s. Zen taught that people could find inner peace through self-control and a simple way of life. Followers of Zen disciplined their bodies through martial arts (MAHR • shuhl), or sports that involved combat and self-defense.

Zen Buddhists also practiced meditation (meh • duh • TAY • shuhn). A person who meditated sat cross-legged and motionless. The person tried to clear the mind of all worldly thoughts and desires. Meditation was considered a way for people to relax and find inner peace.

Writing and Literature

During the A.D. 500s, the Japanese adopted China's writing system. They used Chinese picture characters that represented whole words. The Japanese and Chinese languages were very different, so the Japanese found it difficult to use these characters. Then, in the A.D. 800s, they added symbols that stood for sounds, much like the letters of an alphabet. Reading and writing became much easier.

The Japanese greatly admired calligraphy, or the art of writing beautifully. Every well-educated person was expected to practice it. Handwriting was believed to reveal much about a person's education, social standing, and character.

Under the shoguns, the Japanese wrote poems, stories, and plays. By the 1600s, a form of poetry called *haiku* (HY • koo) had emerged. A haiku consists of 3 lines of words with a total of 17 syllables. Haiku usually expresses a mood or feeling. The most noted writer of haiku was a man of samurai descent. Below are two of his most famous haiku.

First snow falling on the half-finished bridge.

A field of cotton—As if the moon had flowered.

— tr. by Robert Hass

Japan's first great prose literature was written around A.D. 1000 by women at the emperor's palace at Heian-kyo. Lady Murasaki Shikibu (mur • uh • SAH • kee shee • KEE • boo) wrote *The Tale of Genji*. This work describes the romances and adventures of a Japanese prince. Some people believe the work is the world's first novel, or long fictional story.

The Japanese also wrote plays. The oldest type of play is called Noh. Created during the 1300s, Noh plays developed out of religious dances and were used to teach Buddhist ideas. Many Noh plays are still performed in Japan today.

Architecture and Art

During the time of the shoguns, the Japanese adopted building and artistic ideas from China and Korea. They went on to develop their own styles. The architecture and art of Japan revealed the Japanese love of simplicity and beauty.

Shinto shrines were built in the Japanese style, usually as a simple wooden building, with one room and a rice straw roof. Often they were built near a sacred tree or rock.

Unlike Shinto shrines, Buddhist temples were built in the Chinese style. They had massive tiled roofs held up by thick, wooden pillars. Inside, the temples were richly decorated. They had many altars, paintings, and statues.

Around buildings, the Japanese created gardens that copied nature on a small scale. Carefully placed large rocks served as symbols of mountains, while raked sand gave the sense of water flowing. They might contain only a few plants. The gardens were built this way to create a feeling of peace and calmness.

Creative Artisans

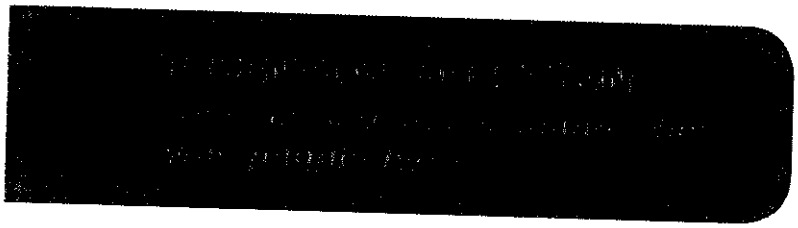
NAME _____ DATE _____ CLASS _____

Guided Reading

networks

Civilizations of Korea, Japan, and Southeast Asia

Lesson 3 *Medieval Japan*



Samurai and Shoguns

1. **Identifying** When did the Japanese emperor move the capital to Heian-Kyo?

_____

2. **Stating** What were the samurai given in return for their services?

_____

3. **Analyzing** What did Bushido require of a samurai?

_____

_____

_____

4. **Explaining** Why did nobles form their own samurai armies?

_____

_____

NAME _____ DATE _____ CLASS _____

Guided Reading *Cont.*

networks

Civilizations of Korea, Japan, and Southeast Asia

7. **Explaining** How did the Ashikaga shogunate lead to a divided Japan?

_____

8. **Defining** What is a daimyo?

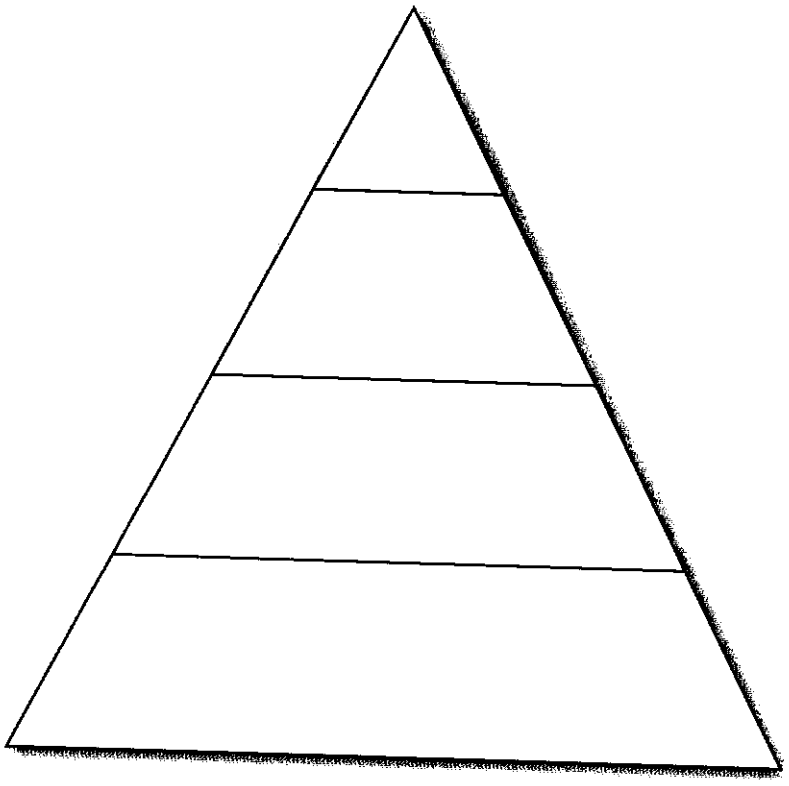
_____

9. **Analyzing** What was the bond between samurai and daimyo?

_____

_____

10. **Classifying** Fill in the diagram below. Put the people with the most wealth at the top. Put the poorest people at the bottom.



NAME _____ DATE _____ CLASS _____

Guided Reading *Cont.*

networks

Civilizations of Korea, Japan, and Southeast Asia

14. Assessing Fill in the boxes below. Identify the needs that Shinto satisfied on the left. Identify the needs that Buddhism satisfied on the right.

Shinto	Buddhism

15. Explaining What were Noh plays used to teach?

_____

16. Contrasting How were Buddhist temples different from Shinto shrines?

_____

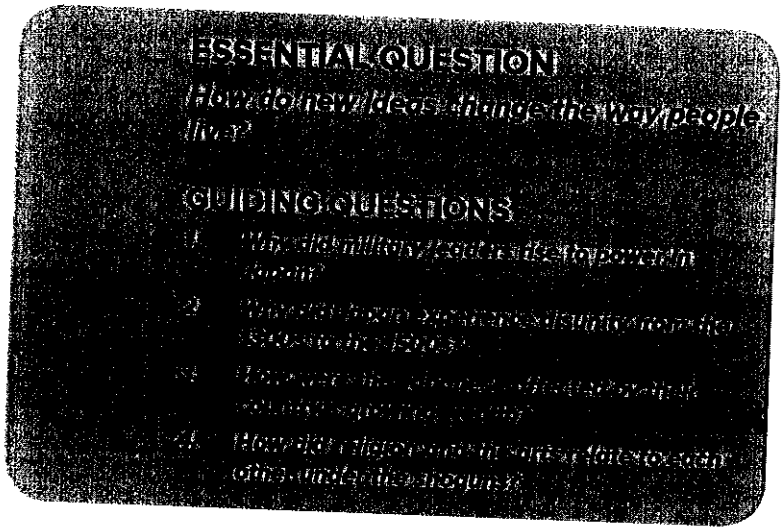
_____

NAME _____ DATE _____ CLASS _____

networks

Civilizations of Korea, Japan, and Southeast Asia

Lesson 3 Medieval Japan



Terms to Know

samurai a warrior who served a Japanese daimyo, or lord

shogun a military governor who ruled Japan

vassal a person who serves a feudal lord

feudalism the system of service based on the relation of lord to vassal

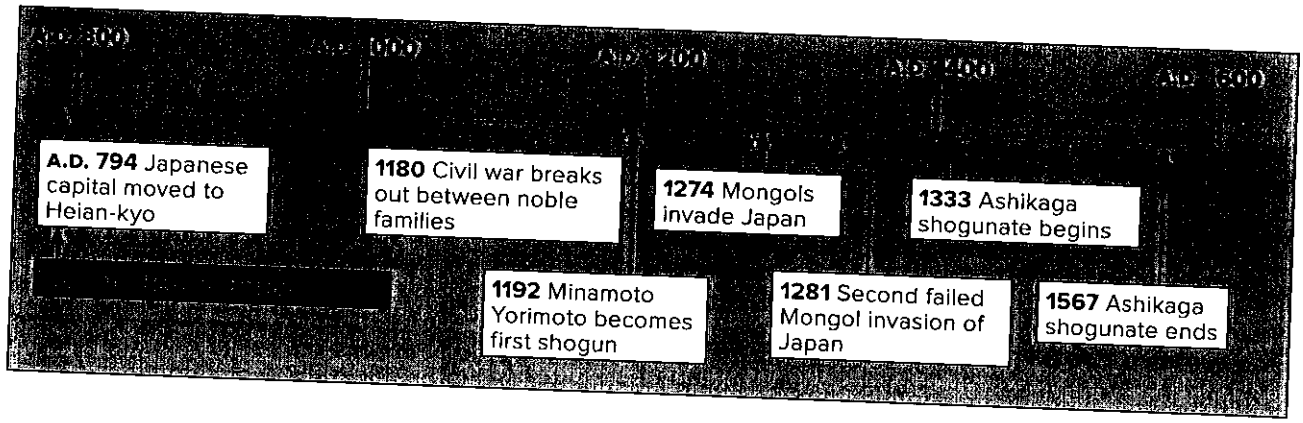
guild a group of merchants or craftspeople during medieval times

sect a religious group

martial art sport involving combat and self-defense

meditation mental exercise to reach a greater spiritual awareness

When did it happen?



What do you know?

In the K column, list what you already know about medieval Japan. In the W column, list what you want to know. After reading the lesson, fill in the L column with the information that you learned.

K	W	L

Lesson 3 Medieval Japan, *Continued*

Defining

5. What is a *vassal*?

_____

_____

Reading Check

6. Why did feudalism develop in Japan?

_____

_____

_____

Drawing Conclusions

7. Why do you think only a few people enjoyed the wealth of Japan?

_____

_____

_____

_____

Reading Check

8. Why did Japan's wealth increase under the rule of the shoguns?

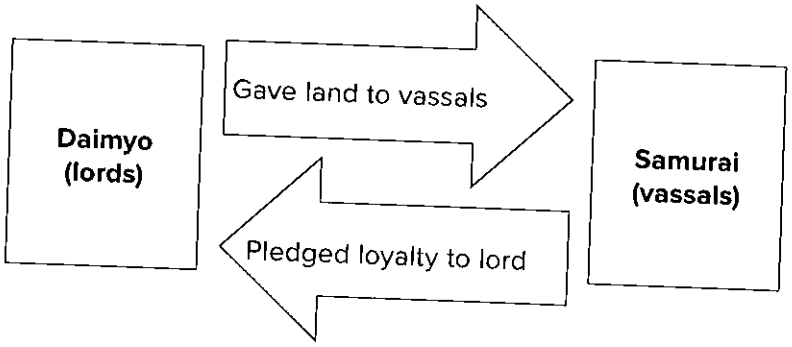
_____

_____

_____

Many samurai became **vassals** of a daimyo. This meant that the samurai gave an oath of loyalty to serve his daimyo in battle. In return, the daimyo gave land to his samurai. This system is known as **feudalism.**

Feudalism



Fighting spread and the violence finally ended the Ashikaga shogunate in 1567. By that time, only a few powerful daimyo were left.

Society Under the Shoguns

Under the shoguns, Japan grew richer. Still, only a few Japanese enjoyed this wealth. This group included the emperor and his family, noble families, and military leaders. Merchants and traders also benefited.

Most Japanese were poor farmers. They created most of Japan's wealth. Their lives improved with a better irrigation system for crops. Artisans on the daimyo estates made armor, weapons, and tools. Merchants sold these items.

Heian-kyo, now called Kyoto, became a major center of production and trade. Artisans and merchants formed **guilds.** These groups protected their jobs and increased profits. The Japanese traded with Korea, China, and Southeast Asia.

A typical Japanese household included grandparents, parents, and children. A man had complete control over family members. Upper class women lost many freedoms when Japan became a warrior society.

Women in farming families had more say in choosing husbands. They worked long hours in the fields, however. They cooked, wove cloth, and cared for their children. In the towns, the wives of artisans and merchants helped run businesses. Some talented women became famous artists, writers, and entertainers.

NAME _____ DATE _____ CLASS _____

Lesson Quiz 18-3

networks

Civilizations of Korea, Japan, and Southeast Asia

DIRECTIONS: True/False Indicate whether the statement is true or false.

_____ **1.** Before A.D. 800, the Japanese capital had moved from Nara to Heian-kyo.

_____ **2.** Under the regents, the Japanese government eliminated taxes for farmers and raised them on nobles in the outlying provinces.

_____ **3.** The word *samurai* means "to serve," and *bushido* means "the way of the warrior."

_____ **4.** Although Yoritomo was made shogun in 1192, it was the emperor who actually ran Japan's government for the next seven centuries.

_____ **5.** Noh is a form of Japanese poetry made up of 3 lines and 17 syllables.

DIRECTIONS: Multiple Choice Indicate the answer choice that best completes the statement or answers the question.

_____ **6.** What did the Japanese emperor do in 1192 to prevent the Minamoto family from taking the throne?

A. He declared war against the Minamoto family.
B. He gave Minamoto Yoritomo the title of shogun.
C. He persuaded the Mongols to side with him.
D. He declared a state of emergency and shut down the government.

_____ **7.** Followers of Zen Buddhism discipline their bodies through

A. faith.
B. martial arts.
C. meditation.
D. poetry.

_____ **8.** The art and architecture of Japan shows the Japanese love of

A. complexity.
B. columns and domes.
C. Korean styles.
D. simplicity.

_____ **9.** Lady Murasaki Shikibu wrote this book about a Japanese prince.

A. *The Tale of Genji*
B. *The Tale of Heike*
C. *A Shogun Tale*
D. *Samurai Warrior*

_____ **10.** Japan's wealth came from its farmers and artisans, and increased

A. land.
B. shipbuilding.
C. taxes.
D. trade.

The varied cultures of Southeast Asia have been shaped by outside influences and, in turn, have shaped other cultures.

Early Civilization

How did geography affect settlement and early ways of life in Southeast Asia?

China, Korea, and Japan were not alone in developing civilizations along Asia's Pacific coast. Farther south, other civilizations arose in a region known today as Southeast Asia. Southeast Asians developed their own traditions, though they were influenced by India, China, and Islam.

The Geography of Southeast Asia

Southeast Asia has two major parts. One is a mainland area made up of long, winding peninsulas. The other is a large archipelago, or chain of islands.

Mountain ranges cross mainland Southeast Asia, running north to south. Between the ranges are narrow river valleys and broad coastal deltas. These lowlands are rich in fertile soil. They became prosperous farming and trading centers and home to most mainland Southeast Asians.

South and east of the region's mainland are thousands of mountainous islands. Part of a geographical area known for being unstable, these islands hold many active volcanoes. These volcanoes provide rich soil for farming. Earthquakes affect the island peoples of Southeast Asia. One particular danger comes from tsunamis (soo • NAH • meez). A tsunami is a huge ocean wave caused by an underwater earthquake. Tsunamis usually strike coastal lowlands, killing many people and destroying buildings. This happened in Japan in 2011.

Sea trade and inland mountain barriers shaped Southeast Asia into a region of many ethnic groups, languages, and religions. As a result, Southeast Asia was never united under a single government. Instead, it was an area of separate territories.

Early Years

Early peoples in Southeast Asia grew rice, raised cattle and pigs, and made metal goods. These early people believed in animism, the idea that spirits exist in living and nonliving things. They practiced different rituals to honor their ancestors as well as animal and nature spirits.

Southeast Asians also developed their own forms of art. Artisans made a cloth of detailed patterns later called batik (buh • TEEK). Musicians played instruments including the *dan bau* (similar to a xylophone), the *dan day* (a type of guitar), and the *rammana* (a type of drum). Artists created a type of theater that used shadow puppets to tell stories. Performers holding long rods controlled the puppets behind a white screen, while audiences on the other side could see the puppets' moving shadows.

Outside Contacts

During the A.D. 100s, Hindu traders from India reached coastal areas of Southeast Asia. They set up a trading network that exchanged goods and ideas among the peoples of Southeast Asia, India, and the Middle East. As these contacts increased, the cultures of other civilizations spread throughout Southeast Asia. Over time, the people of the region blended Hindu and Chinese ways with their own traditions.

Analyzing Why did outside influences have a powerful effect on early Southeast Asia?

Kingdoms and Empires

Why did powerful kingdoms and empires develop in Southeast Asia?

From A.D. 500 to 1500, many kingdoms and empires thrived in Southeast Asia. States covering fertile inland areas drew their wealth from the land. States on the coast became maritime (MEHR • uh • tym), or seafaring, powers that controlled shipping.

Vietnam

Along the coast of the Indochinese Peninsula lies the present-day country of Vietnam. The ancient Viet were one of the first people in Southeast Asia to develop their own state and culture. During the 200s B.C., the Viet people ruled most of the Indochinese Peninsula.

During the early A.D. 900s, the Viet rebelled against China's weakened Tang dynasty. In A.D. 938, the Viet forces defeated a fleet of Chinese warships in the Battle of the Bach Dang River. The Viet had finally won independence.

The new state was modeled on the government of China and was known as Dai Viet, or Great Viet. Confucianism became its official religion. Viet emperors adopted Chinese court ceremonies. Just as in China, Viet government officials were selected through civil service examinations.

Angkor Wat was overgrown by thick tropical plants and trees after its capture by the Thai in A.D. 1432. During the late 1900's the site was further damaged during various wars. Mostly, however, it suffered from neglect. In 1992, Angkor was named a UNESCO World Heritage site, a major step in protecting it for generations to come.

LESSON 4 REVIEW

Review Vocabulary

1. Why do *maritime* workers live along a seacoast?

Answer the Guiding Questions

2. ***Identifying*** What separated early Southeast Asians?

3. ***Listing*** What were the most powerful kingdoms to develop on mainland Southeast Asia by A.D. 1500?

4. ***Contrasting*** Why did some Southeast Asian states rely mostly on trading while others relied on farming?

5. ***Explaining*** Why was Angkor Wat significant to the Khmer?

6. **INFORMATIVE/EXPLANATORY** Look at the photograph of Angkor Wat. Then write a paragraph describing its appearance to someone who has never seen it before.

NAME _____ DATE _____ CLASS _____

Guided Reading

networks

Civilizations of Korea, Japan, and Southeast Asia

Lesson 4 *Southeast Asia: History and Culture*

[redacted]

Early Civilization

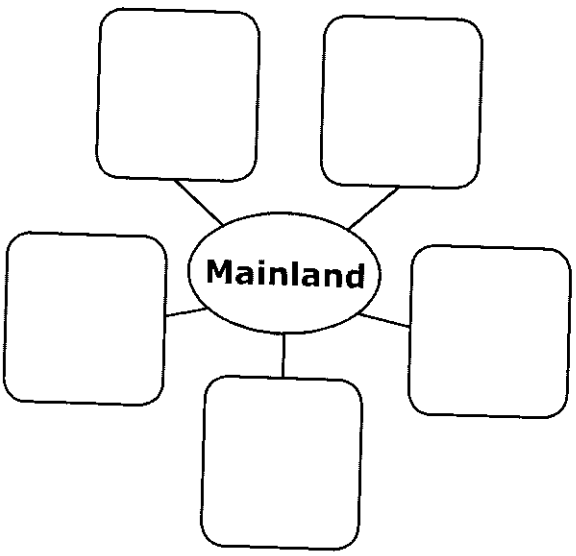
1. **Identifying** What are the two main land forms of Southeast Asia?

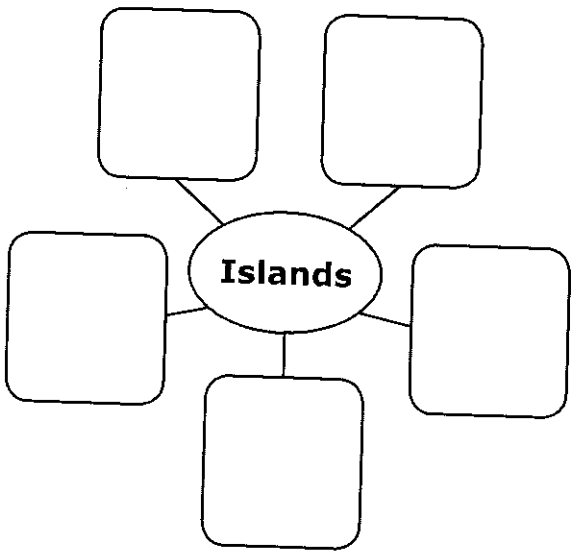
_____

_____

2. **Categorizing** Choose names of Southeast Asian countries from the word box. Write them in the appropriate graphic organizers below.

[redacted]





NAME _____ DATE _____ CLASS _____

Guided Reading *Cont.*

networks

Civilizations of Korea, Japan, and Southeast Asia

10. Contrasting Fill in the table below. Show how land-based kingdoms were different from sea-based kingdoms in Southeast Asia.

	Land-Based Kingdoms	Sea-Based Kingdoms
Example Kingdoms		
Sources of Wealth		
Main Religious Influences		

NAME _____ DATE _____ CLASS _____

Economics of History Activity

networks

Civilizations of Korea, Japan, and Southeast Asia

Lesson 4 *Southeast Asia: History and Culture*

The Rise of Angkor

Background Information

During the A.D. 1100s, Angkor became one of the richest and most powerful cities in Southeast Asia. At its height, the Khmer Empire extended over much of modern-day Cambodia, Laos, Vietnam, and Thailand. When the Khmer built Angkor, however, they did more than construct a city. They altered their natural surroundings to construct an irrigation system to support their state.

The irrigation system the Khmer created was perhaps the most complex in the ancient world. Angkor was situated on a plain that received plenty of water during the wet season. During the dry season, however, water supplies shrank. By creating an intricate system for holding water and releasing it as needed, the Khmer were able to grow three to four crops of rice each year. They did this in an area that before had been poorly suited to grow even one crop a year.

Thus, by controlling their water supply, the Khmer were able to increase the fertility of their lands. Basically, Angkor was an immense system of artificial lakes and canals, with irrigation channels that watered large areas of rice paddies. This system formed the core of the empire's wealth and power.

One way in which the rulers of Angkor used this wealth was to build temples. There were many types of temples built at Angkor. These ranged from Buddhist temples to ones dedicated to Hindu gods. The style of architecture also changed over the centuries.

The temple complex of Angkor Wat, which is very large, was devoted to Hindu gods. It was built under Suryavarman II, who became ruler over the Khmer Empire in A.D. 1113. Construction of Angkor Wat began early in his reign and was not finished until after his death. Angkor Wat is surrounded by a moat and decorated with sculptures that show him as the god Vishnu performing the many functions of a ruler. Though spectacular, Angkor Wat took so long to complete and cost so much to build that it weakened the empire.

Today Angkor is a World Heritage site. A number of countries have promised to help preserve the buildings at Angkor for future generations. Scans taken from space indicate that there are still buildings and structures at Angkor that have yet to be explored.

NAME _____ DATE _____ CLASS _____

Economics of History Activity *Cont.*

networks

Civilizations of Korea, Japan, and Southeast Asia

Applying the Concept

4. **Making Generalizations** Why is it important that a state does not spend more money than it has?

_____

_____

5. **Making Inferences** Why do you think that Angkor has been declared a World Heritage site?

_____

_____

NAME________________________________ DATE ____________ CLASS ________

networks

Civilizations of Korea, Japan, and Southeast Asia

Lesson 4 Southeast Asia: History and Culture

ESSENTIAL QUESTION

What makes a culture unique?

GUIDING QUESTIONS

1. [illegible]
2. [illegible]

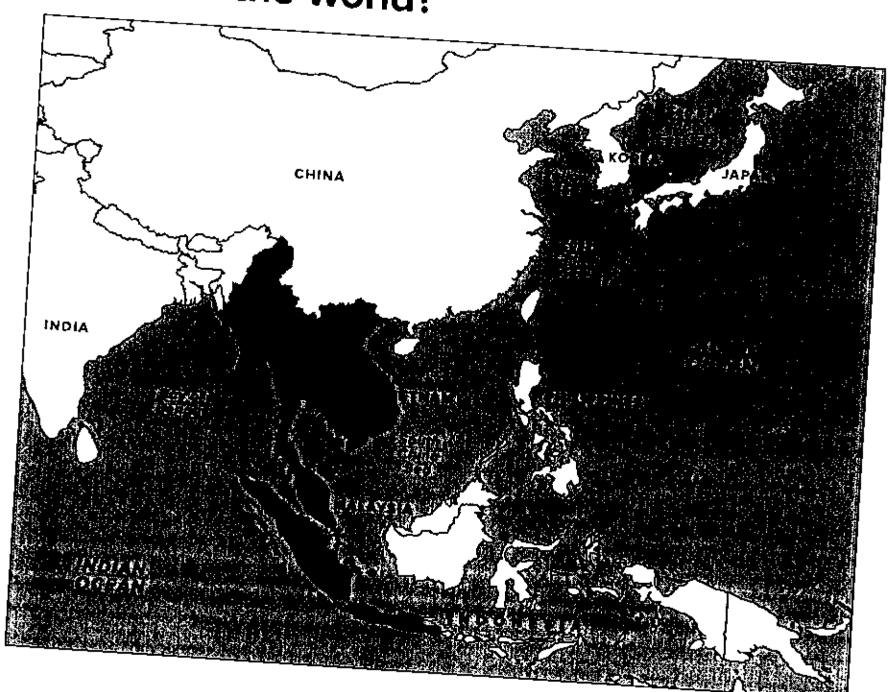
Terms to Know

volcano a mountain that may release melted rocks from inside the Earth

tsunami a huge ocean wave caused by an undersea earthquake

maritime related to the sea or seafaring

Where in the world?



When did it happen?

A.D. 500 — 750 — 1000 — 1250 — 1500

c. A.D. 300s Kingdom of Funan founded

c. 800 Kingdom of Angkor founded

849 City of Pagan founded

938 The Viet win independence from China

1350 Ramathibodi becomes king in Thailand

c. 1400 Melaka becomes center of a Muslim empire in Indonesia

1432 City of Angkor captured

Contrasting

5. How did land-based and sea-based economies differ?

_____

_____

_____

Marking the Text

6. Circle the examples of China's influence on the government of Dai Viet.

Explaining

7. Why was Angkor Wat built?

_____

_____

_____

Describing

8. What influences did Thai culture adopt from Hinduism?

_____

_____

_____

_____

Kingdoms and Empires

Southeast Asian states in inland areas relied mainly on farming. States along the coast relied more on trade. They became **maritime,** or seafaring, powers based on shipping.

In 938, the people who lived in what is now Vietnam won independence from China. Their new state was called Dai Viet, or Great Viet. It was based on China's government. Confucianism became its official religion. Viet rulers used Chinese court ceremonies. Government officials were selected through Chinese-style civil service examinations.

Present-day Cambodia was once the home of the Khmer people. Khmer kings based their rule on Hindu and Buddhist ideas from India. They had architects design Indian-style buildings. The most magnificent of these structures was Angkor Wat.

Angkor Wat served as a Hindu and Buddhist temple, a royal tomb, and an observatory for stars and planets. The expense of building Angkor Wat weakened the Khmer Empire. In 1432 the Thai, a neighboring people, captured Angkor. The Khmer Empire faded from history.

The first Thai kingdom was called Sukhothai. It became a center of learning and arts. The Thai developed a writing system. Monks from India converted many Thai people to Buddhism. The Thai were also influenced by Hinduism in their political practices, dance, and literature.

Sukhothai	Ayutthaya
Center of learning and arts	Controlled large areas of Southeast Asia
Monks converted people to Buddhism	Center of Buddhist learning and culture
Influenced by Hinduism	Traded with China and other Asian kingdoms

In 1350 a new Thai kingdom called Ayutthaya was formed. Ayutthaya controlled large areas of Southeast Asia. It was also an important center of Buddhist learning and culture. The people of Ayutthaya traded teak wood and spices with China and other nearby Asian kingdoms.

West of the Thai kingdom, the Burmese developed their own civilization. In 849 they set up a capital city called Pagan. It, too, became a center of Buddhist learning. In the late 1200s, Mongol attacks weakened Pagan. Many Burmese people moved south to escape the Mongols.

NAME _____ DATE _____ CLASS _____

Lesson Quiz 18-4

networks

Civilizations of Korea, Japan, and Southeast Asia

DIRECTIONS: Completion Enter the appropriate word(s) to complete the statement.

1. _____ and _____ are natural disasters faced by the people of Southeast Asia.
2. Southeast Asians developed a special kind of richly patterned cloth called _____.
3. The wealth of the Khmer empire was based on _____.
4. The capital of the Ayutthaya kingdom is today known as _____.
5. The Burmese city of Pagan was attacked by _____ in the late 1200s.

DIRECTIONS: Multiple Choice Indicate the answer choice that best completes the statement or answers the question.

_____ 6. The river valleys, coastal deltas, and volcanoes of Southeast Asia have resulted in

A. yearly massive flooding and hurricanes.
B. land that is poorly suited for settlement.
C. rich soil that is good for farming.
D. a culture isolated from the influences of others.

_____ 7. One Southeast Asian art form is

A. haiku.
B. cave art painting.
C. the making of celadon.
D. shadow puppet theater.

_____ 8. In order to win their independence, the Viet first

A. rebelled against the weakened Tang dynasty and defeated the Chinese in battle.
B. defeated India in battle.
C. made peace with the Tang dynasty of China and set up a new capital at Sukhothai.
D. defeated the Mongols and adopted Islam as their official religion.

_____ 9. This country was home to the ancient Khmer people and is the location of Angkor Wat, the world's largest temple complex.

A. Cambodia
B. Japan
C. Burma
D. Vietnam

Print

Directions: Write your answers using standard grammar, spelling, sentence structure, and punctuation.

1. Exploring the Essential Question

INFORMATIVE/EXPLANATORY Review the section about the first settlers in Japan. Then write a paragraph in which you discuss the Yayoi. How did they live? How were they organized? What kind of government did they have?

2. 21st Century Skills

USING LATITUDE AND LONGITUDE Many Southeast Asian countries are linked by water. Notice where the Equator falls in the region on the map below. Do research to find out what effect living on the Equator can have on the lives of the people of Southeast Asia. How might this latitude influence their economies and lifestyle? Share your findings with the class, using the map as part of your presentation.

3. Thinking Like a Historian

UNDERSTANDING CAUSE AND EFFECT Create a diagram like the one shown here to identify what events caused shoguns to rise to power in Japan.

4. Geography Activity

Locating Places

Match the letters on the map with the numbered places listed below.

1. Bay of Bengal
2. Pacific Ocean
3. Vietnam
4. Indonesia
5. Cambodia
6. Japan
7. Korea
8. Thailand

Directions: Answer the questions using standard grammar, spelling, sentence structure, and punctuation.

CHECKING FOR UNDERSTANDING

1. Define each of these terms as they relate to Korea, Japan, and Southeast Asia.

A. archipelago
B. samurai
C. shogun
D. vassal
E. feudalism
F. guild
G. volcano
H. tsunami

REVIEW THE GUIDING QUESTIONS

2. ***Explaining*** How did the geography of Korea affect its early settlement?

3. ***Summarizing*** Summarize how the Koryo rulers built a civilization on the Korean Peninsula.

DBQ SHORT RESPONSE

"During the Three Kingdoms,... power in all three of the kingdoms was held by those who lived in the capital and by the aristocratic families who dominated a very rigid and hereditary social status system. Members of the upper and lower classes were differentiated in almost every aspect of their lives, including clothing, food, housing, and occupation. ...The lifestyle of the aristocracy was supported by slaves, who led miserable lives."

—May Connor, *The Koreas*

21. What factors differentiated members of the upper and lower classes?

22. What privileges did aristocrats have that the lower class didn't have?

EXTENDED RESPONSE

23. ***Informative/Explanatory*** Write a short essay in which you explain the concept of animism and its influence on the culture of the Japanese.

STANDARDIZED TEST PRACTICE

DBQ ANALYZING DOCUMENTS

A great Noh actor, explained how acting is mastered.

"As long as an actor is trying to imitate his teacher, he is still without mastery. . . . An actor may be said to be a master when, by means of his artistic powers, he quickly perfects the skills he has won through study and practice, and thus becomes one with the art itself."

—*The Book of the Way of the Highest Flower (Shikadō-Sho)*
by Seami Jūokubushū Hyōshaku

24. ***Analyzing*** Which of the following best summarizes when actors become "masters"?
A. when they can imitate the teacher
B. when they begin to study and practice acting
C. when they learn artistic skills
D. when they become part of the art of acting

25. ***Comparing and Contrasting*** What might a master actor and a samurai have in common?
A. Both were well paid.
B. Both worked for shoguns.
C. Both owned land.
D. Both practiced their skills to perfection.

NAME _____ DATE _____ CLASS _____

Vocabulary Builder Activity

networks

Civilizations of Korea, Japan, and Southeast Asia

A. Content Vocabulary

Directions Match the vocabulary words in the left column with their definitions in the right column. Write the letter of the vocabulary word in the space by its definition.

Content Vocabulary	Definitions
a. shamanism	**1.** _____ person under the protection of a feudal lord
b. archipelago	**2.** _____ related to the sea
c. animism	**3.** _____ an expanse of water with many scattered islands
d. feudalism	**4.** _____ basic laws that define the role of government
e. constitution	**5.** _____ a huge ocean wave
f. samurai	**6.** _____ military governor who ruled Japan
g. shogun	**7.** _____ mental exercise done to reach spiritual awareness
h. vassal	**8.** _____ belief in spirits that exist separately from bodies
i. sect	**9.** _____ a mountain that releases hot or melted rocks
j. volcano	**10.** _____ belief that some people can communicate with spirits
k. tsunami	**11.** _____ sports that involve combat and self-defense
l. maritime	**12.** _____ the system of service between a lord and those loyal to that lord
m. guild	**13.** _____ warrior who served a Japanese lord
n. martial arts	**14.** _____ a religious group
o. meditation	**15.** _____ a group of merchants or artisans

NAME _____ DATE _____ CLASS _____

Vocabulary Builder *Cont.*

networks

Civilizations of Korea, Japan, and Southeast Asia

C. Combined Vocabulary Reinforcement

Directions Replace each underlined word in the sentences below with the correct word from the box. Cross out the incorrect word, and write the correct word in the blank.

1. The Japanese islands are an extended hierarchy. _____
2. Constitution trade is carried out by ships. _____
3. A shogun was often the vassal of a daimyo. _____
4. Meditation in Japan depended on the relationship between samurai and daimyo. _____
5. Artisans often joined a sect for protection. _____
6. Calligraphy is a form of exercise used for self defense. _____
7. The written law of a country is called its conflict. _____
8. A military ruler was called a tsunami. _____
9. Merchants created a large trade institution in Southeast Asia. _____

NAME _____ DATE _____ CLASS _____

Chapter 18 Test, Traditional

Civilizations of Korea, Japan, and Southeast Asia

networks

DIRECTIONS: True/False Indicate whether the statement is true or false.

_____ **1.** Korea lies on a peninsula in Northwest Asia.

_____ **2.** In Korea, the Three Kingdoms were at peace and worked well with one another.

_____ **3.** The Japanese prince Shotoku was hostile toward China and prevented his people from having any contact with the Chinese.

_____ **4.** Mongol attacks on Japan in the late 1200s were turned back with the help of violent typhoons.

_____ **5.** In the A.D. 700s, a Malay state controlled the trade route through the Strait of Malacca.

DIRECTIONS: Matching Match each item with the correct statement below.

_____ **6.** chain of islands

_____ **7.** Japanese warriors who fought for nobles in exchange for land

_____ **8.** sport involving combat and self-defense

_____ **9.** belief in gods, demons, and spirits

_____ **10.** huge ocean wave caused by an undersea earthquake

A. samurai

B. martial art

C. shamanism

D. archipelago

E. tsunami

DIRECTIONS: Multiple Choice Indicate the answer choice that best completes the statement or answers the question.

_____ **11.** In Japan during the civil war period of the 1100s, shoguns were

A. a warrior class following a strict code of rules, pledging loyalty to the daimyo.

B. powerful generals who began to challenge the Emperor's power by establishing military governments.

C. powerful generals who served the Emperor faithfully.

D. religious leaders ruled by the daimyo.

Chapter 18 Test, Traditional *cont.*

networks

Civilizations of Korea, Japan, and Southeast Asia

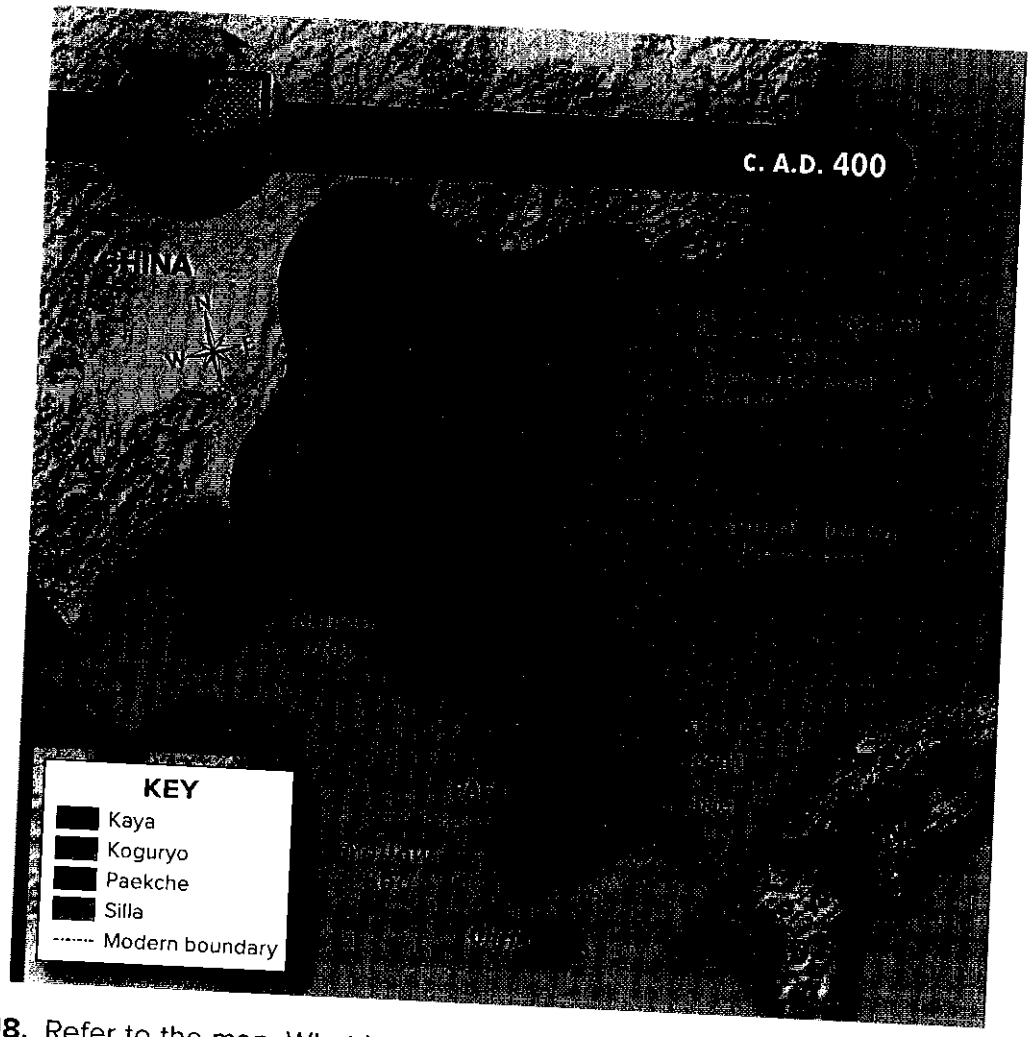
_____ **17.** What two landforms make up the geography of Southeast Asia?

A. mountains and an isthmus

B. peninsulas and an archipelago

C. volcanoes and oceans

D. deserts and plains



_____ **18.** Refer to the map. What body of water bordered the Koguryo and Silla kingdoms on the east?

A. Korea Bay

B. Korea Strait

C. Sea of Japan (East Sea)

D. Yellow Sea

_____ **19.** Refer to the map. Of the Three Kingdoms, which was the most mountainous?

A. Kaya

B. Koguryo

C. Paekche

D. Silla

Name: _____

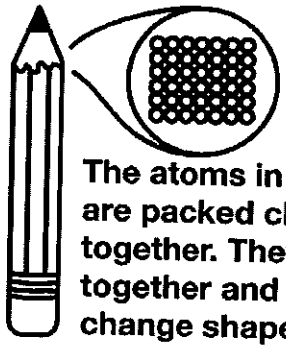
Why Does Matter Matter?

by Kelly Hashway

What do trees, air, and water have in common? They all have matter. That means they take up space. You might be wondering why these things look so different if they all have matter. Everything found on Earth can be grouped into one of three states of matter: solid, liquid, or gas. In order to figure out which state of matter an object fits in, we have to examine its properties. The properties we look at are shape, mass, and volume. Mass is the amount of matter an object has, and volume is the amount of space the matter takes up.

Solid

Solids are easy to recognize. They have definite shape, mass, and volume. Trees are solids. They are made up of tiny particles called atoms. These atoms are packed closely together, and they hold the solid in a definite shape that does not change. If you look around your house, you will see lots of solids. Televisions, beds, tables, chairs, and even the food you eat.

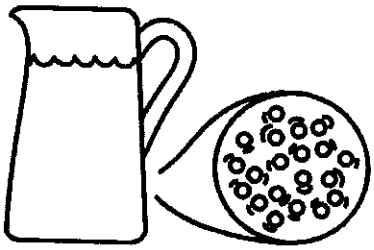


The atoms in a solid are packed closely together. They bond together and do not change shape.

Liquid

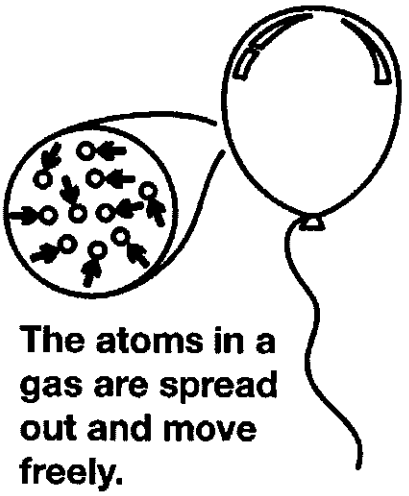
Liquids do not have definite shape, but they do have definite mass and volume. Liquids are similar to solids because their atoms are close together, but what makes a liquid different is that those atoms can move around. Liquids can change shape by flowing. If you've ever spilled a glass of milk, then you know it spreads out across the floor. It does this because the milk is taking the shape of the floor. Since liquids do not have a definite shape of their own, they will take the shape of their containers. This is why the same amount of milk can look different in a tall glass, a wide mug, or spread out on your kitchen floor.

The atoms in a liquid are close together. They slide around.



Gas

Gases do not have definite shape or volume. Like liquids, gasses will take the shape of their containers. If a gas is not in a container, it will spread out indefinitely. This is because the atoms in a gas are spaced farther apart than in a solid or a liquid. And being spread out like this allows them to move around freely. Think about the air you breathe everyday. That air is spread across the empty space around the earth. You've probably also noticed that you usually cannot see the air. This is another property of gases. Even though we cannot see them, you come in contact with them everyday. There's air in the tires of your family car and your bicycle. There are many different types of gas in the earth's atmosphere, such as oxygen, carbon dioxide, nitrogen, water vapor, and helium.



The atoms in a gas are spread out and move freely.

When trying to remember the three states of matter, think about water. If it freezes into a solid, it becomes ice. Its atoms are packed together keeping its shape. Of course, we know water can also be a liquid. It flows in rivers or it can be poured from a glass. When water evaporates it becomes water vapor, a type of gas in the air. Try a little experiment of your own by placing an ice cube in a covered glass or container. You will be able to observe the ice first in its solid form and then watch as it melts into a liquid to become water. Eventually the water will turn to water vapor and your glass or container will be filled with this gas.

You can see three different states of matter in this picture. The pot is made of solid matter. The water inside the pot is liquid. When the liquid is heated it becomes water vapor, which is a gas.

Matter is everywhere! Can you find a solid, a liquid, and a gas around you right now?

Name: _____

Why Does Matter Matter?

by Kelly Hashway

solids	volume	container	matter	ice	juice
gases	mass	atoms	chair	oxygen	melting
liquids	shape	space	milk	helium	

Choose a word from the box to complete each sentence.

1. The three basic properties of matter are _____,

   _____, and _____.

2. All matter is made up of tiny particles called _____.

3. Volume is the amount of _____ that matter takes up.

4. Mass is the amount of _____ an object has.

5. Liquids take the shape of their _____.

6. _____ do not have a definite shape or volume.

7. _____ do not have a definite shape, but they do have a definite volume.

8. _____ have a definite shape and volume.

9. A _____ and _____ are examples of solids.

10. _____ and _____ are examples of liquids.

11. _____ and _____ are examples of gas.

12. Solid ice is _____ when it is changing into a liquid.

Name _____ Date _____

Addition and Subtraction of Units of Measure

Add or subtract the following units of measure.

1. 25 mi 845 yd - 12 mi 654 yd

2. 41 mi 1002 yd + 12 m 201 yd

3. 12 lb 3 oz + 2 lb 5 oz

4. 12 lb 2/7 oz + 2 lb 3/7 oz

5. 74 c 6 fl oz - 56 c 2 fl oz

6. 46 c 7 fl oz + 24 c 1 fl oz

7. 69 qt 5 pt + 12 qt 2 pt

8. 2 qt 3/4 pt + 12 qt 1/4 pt

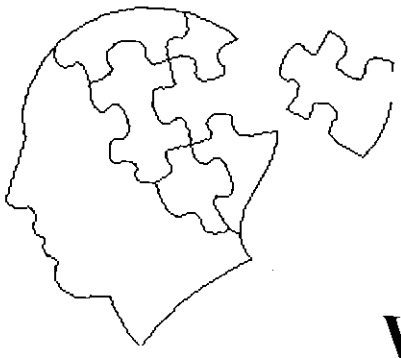
9. 8 gal 1/5qt + 6 gal 2/5 qt

10. 12 gal 2 qt + 6 gal 2/5 qt

11. 45 lb 2 oz + 12 l 4 oz

12. 15 lb 4 oz + 8 lb 7 oz

Name _____ Date _____



Weather Cryptogram

Directions: Unscramble the words by placing the correct letter in the shaded boxes. Use the numbered boxes to complete the answer to the riddle.

RIDDLE:

Where is the driest location on Earth?

DMTIYHIU

_ _ _ _ _ _ _ _
9

RAECOSTF

_ _ _ _ _ _ _ _
5 8

TENRIW

_ _ _ _ _ _
3

HREUNICRA

_ _ _ _ _ _ _ _ _
2 12

OUDLCY

_ _ _ _ _ _
11

WRAM

_ _ _ _
1

GSIWONN

_ _ _ _ _ _ _
10 6

RNAODOT

_ _ _ _ _ _ _
4

NSYNU

_ _ _ _ _
7

ANSWER:

_	_	_	_	_	_	_	_	_	_	_	,	_	_	_	_	_
1	2	3	4	5	1	6	1	7	3	1		8	9	10	11	12

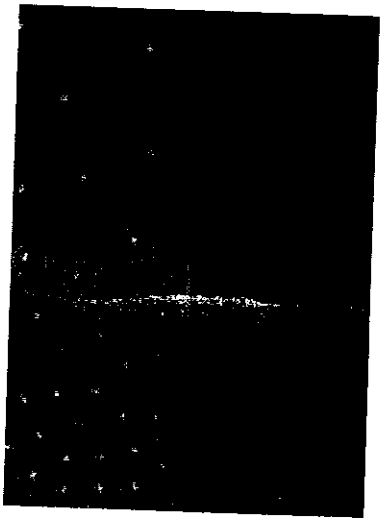
Air Pressure

This text is from the U.S. National Oceanic and Atmospheric Administration: National Weather Service.

The atoms and molecules that make up the various layers in the atmosphere are constantly moving in random directions. Despite their tiny size, when they strike a surface they exert a force on that surface in what we observe as pressure.

Each molecule is too small to feel and only exerts a tiny bit of force. However, when we sum the total forces from the large number of molecules that strike a surface each moment, then the total observed pressure can be considerable.

Air pressure can be increased (or decreased) one of two ways. First, simply adding molecules to any particular container will increase the pressure. A larger number of molecules in any particular container will increase the number of collisions with the container's boundary, which is observed as an increase in pressure.



The number of molecules in the atmosphere decreases with height.

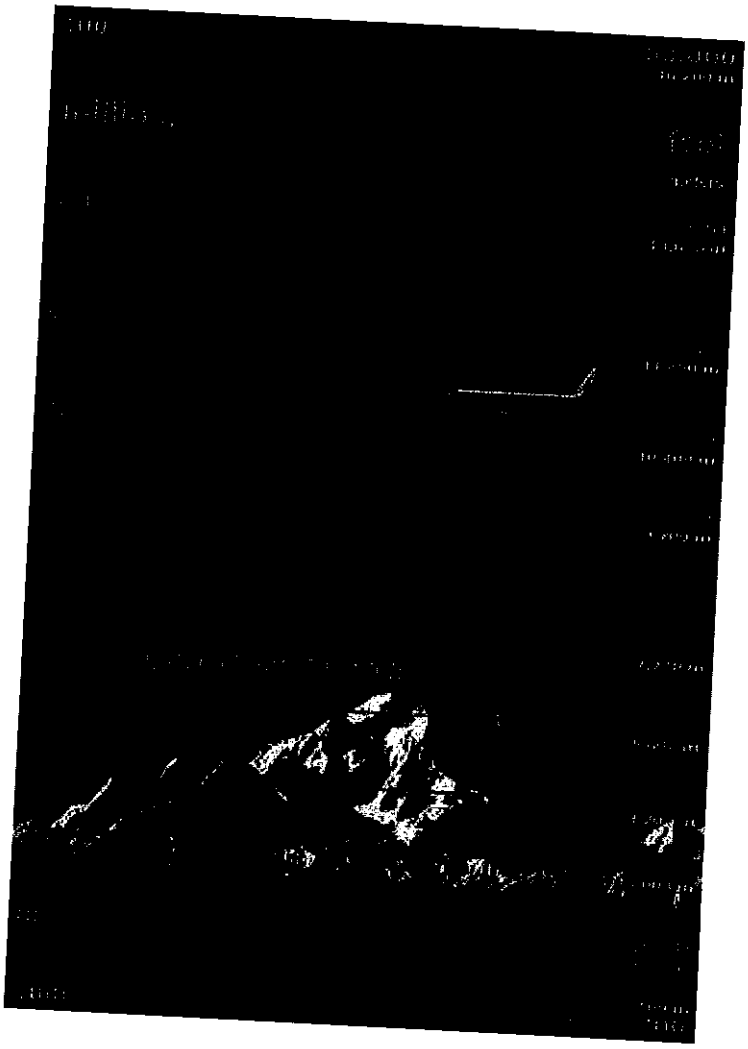
A good example of this is adding (or subtracting) air in an automobile tire. By adding air, the number of molecules increase as well [as] the total number of the collisions with the tire's inner boundary. The increased number of collisions forces the tire's pressure increase to expand in size.

The second way of increasing (or decreasing) is by the addition (or subtraction) of heat. Adding heat to any particular container can transfer energy to air molecules. The molecules therefore move with increased velocity striking the container's boundary with greater force and is observed as an increase in pressure.

Since molecules move in all directions, they can even exert air pressure upwards as they smash into [an] object from underneath. In the atmosphere, air pressure can be exerted in all directions.

In the International Space Station, the density of the air is maintained so that it is similar to the density at the earth's surface. Therefore, the air pressure is the same in the space station as the earth's surface (14.7 pounds per square inch).

Back on Earth, as elevation increases, the number of molecules decreases and the density of air therefore is less, meaning a decrease in air pressure. In fact, while the atmosphere extends more than 15 miles (24 km) up, one half of the air molecules in the atmosphere are contained within the first 18,000 feet (5.6 km).



The difference in pressure as height increases

boundary

bound · a · ry

Definition

noun

1. something that marks the edge or limit.

The fence is the boundary of our neighbor's property.

Advanced Definition

noun

1. a line, real or imaginary, that indicates the limits of something.

The river forms part of the southern boundary of our country.

We planted trees along the boundary of our property.

These are some examples of how the word or forms of the word are used:

1. Although there are no physical **boundaries** separating one ocean from the other, five oceans have been demarcated and named.
2. The location where these tectonic plates meet is called a plate **boundary**. Wherever you find plate boundaries, events like earthquakes can occur, and features like mountains, volcanoes, and ocean trenches are common.
3. Remarkably, biodiversity is not necessarily dependent upon the size of the ecosystem; some of the richest ecosystems in the world exist within narrow **boundaries** (sections of the Amazon rainforest, for example, and the Galapagos Islands).
4. Some sixth grade students crave order, stability, and the confines that allow them to still be carefree students. Others want to be less safe, more interesting. They want to escape **boundaries**, have adventures, and test limits.
5. "Kids can ... communicate with each other using the Internet. ... National **boundaries** are no barrier." A barrier is something that blocks something else. Takahashi says there are some kids who have mixed feelings about the Internet.
6. Today the many different countries on the South American map remind us of the divisions within Latin America. All of the different **boundaries** were established through wars for independence, except for the case of Brazil. Brazil stayed intact as one country, just as it had been one territory.
7. Just as ridges form when you push two sides of a piece of cloth together, they also form when continental plates push against each other, or when a plate feels pressure from both sides. This means that large mountain chains form inside a continent-for example, the Rocky Mountains-or on continental **boundaries**.
8. Clifford said his teaching gigs provide him with a sense of balance that most other successful artists don't have, noting that many groups quick to make it big are also quick to fall apart. In order to maintain this balance, he must establish a clear set of **boundaries** in the classroom.
9. And back and forth the game goes, until someone hits the ball "out of bounds" or is unable to continue the volley. Players can decide on where the **boundaries** lie or, if they're lucky, the playground's construction crew might have painted lines on the asphalt to mark "out of bounds" for them already.

exert

ex · ert

Advanced Definition

transitive verb

1. to exercise or bring to bear (power, influence, or the like); put into action.

   He exerted his influence in the company to get his son a job.

2. to force (oneself) into vigorous or strenuous effort.

   The doctor told him not to exert himself until he had fully recovered.

   I know I could succeed if I exerted myself.

Spanish cognate

ejercer: The Spanish word *ejercer* means exert.

These are some examples of how the word or forms of the word are used:

1. Magnetism is the force that electric currents **exert** on other electric currents.
2. Once the wave is caught and the surfboard starts moving through the water, however, hydrodynamic forces-forces **exerted** on an object by moving water-come into play.
3. For this reason, cyclists tend to have large, bulging thigh muscles. These muscles allow the cyclist to continue **exerting** force on the bicycle pedals, which cause the wheels to keep spinning despite their constant interaction with the road.
4. Let's say you're pedaling very fast on a bicycle. You are **exerting** a lot of energy as you do this. You can tell because your heart rate may increase, you may breathe harder, and you may begin to sweat - a sign that your body is trying to cool itself.
5. In order for LeBron James to score a slamdunk, he must **exert** a certain amount of force against the surface of the basketball court. LeBron James is a big man. He is 6 feet, 8 inches tall. He weighs 245 pounds. When he is standing upright, with his arms raised above his head, his reach extends to 8 feet and 10 ¼ inches.
6. The real problem is when I try to hang out with other magnets. They also **exert** force, but in weird ways. When I see my best magnet friend, Rob, I always want to give him a hug, a high five or even just a handshake. But I can't get close to him! It's like we're pushing each other away, without even using our hands.
7. The forces on a surfer waiting to catch a wave are simple and balanced. The downward force of gravity on both board and rider is balanced by the upward force of buoyancy, created by water pushing up on the partially submerged board. Once the wave is caught and the surfboard starts moving through the water, however, hydrodynamic forces-forces **exerted** on

an object by moving water-come into play.

8. When there is a change in one of the forms of energy used to power modes of transportation, then the energy generated by these devices changes as well. Let's say you're pedaling very fast on a bicycle. You are **exerting** a lot of energy as you do this. You can tell because your heart rate may increase, you may breathe harder, and you may begin to sweat - a sign that your body is trying to cool itself.

9. For example, if two cars are moving at 30 miles per hour when they collide, this will result in an accident. In such a case, each car is **exerting** 30 miles per hour worth of force on the other. The combined effect of such a crash would be equivalent to a car slamming into a brick wall at 60 miles per hour. In both cases, energy is transferred from one object to the other - between the two cars, or between the car and the wall.

pressure

pres · sure

Definition

noun

1. a steady force upon a surface.

   Put pressure on a cut to make it stop bleeding.

2. a strong influence or heavy force on the mind or emotions.

   He feels a lot of pressure to do well in his job.

verb

1. to try to influence or force someone into an action.

Advanced Definition

noun

1. the applying of constant force upon a surface.

   Put pressure on a cut to make it stop bleeding.

2. a constraining influence or burden, as on the mind.

   The athletes are under a great deal of pressure to perform well and win.

3. an urgent claim.

   The pressures of one's job can bring on stress.

transitive verb

1. to compel (someone) into a course of action by forceful influence or coercion.

   His father pressured him into going to law school.

Spanish cognate

presión: The Spanish word *presión* means pressure.

These are some examples of how the word or forms of the word are used:

1. There is less peer **pressure** and less bullying. Both girls and boys have more freedom to explore their own interests and abilities.

2. Gandhi's fasts drew public attention to his cause. Newspapers and the public began to sympathize with Gandhi. They put **pressure** on the British government to change its ways.

3. As they rode up, Kara noticed that Sam kept opening her mouth wide, as if she were yawning, but then shutting it quickly. "Ears popping?" Kara asked. Sam nodded her head. Eventually, everyone started to do the same, a signal of the change in air **pressure** as the altitude increased.

4. They can recall games played for upwards of three to five thousand dollars, with the victorious team getting a cut. Players depended on winnings as a sort of additional income, so, just like in a World Series game, there were some **pressure** situations under which to perform for one's own financial benefit, and for their teammates as well. Fans who had their own best interests in mind heckled batters trying hard to focus on a potentially game - changing pitch.

5. Being part of the rumbling ocean means it is liquid, of course. It's dark and cold at the bottom of the ocean, and relatively bleak. Every once in a while the water molecule is somehow consumed by a deepsea dweller, and passes through its body until it eventually rejoins the ocean. As this happens, the little water drop may end up in a different part of the ocean where it is more shallow, and there is less **pressure** and more light, as some sunlight filters through.

6. The town receives just 16 inches of rain every year, similar to Los Angeles. That's because cool, wet air gets trapped inside the bowl of the Olympic Mountains, and as it escapes over the northern wall it experiences increased air **pressure** as it drops in elevation, causing it to lose most of its moisture.

Name: _____ Date: _____

1. According to the text, what is pressure?

A. the speed atoms and molecules travel in a container

B. the direction atoms and molecules travel when they strike a surface

C. the force atoms and molecules exert when they strike a surface

D. the layer of atoms and molecules in a container

2. Based on the text, what is the effect of adding molecules or heat to a container?

A. The container's air pressure would decrease.

B. The container's air pressure would increase.

C. The container's air pressure would stay the same.

D. There would be no more air pressure in the container.

3. Read these sentences from the text.

"In the International Space Station, the density of the air is maintained so that it is similar to the density at the earth's surface. Therefore, the air pressure is the same in the space station as the earth's surface (14.7 pounds per square inch)."

What can you conclude about the International Space Station?

A. Without air pressure maintenance, air pressure in the International Space Station is different than in the earth's surface.

B. Without air pressure maintenance, air pressure in the International Space Station is the same than in the earth's surface.

C. With air pressure maintenance, air pressure in the International Space Station is different than in the earth's surface.

D. With air pressure maintenance, there is no air pressure in the International Space Station.

4. Read these sentences from the text.

"In the International Space Station, the density of the air is maintained so that it is similar to the density at the earth's surface. Therefore, the air pressure is the same in the space station as the earth's surface (14.7 pounds per square inch)."

Based on the text, what can you infer about the International Space Station?

A. Heat or the number of molecules in the International Space is greater than in the earth's surface.

B. Heat or the number of molecules in the International Space is less than in the earth's surface.

C. Heat or a number of molecules was added or subtracted in the International Space Station.

D. There is no heat or molecule in the International Space Station.

5. What is the main idea of this text?

A. Air pressure is the same in the International Space Station as in the earth's surface because the density of air is maintained in the station.

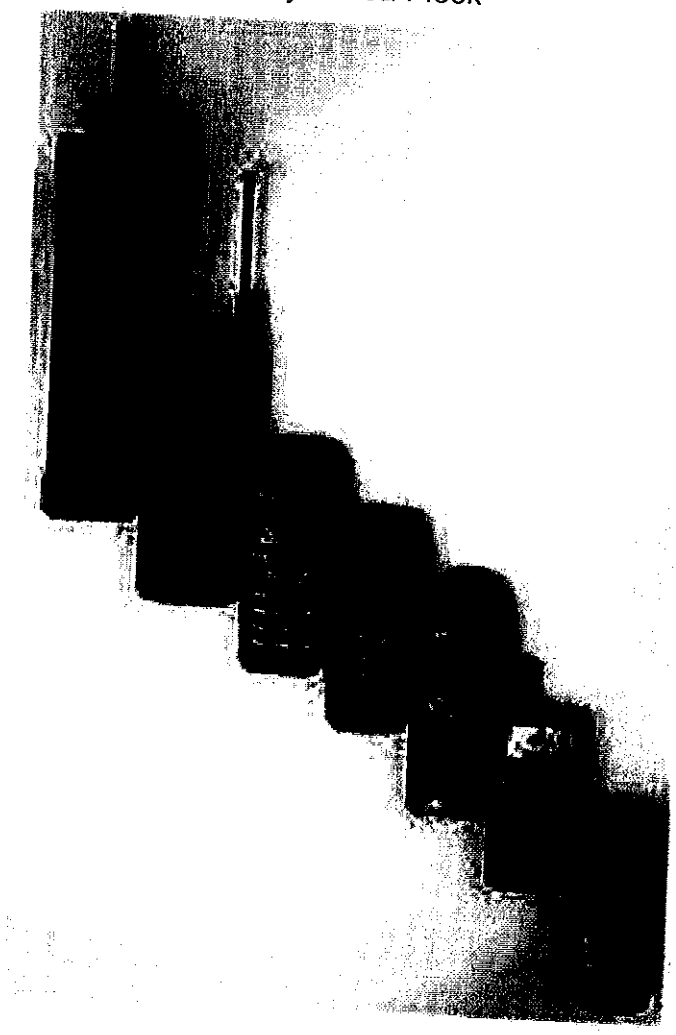
B. Air pressure in a container can be increased by adding molecules or heat, and it can be decreased by subtracting molecules or heat.

C. Air pressure on Earth decreases as elevation increases because the number of molecules decreases with height.

D. Air pressure is observed by the exerted force of atoms and molecules, and it can be changed by adding or subtracting molecules or heat.

Using Cellphones and Computers to Transmit Information

by Alissa Fleck



Modern technology can do some pretty incredible things. It's possible, with current technological capabilities, to transmit digital information over long distances using coding and decoding processes without losing the contents of the original information. The best part is we don't have to do anything besides send the message and wait for it to be received.

Consider, for instance, the cellular phone. It wasn't until the early 1980s that this mobile variation on the standard telephone was even available for people to use. Now, it seems like everyone has a cellphone, sending and receiving information in speedy ways invisible to the human eye.

There's so much going on below the surface of what we can see when we use our cellphones. One difference between a mobile phone and a traditional landline telephone is you can move the cellphone just about anywhere geographically and still use it to talk to other phone users. No matter

how far away you are from someone you call, you can usually still understand each other's voices over the phone, thanks to radio waves and something called a cellular network.

It took many evolutions in phone technology to get where we are today, but the current cellphone wirelessly transmits information by connecting to a cellular network. Mobile phone operators provide these cellular networks, which function with the help of cellphone towers, and then calls are made over what is known as a radio link. Through this process, information-in this case, voice input-is broken down and reassembled over the radio link, so the person on the other end instantaneously hears what is said.

In other words, as you speak into the phone, your voice is converted into an electrical signal, transmitted in the form of a radio wave by these towers, and then converted back into the sound of your voice by the phone on the receiving end. All this happens in the blink of an eye while you chat over the phone without any distortion.

The process of transmitting digital information is not exclusive to telephones. Computers are another instrument that can receive, decode and convert information, though typically this information is not a person's voice, but written content.

We may take for granted the ease with which we can pass along information with computers and the Internet, but many forces are hard at work processing information to make computers easier for us to use and communication more reliable.

The first computer showed up around 1941, but it was much more limited in its capabilities than computers now. In fact, computers are everywhere-sometimes they are so small we do not think of them as computers at all, though they serve the same function as the computers we have at home, the office or school.

Much like cellular telephones, computers were actually first used to transmit sensitive information across geographical spaces by the military at a point when government officials worried it would be possible to knock out a country's entire telephone grid.

Computer engineers began finding ways to link their computers together in order to share information among them. This linking began with just a couple of computers and grew to the millions which connect regularly today. Ultimately, that's how what we know as the Internet was developed.

Wireless computer networking is also similar to cellular phone use in that computers use the same networks our mobile phones use.

While you speak into the telephone using your voice, you typically insert data into your computer by typing on the keyboard. You may decide to share information through an email or access information on a website by typing in or visiting what is known as a hyperlink.

When you use the Internet to share and access information, you connect to the relevant network. You can send a message from your computer to another computer anywhere in the world and it will arrive almost immediately, going through many different networks in the process.

Still, the information you send does not travel in a single piece as it might through the standard mail service; instead, it is broken down into smaller digital information. As with a cellphone, the information you send is fragmented into tiny pieces and then reconstructed once it's reached its destination.

Along with your message comes other information, for instance about ordering, or how the message should be restructured to make sense to the reader. Your message will also include more basic data about where it came from and where it is supposed to go.

Computers and the Internet require many high-tech and complicated pieces to run properly, but something known as a router is a key instrument that keeps information being sent from one computer to another going along the correct pathway. The Internet also relies on telephone wires and satellite links for wireless information sharing.

It's important to note that for the Internet to work as it does, many companies have to agree to work with one another. The Internet is really a collection of networks working together toward a common goal of allowing information to be shared.

digital

dig · it · al

Definition

adjective

1. showing information by a row of numbers.

   I wear a digital watch because it's easy to read.

2. using information in the form of an electronic signal.

   Digital cameras don't need film.

Advanced Definition

adjective

1. of, pertaining to, or resembling a digit, esp. a finger.
2. in electronics, transmitting all variables as numerical values.

Spanish cognate

digital: The Spanish word *digital* means digital.

These are some examples of how the word or forms of the word are used:

1. Eyewitnesses recorded the fireball with their phones and **digital** cameras. A European weather satellite took a photo of the meteor as it streaked through the atmosphere, and a Chinese satellite captured the meteor's vapor plume. Thousands of people saw the flash of light and felt the shock wave after the meteor crashed into Earth.
2. What makes this so reliable is the fact that **digital** signals are actually quite resistant to outside noise disturbances. While other kinds of communication will almost always be transmitted along with some kind of undesirable noise (making a recording much harder to hear), digital signals can be encoded and sent without too much outside interference.
3. One in four of the 14-to 24-year-olds who responded to the survey said they had experienced **digital** abuse within the past six months. About 20 percent said someone had written something mean or untrue about them online.
4. In 1982, Billy Joel's *52nd Street* became the first album released on a Compact Disc, the new solution to the problems presented by vinyl records and cassette tapes. These CDs were created using an optical disc that stored **digital** data.

transmit

trans · mit

Definition

verb

1. to send or carry from one person, place, or thing to another.

   The television station refused to transmit the program.

   They transmitted the message to their leader.

2. to pass on or spread a disease.

   Some insects transmit diseases.

   The doctors are afraid that the child's disease will be transmitted to others.

Advanced Definition

transitive verb

1. to send or convey from a source to a destination.

   The message was transmitted by wire from London to Paris.

   We need to transmit this information to our regional office.

2. to communicate or broadcast (news or other information).

   This channel transmits the news continuously.

3. to pass on or spread (disease).

   He transmitted the infection to his wife.

   The disease can be transmitted by coughing.

4. to hand down genetically, as from parent to child.

   The disease gene was transmitted to the offspring.

5. to pass, allow to pass, or cause to pass something: (light, motion, sound, force, or the like) through or along.

   Water transmits sound effectively.

intransitive verb

1. to send a signal by electromagnetic waves.

The campus radio station transmits from ten o'clock in the morning to nine o'clock in the evening.

Spanish cognate

transmitir: The Spanish word *transmitir* means transmit.

These are some examples of how the word or forms of the word are used:

1. The cones receive pulses from the organ electrically that began when the organist hit the keys. The cones can **transmit** the sounds because they are able to vibrate in just the right way for the sound waves to be created accurately.
2. Signals of any kind are a way to deliver a message to a destination. When digital signals **transmit** information, they do so by turning signals into code. This is binary code, which is very specific and easily quantified. When that code is sent via wave pulses, the transmission of the signal is very reliable.
3. The sound waves penetrate the whale's skin and cause long tunnels of fat inside its lower jawbone to vibrate. Those vibrations are **transmitted** to the whale's ear. That helps the whale decide whether to go and eat, or turn and swim away.
4. For example, when Proust tasted his cookie, the sense receptors on his tongue sent a message to his brain telling it how the madeleine tasted. The messages are signals **transmitted** along nerve cells until they reach the brain. When the brain receives these signals, it processes them, and controls the body's reaction to them.
5. Muslims believe that the words in the Qur'an are the teachings of God as told to Muhammad through the angel Gabriel, messages that were **transmitted** over the course of about twenty-three years, beginning during that important prayer retreat in 609 CE. Because of this and its poetic style, Muslims stand firm that the Qur'an is a one-of-a-kind manuscript, the final and most holy of God's revelations.
6. Franklin's lightning rod connected to a wire that ran down through the house and into the ground, where it was attached to a ground rod. Both rods were made from metal, which Franklin theorized would conduct the electricity of the lightning. By moving from the first rod down the length of the wire, the lightning's energy could be safely **transmitted** into the ground, where it would no longer pose a threat to one's home or body.

Name: _____ Date: _____

1. What are two examples of technology that send information over long distances?

A. the human eye and computers

B. government officials and computers

C. cellphones and the human eye

D. cellphones and computers

2. What does the author compare to cellphones in this passage?

A. The author compares companies to cellphones.

B. The author compares engineers to cellphones.

C. The author compares computers to cellphones.

D. The author compares cellular networks to cellphones.

3. A cellphone sends and receives information in a speedy way invisible to the human eye.

What evidence from the passage supports this statement?

A. When a person speaks into a cellphone, his or her voice is broken down and reassembled over a radio link, so the person on the other end instantaneously hears what is said.

B. When computers first showed up around 1941, they were used to transmit sensitive information across geographical spaces by the military because of worries government officials had.

C. Although people may take for granted the ease with which they can pass along information through computers, many forces are at work to make computer communication more reliable.

D. Like cellphones, computers can receive, decode, and convert information, though typically this information is written content rather than someone's voice.

4. What is one way that computer use has changed over time?

A. Computers were first used in homes, schools, and offices to send different kinds of information, but now they are used only by the military to send sensitive information.

B. Computers were first used by the military to send sensitive information, but now they are used in homes, schools, and offices to send different kinds of information.

C. Computers used to send a person's voice from one place to another, but now they send only written content.

D. Computers used to send a person's voice from one place to another, but they have been gradually replaced by landline telephones.

5. What is this passage mostly about?

A. computers, the Internet, and how the military uses technology to protect people

B. cellphones, landline telephones, and the reasons people have trouble hearing each other over the phone

C. mobile phone operators, government officials, and companies that work with one another

D. cellphones, computers, and how they send information from one place to another

6. Read the following sentence: "It's possible, with current technological capabilities, to **transmit**digital information over long distances using coding and decoding processes without losing the contents of the original information."

What does the word **transmit** mean in the sentence above?

A. harm

B. fold

C. hear

D. send

7. Choose the answer that best completes the sentence below.

Information is transmitted by different kinds of modern technology, _____ cellphones and computers.

A. in conclusion

B. instead

C. especially

D. never

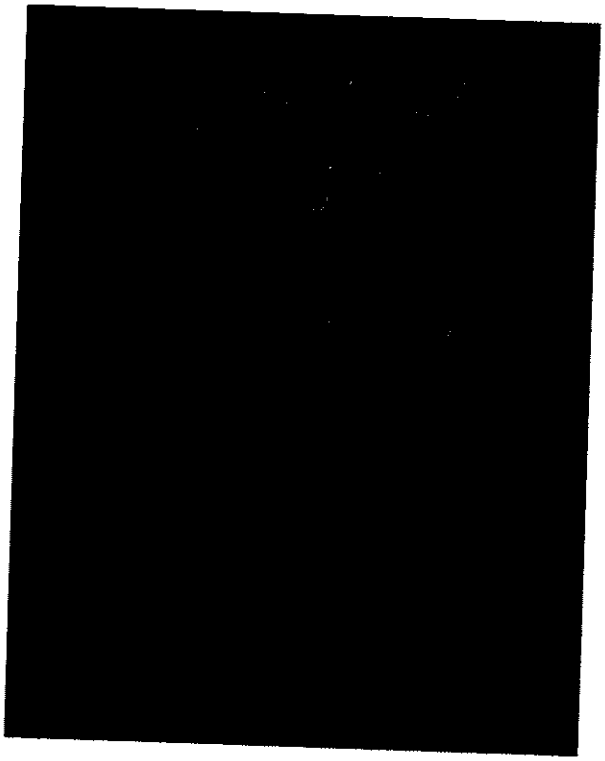
8. According to the passage, what are cellphones used for?

9. How does a cellphone transmit information using cellular networks?

10. At the end of the passage, the author writes, "The Internet is really a collection of networks working together toward a common goal of allowing information to be shared." Could cellphones be described in the same way? Explain your answer using evidence from the passage.

Naturally Selected to Survive

by Michael Stahl



The earth has changed, over and over again, throughout the course of its history. Some of these changes have happened quickly. Others have occurred over long stretches of time. For example, the planet has experienced ice ages that took place over *thousands* of years. During those eras, huge sheets of ice covered much of the surface of the globe. Then for a few thousand years between the ice ages, the earth warmed up. Scientists believe that this cycle has actually occurred a few times.

As the planet goes through this cycle, environments may go through changes. In order to survive in changing environments, species oftentimes must undergo a process of adaptation. Adaptation refers to a mutation or genetic change that enables an organism such as an animal or plant to survive in its environment. This trait is passed down from one generation to the next, becoming an inherited trait of the species. A species may have to adapt to warmer temperatures, increased precipitation, or even developing air pollution. If the organisms of a species cannot change along with the area in which they live, they risk dying out. Though an uncountable number of species that have roamed the earth have become extinct, the planet has seen many others adapt as well. These select organisms have been able to go on living in their environment.

A species adapts to a changing environment as organisms with favorable traits reproduce and survive. These favorable traits, which help the species survive, are passed down through different generations of the species. This process is called "natural selection." Recent history has given us an important example of how organisms are able to survive once their environments change.

Light gray peppered moths and dark-colored peppered moths lived in the countryside between the cities of Manchester and London in England. Many years before the 19th century, more of the light gray peppered moths had been able to survive in their environment mostly because of their color. Their thin layer of skin, as well as their large wings, was mostly gray with a little bit of black "peppered" all around. This color was advantageous because the light gray peppered moths were camouflaged when they stayed on gray-colored areas on the sides of trees in their habitat. Predators, which were mostly birds, could not see the light-colored moths on the trees because the color of the moths blended in with the color of the trees. Instead, the predators were able to see the dark-colored peppered moths more easily.

In the early 19th century, though, England began the first years of its Industrial Revolution. Many areas, especially in and between the cities of Manchester and London, became populated by a growing number of factories. This was because companies began to use a lot of new machinery that

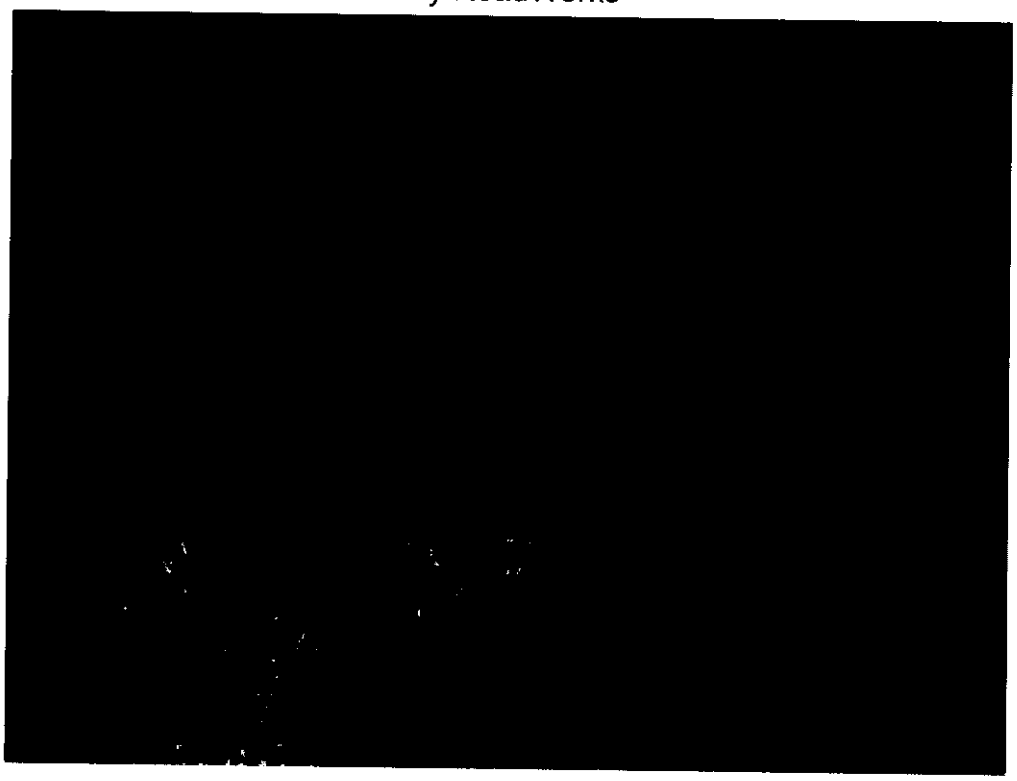
had been invented in the decades before. These machines made work a lot easier in many ways. The companies could build more products faster than ever before. However, many of these factories needed coal to provide energy for the machines. When coal burns, it gives off a lot of dark-colored smoke. Soot is a black substance that collects on a surface that comes into contact with smoke. Smoke's dark particles stick onto surfaces like paint. In the English countryside near industrialized areas, the trees began to blacken with soot because of all of the smoke in the air from the factories. This made the light gray peppered moths much more vulnerable. Predators could see them on the trees more clearly and easily hunt them down.

Sometime in the next hundred years, scientists began to notice a huge change in the moth population living in and between the cities of Manchester and London near where many of those factories had been constructed. Most of the peppered moths were the dark-colored kind! What caused this change was the fact that predators had eaten a lot of the light gray peppered moths because the moths were clearly visible on the black-colored trees. The dark-colored peppered moths in the area survived much more easily and mated with other dark-colored peppered moths until most of the population of peppered moths became dark-colored.

Many scientists feel that this example of evolution in a species supports Charles Darwin's theory of natural selection. An author named J.W. Tutt published a report about the moths a few years after Darwin's death, writing that the change in the peppered moth population seemed to support Darwin's ideas. Though Darwin was not alive to read the Tutt report, his teachings about nature live on.

Life Finds a Way

by ReadWorks



Deep, deep under the ocean, there is a place unlike anywhere else on Earth. In a place so deep that it's impossible for sunlight to reach it, great rocky tubes shoot up from the sea floor. These tubes, or chimneys, belch out what looks like black smoke, all day and all night. The "smoke" is in fact a mixture of minerals from deep within the earth, which shoot out of the chimneys at extremely hot temperatures. For many years after these things (which scientists now call "hydrothermal vents") were discovered, scientists were sure that nothing could live anywhere near them.

They had lots of reasons to think this. For one, there was absolutely no sunlight. In one way or another, sunlight is the source of almost all life on the surface of earth. Plants use it to make food in a process called photosynthesis, some animals eat those plants, and other animals eat the plant-eaters. Without sunlight, the whole system falls apart, so how could there be any life somewhere that is so deep in the ocean that no light makes it down?

Secondly, the minerals in the smoke, mostly sulfur, were thought for a long time to be poisonous to most living things on Earth. With so much sulfur coming out of the ground at such high temperatures, for many years scientists were pretty confident that nothing could live around these vents.

After studying them for a long time, however, scientists made a shocking discovery. There was life around the vents. Tiny bacteria used the sulfur from the vents to make food - a process called "chemosynthesis." Other animals, like worms and shrimp, then ate this bacteria. A whole ecosystem exists there.

Finding this life made scientists reconsider the power of evolution. They had thought for almost a hundred years that while life was adaptable to a certain extent, there were some things it simply couldn't do without: sunlight and oxygen being two. However, as the animals around the hydrothermal vents proved, life was much more adaptable than they had believed. Now, scientists think that life, just like it does around the vents, could exist right now on Europa, one of Jupiter's moons. Europa has long been known to have vast oceans, but scientists thought that being so far from the sun and having an atmosphere so thin that it can't hold in much air, life would not be possible there. Now, it seems like those factors might not matter as much as previously thought. Some scientists also think that Mars may have once had life on its surface.

As the undersea vents example shows, life is extremely adaptable. All different kinds of places on Earth have animals and plants that have adapted over many years to thrive in the particular places where they live. Some animals that live in places where it is very snowy, like high in the mountains or in the arctic, end up white so that they fit in better. Animals and plants that live in the desert, like cacti and camels, have evolved so that they need only the very little water that they get living there. Now think of fish. They are able to swim and breathe perfectly in the water. But a fish would not do very well living in the middle of the desert. Similarly, if you took a big black bear from the forest and dropped it down in the middle of the ocean, it would not last long at all.

This is because a process called natural selection has been at work since not long after the earth first formed many billions of years ago. Natural selection allows animals that have traits suited to a particular environment to survive and produce offspring. Animals who are unable to adapt to changes in their environments die off. With this process constantly at work, nature produces all sorts of animals well-suited to where they are: giraffes with long necks to reach the leaves on the trees in Africa, bears that sleep through long winters where there's no food, and on and on.

The process of natural selection helps us to understand how many plants and animals became the way they are. Many times, life finds a way, no matter how harsh the environment.

Name: _____ Date: _____

Use the article "Life Finds a Way" to answer questions 1 to 3.

1. What did the animals around hydrothermal vents prove about life?

2. The first half of this article discusses the discovery of life around hydrothermal vents. What idea does the second half of the article discuss?

3. Explain how the discovery of life around hydrothermal vents is connected to the idea in the second half of the article. Use evidence from the text to support your answer.

Use the article "Naturally Selected to Survive" to answer questions 4 to 6.

4. Describe the peppered moth. Include at least two details from the article in your description.

5. The first half of this article discusses the ideas of adaptation and natural selection. What specific example of these ideas does the second half of the article discuss?

6. How does the example from the article help readers understand the ideas of adaptation and natural selection?

Use the articles "Life Finds a Way" and "Naturally Selected to Survive" to answer questions 7 to 9.

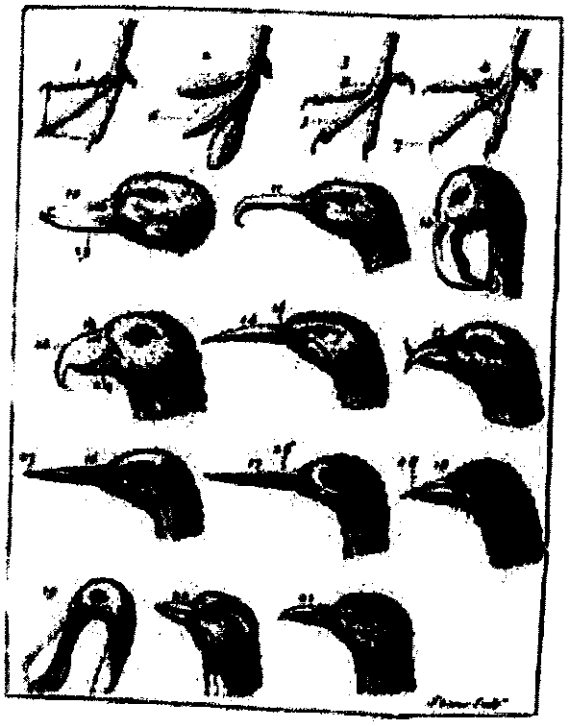
7. Compare the structure of these two articles. Use information from both articles to support your comparison.

8. Contrast the structure of these two articles. Support your answer with information from both articles.

9. Do the differences in the structure of these two articles make one article easier to understand than the other? Support your answer with evidence from both articles.

When Fish First Walked

by ReadWorks



A few hundred million years ago, the competition for food between fishes was fierce. So much so that gradually, some fish developed the ability to get out of the water and reach food sources that none of the other fish could get to. They survived long enough to successfully reproduce, and passed this characteristic on to future generations. In fact, from these fish eventually originated the animals with two pairs of limbs, including human beings.

This is an example of natural selection. An organism that develops a trait that helps it survive in its environment will have a better chance of reproducing and passing that trait on to the next generation. As a consequence, organisms with this helpful trait will become more prominent while other organisms of the same species die out. Why do giraffes have long necks? Why do rabbits produce so many offspring? Natural selection can help us understand why some species are the way they are.

The term "natural selection" was coined by Charles Darwin, who developed the scientific theory of evolution. Darwin was born in England in 1809 and spent his life observing animals and plants from around the world. He explained the theory in his landmark book *On the Origin of Species*.

Sometimes, the changes that occur among a group of organisms will seem very small but still play an important role in their survival. Take, for example, the peppered moth. The peppered moth was light in color and had speckled wings. It was hard to pick out against many of the trees and buildings in England and could camouflage itself easily. But during the Industrial Revolution, London became polluted, and the smog turned everything black. Now the moths could be seen more easily by predators; they had nowhere to hide. Around this time, dark-colored peppered moths, which are almost invisible against a dark background, began to appear and soon became widespread. The lighter moths, on the other hand, became scarce in these sooty industrial areas.

Another case that has to do with survival through camouflage involves the little deer mouse. Typically, deer mice are dark brown, which makes it easier for them to hide from owls and other predators in the dark soil of the woods. The deer mouse that lives in Nebraska's light-colored Sand Hills, however, has gone from brunette to blonde so it can blend in and have a better chance at survival. It took thousands of years for these mice to change the color of their coats, which may sound like a long time, but when it comes to evolution, that's pretty quick!

One interesting case study is that of the Galápagos finches, about 14 species of bird that were studied by Darwin on the Galápagos Islands. Often referred to as "Darwin's finches," these birds look

very much alike. The most significant difference among them is the size and shape of their beaks. Every different beak evolved the way it did so as to be suited to a particular feeding task. When, in 1977, a drought hit the island, vegetation withered and the only seeds left were large and tough. The finches with deeper, stronger beaks were able to crack through these seeds, and many more of them survived than their smaller-beaked brothers. However, in the mid-1980s, during an especially rainy time, smaller, softer seeds flourished. The birds best adapted to eat them had smaller beaks and they fared much better.

Where have all the dull male peafowl (peacocks) gone? Well, female peafowl (peahens) choose their mates based on the color and brightness of their plumage. This means that peacocks with impressive tail feathers are able to find mates more easily. A few thousand years ago, there were many more males with dull feathers, but they kept getting passed over by the females and did not reproduce. Their numbers therefore began to dwindle. These days, they're quite rare.

Darwin's theory teaches us that an animal or plant that adapts to its environment and remains alive long enough to procreate will thrive. The dodo bird, which has gone extinct, was not lucky in this respect. A lack of predators for thousands, and maybe even millions, of years meant that the dodos never learned to fly. When humans finally arrived to their home on the island of Mauritius, the dodos had no way of protecting themselves and, in the 17th century, were wiped out. It isn't easy being on the wrong side of natural selection. Fortunately for us humans, the fish with the fleshy, leg-like fins came out on top.

adapt

a · dapt

Advanced Definition

transitive verb

1. to make fit or suitable for a particular need or condition; adjust.

They adapted the reading room so they could hold meetings there.

The school water fountains are adapted for children.

intransitive verb

1. to become adjusted.

The children of the immigrants adapted quickly to their new surroundings.

Spanish cognate

adaptar: The Spanish word *adaptar* means adapt.

These are some examples of how the word or forms of the word are used:

1. One by one, the other races have gone extinct. The hypothesized reasons range from an inability to **adapt** to climate change to murder at the hands of more advanced humans.
2. Zoe had specialized in behavioral ecology during her studies at university, so when she applied for a job at the zoo, she specified that she was very interested in the ways animals **adapt** their behavior to changing environmental factors.
3. Another way animals **adapt** to life in the rainforest is by camouflaging themselves to hide from predators.
4. Scientists feel that there are many possible reasons that led to the extinction of the Smilodon, all of which are highly debated. Some think it was due to climate change. As the air began to heat up quickly around planet Earth, animals needed to **adapt**.

evolution

e · vo · lu · tion

Advanced Definition

noun

1. the continuous modification and adaptation of organisms to their environments through selection, hybridization, and the like.
2. the theory or study that describes this process as the cause of species' existence and characteristics. (See Darwinian theory.)

   the dispute over evolution vs. creation
3. a gradual process of change and development that something goes through, usu. becoming more complex and sometimes better.

   the evolution of electronic weaponry

Spanish cognate

evolución: The Spanish word *evolución* means evolution.

These are some examples of how the word or forms of the word are used:

1. Before the breakup of Pangaea, many scientists believe, all of life was situated in one ecosystem, and did not have any reason to adapt to change. Once Pangaea broke up, it was possible for **evolution** to happen at an increased rate.
2. Charles Darwin, the famous biologist who first proposed the scientific theory of **evolution**, described the coral reef as an oasis in the desert of the ocean.
3. When the famous naturalist Charles Darwin, who helped develop the theory of **evolution**, visited the Galapagos Island in the 1830s, he made an interesting discovery about native birds.
4. Tiny bacteria used the sulfur from the vents to make food - a process called "chemosynthesis." Other animals, like worms and shrimp, then ate this bacteria. A whole ecosystem exists there. Finding this life made scientists reconsider the power of **evolution**.
5. Prehuman **evolution** has wound its way through two genera (groups of related species) during the past 5 million years. The first genus, Australopithecus, existed roughly 5 million to 2 million years ago. The second genus, Homo, arose 2.5 million to 2 million years ago.
6. Sexual selection is an example of natural selection. That's the principle that animals with advantageous traits are more likely to survive and pass those traits to the next generation. Natural selection drives **evolution**.
7. Hazen's background is studying minerals-solid, crystalline materials that form naturally through geological processes and make up rocks. He's using that knowledge to figure out how ancient minerals might have been involved in the **evolution** of the first primitive life-forms.

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reproduce

re · pro · duce

Definition

verb

1. to make a copy of.

   The designer made a model, and the company reproduced it.

2. to make a new plant, human, or animal. In humans, to reproduce is to produce children.

   Plants reproduce in a different way from humans.

Advanced Definition

transitive verb

1. to make a copy or duplicate of.

   The furniture maker reproduced a chair made hundreds of years ago.

2. to produce again.

   Can you reproduce that sound you just made?

3. to create (new plants or animals of the same kind) by means of a sexual or an asexual process.

4. to have a mental image of, or to bring to mind again.

intransitive verb

1. to go through a process of copying, duplication, or reproduction.

   This design will reproduce well.

2. to create offspring.

   Turtles reproduce by laying eggs.

Spanish cognate

reproducir: The Spanish word *reproducir* means reproduce.

These are some examples of how the word or forms of the word are used:

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1. All plants, animals and other living things **reproduce**, resulting in new offspring or organisms.

2. Natural selection is based on the idea that animals with specific biological traits well-suited to survive in an environment, will **reproduce** at a much faster rate than animals with biological traits that are poorly suited to an environment.

3. Charles Darwin outlined the idea of natural selection in his 1859 book, On the Origin of Species, where he explained there are certain characteristics that help an animal survive, such as a sharp beak that allows birds in the Galapagos Islands to better find and eat their food. These sharp-beaked birds survived long enough to **reproduce**, and their offspring had sharp beaks too.

4. In the habitat, there will be plants and trees also native to Africa, as well as rock formations (like caves) that replicate a lion's natural surroundings. Similarly, if you visit an aquarium, you can look through thick panes of glass to shark tanks, complete with large swimming turtles, rays and other fish that live peacefully among sharks. These are attempts to **reproduce** the conditions in which the animals we see on display evolved-in so doing, they highlight biodiversity.

Name: _____ Date: _____

1. What is natural selection?

A. the process by which humans evolved from fish and monkeys

B. the process by which species change as unsuccessful traits are passed on to the next generation

C. small changes in individual organisms that are not passed on to the next generation

D. the process by which species change as successful traits are passed on to the next generation

2. What does the author list and describe in the passage?

A. examples of natural selection in various species

B. how the dodo bird adapted to the invasive human population

C. the different wing sizes of Galápagos finches

D. how the Industrial Revolution affected London's human population

3. Peppered moths became darker colored because the dark moths were better suited to the sooty environment than the light moths. What details from the passage support this statement?

A. Male peacocks with impressive tail feathers are able to find mates more easily.

B. Deer mice are dark brown, which makes it easier for them to hide from owls and other predators in the dark soil of the woods.

C. The light moths could be easily seen by predators, while the dark moths were nearly invisible on dark backgrounds.

D. During the Industrial Revolution, London became polluted and the smog turned everything black.

4. Read the following sentences: "Another case that has to do with survival through camouflage involves the little deer mouse. Typically, deer mice are dark brown, which makes it easier for them to hide from owls and other predators in the dark soil of the woods. The deer mouse that lives in Nebraska's light-colored Sand Hills, however, has gone from brunette to blonde so it can blend in and have a better chance at survival."

Which of the following conclusions about deer mice is supported by the text?

A. Deer mice migrated from Nebraska to the woods.

B. The color of deer mice changes based on the environment.

C. Deer mice that are blonde will survive easier in the woods.

D. Owls do not hunt deer mice in Nebraska.

5. What is this passage mostly about?

A. Charles Darwin

B. the evolution of fish

C. natural selection

D. Galápagos finches

6. Read the following sentences: "An organism that develops a trait that helps it survive in its environment will have a better chance of reproducing and passing that trait on to the next generation. As a consequence, organisms with this helpful trait will become more prominent while other organisms of the same species die out."

As used in the passage, what does "prominent" most nearly mean?

A. widely seen

B. unpopular

C. scarce

D. large

7. Choose the answer that best completes the sentence below.

Female peacocks prefer to mate with males that have brightly colored plumage; _____, male peacocks with dull feathers have become quite rare.

A. however

B. finally

C. specifically

D. as a result

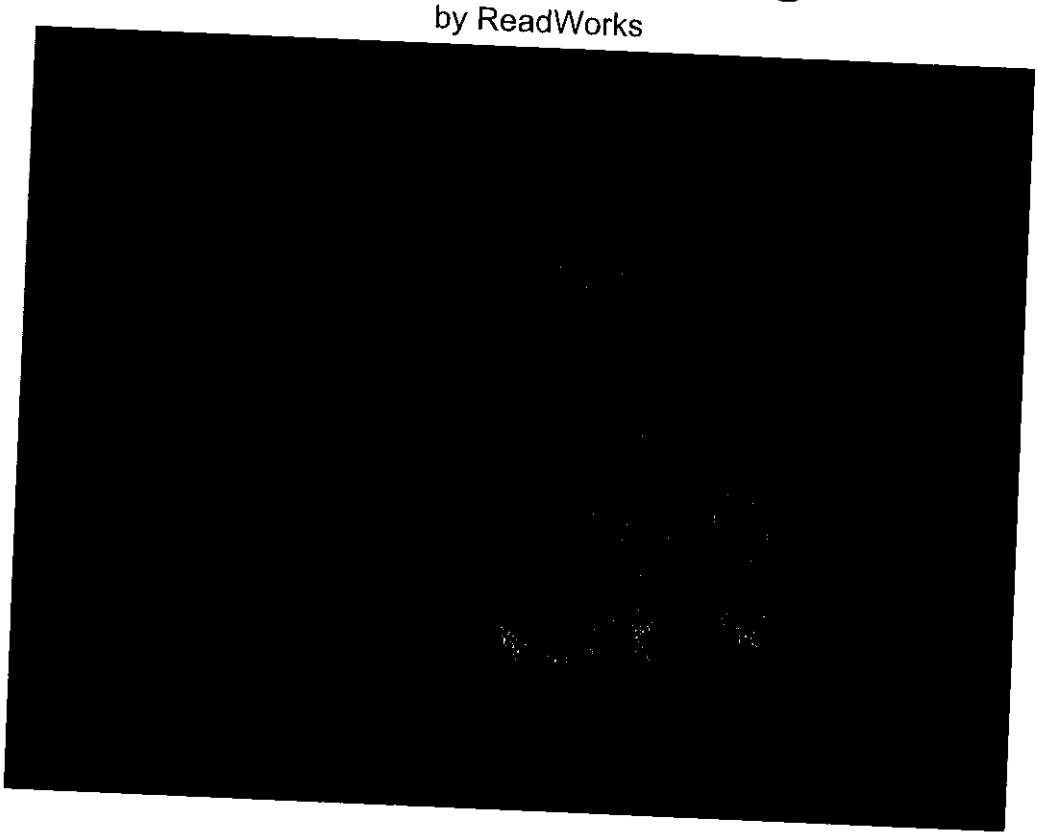
8. Why did the dodo bird never develop the ability to fly?

9. Fish that developed the ability to live out of water is one example of natural selection. Explain how another species has adapted via natural selection.

10. How can a particular trait be both advantageous and disadvantageous? Support your answer with details from the passage.

Selective Breeding

by ReadWorks



Charles Darwin, a British naturalist who lived in the 19th century, is best known for his book *On the Origin of Species*. In it, Darwin established the idea of evolution that is widely accepted today. He proposed that all species alive have evolved through adaptation to their surroundings. Natural selection, the process by which varied traits that increase survival and enable reproduction are passed down from generation to generation, is probably the most famous principle from the book. Darwin's book also addresses the perhaps less well-known concept of artificial selection. Today artificial selection is more often called "selective breeding." Selective breeding involves breeding animals or plants for a specific, typically desirable trait. By doing so, the desired genes from the plant or animal will be passed on to its offspring.

Dog breeding is one of the most common examples of artificial selection. You need only to tune into a dog show on TV to see the power of selective breeding at work. Crossbreeds, for example, are dogs born from parents of two different breeds. Mixed breeds are born from parents of more than two breeds, and pure breeds are born from a single breed. All three varieties are featured in most dog shows. Many of these dogs were bred to achieve certain desirable physical or behavioral traits.

Beyond the context of dog shows, dogs are a particularly interesting example of selective breeding. After all, we call dogs "man's best friend" for a reason. Dogs originally evolved from wolves. Eventually, humans were breeding different types of dogs to accomplish certain jobs. For example, some dogs were bred to hunt well. Others were bred with desired traits to herd cattle. But it was a trait known as "tamability," or a dog's ability to be tamed and live among people, that resulted in humans keeping dogs as pets. Now that many people live relatively quiet, domestic lives, how well a

dog can herd sheep is not of huge importance. What matters most is whether a dog makes a good companion.

Charles Darwin may have been the first to describe the process of selective breeding, but the practice may be more than 2,000 years old. The Romans are said to have practiced selective breeding among their livestock, favoring cows that produced a lot of milk. But it wasn't until the 18th century that farmers began practicing it on a large, industrial scale.

Today, farmers breed chickens to have extra-large breasts and to lay a lot of eggs. A wild fowl-a chicken that lives in the woods-lays between 20 and 30 eggs per year. In contrast, a chicken born out of selective breeding can lay as many as 300 eggs per year.

In the same way that chickens are selectively bred for having more meat and laying a greater amount of eggs compared to wild chickens, cattle are often selectively bred either for more meat or for more abundant milk production compared to cattle in the wild. Over the course of the 1700s, the size of bulls sold for slaughter increased dramatically-from around 300 pounds (about 140 kilograms) to nearly 800 pounds (about 360 kilograms)-as a result of selective breeding. Also as a result of selective breeding, the dairy cow, which does not display a lot of girth or muscle, can produce enough milk for 10 calves. One can identify a dairy cow by its udders, which can hold over 5 gallons (over 19 liters) of milk.

Even though people selectively breed to yield animals with desired traits, there are dangers to selective breeding. Temple Grandin, an animal welfare advocate, notes that breeding animals for size and strength interferes with natural animal processes. Breeding roosters for muscle, for example, can make them top-heavy and unsteady on their feet, interfering with their courtship dances. This, in turn, can alienate them from hens.

Speaking of hens, what about those that were bred to lay 300 eggs per year? Laying one egg a day makes a hen's bones brittle, since the eggs soak up the bird's calcium supply. And what about so-called broiler chickens-the ones that are bred for their large breasts? Often, their bodies grow so fast that their skinny legs can't support them.

Cows required to produce enough milk for 10 calves tend to burn out quickly. Cows not subject to selective breeding can live up to 30 years without burning out. But prolific dairy cows tend to make it just four or five years before they are considered worthless, and then they are sent to be slaughtered.

Selective breeding comes with both benefits and drawbacks. Think of all the joy that dogs have offered humans in the form of companionship over the last 100 years. Selective breeding is to thank for man's best friends. And yet, the pain and suffering that livestock endure makes us think twice. It is important to keep in mind that, in some cases, the negative consequences of selective breeding may outweigh the positive.

artificial

ar · ti · fi · cial

Definition

adjective

1. made by people; not natural.

Those flowers are artificial, not real.

Advanced Definition

adjective

1. created by human beings.

Many pilots get a large part of their training under artificial conditions.

Most artificial fibers for carpets are less expensive than natural fibers.

2. created to imitate something natural.

They play on artificial grass.

Do you ever use an artificial sweetener in your tea?

3. not true or sincere; contrived; forced.

The air seemed filled with artificial laughter.

Her apology sounded artificial to me.

Spanish cognate

artificial: The Spanish word *artificial* means artificial.

These are some examples of how the word or forms of the word are used:

1. In October 1957, the Soviet Union launched Sputnik 1, the first **artificial** satellite in space.
2. Since then, Yeboah has been fitted with a prosthetic, or **artificial**, leg, and has competed in sporting events around the world.
3. Doctors saved a man named Barney Clark by giving him an **artificial** heart. Clark survived with the heart for 112 days.
4. Libbrecht takes snapshots of both real and **artificial** snowflakes to learn more about how they

get their shapes. Something that is artificial is fake.

5. Most of the time, she says, a treat flavored with an **artificial** sweetener is a better choice than a sugary one. That goes double for kids with diabetes, who have to watch their sugar intake.

6. Exercise releases endorphins and endocannabinoids into the bloodstream. Those body chemicals have effects that are similar to those of **artificial** sources: Endorphins produce effects like those of opiates, and endocannabinoids create effects similar to those of cannabis, or marijuana.

7. As the film plays, the theater's seats rumble with the cannon fire of major battles. **Artificial**, or fake, snow even falls from the ceiling as the film shows Washington crossing the Delaware River in a sneak attack on British forces in 1776.

8. Two sunken tugboats, tons of concrete, and some military tanks are also being used to build the reef. Because this reef is being built out of human-made objects, it is known as an **artificial** reef.

breed

breed

Advanced Definition

transitive verb

1. to produce (offspring); give birth to.

   The healthy animals will soon breed offspring.

2. to cause or encourage to reproduce.

   Her family breeds racehorses.

3. in genetics, to fertilize or pollinate under controlled conditions in order to develop or improve a strain.

   These organisms will be bred in the laboratory.

4. to beget or engender; cause.

   Oppression breeds revolution.

   Violence breeds revenge.

5. to bring up or educate; rear.

   These children were bred to take their place in a structured and privileged society.

intransitive verb

1. to produce offspring.

   It is hoped that the newly introduced polar bears will breed in the zoo.

2. to be produced.

   Fear breeds in violent neighborhoods.

noun

1. a group of animals within one species, having relatively unvaried physical characteristics, developed under controlled conditions by man.

   The poodle is a breed of dog originally raised as a retriever of game birds from water.

2. a type, kind, or variety.

He represents a new breed of environmental activist.

These are some examples of how the word or forms of the word are used:

1. The humpback whale comes to the Great Barrier Reef every winter to **breed** and give birth to its young.
2. Mei Xiang and Tian Tian have produced only one surviving cub. Why is it so difficult to **breed** giant pandas in captivity?
3. The goal of the reintroduction program is to encourage the birds to nest and **breed** in the region, once again making it their home.
4. Thumbelina is a miniature horse. She is also a dwarf for her **breed**, making her extra small.
5. As the populations of wild animals dwindle, conservationists are hoping that they can **breed** animals in zoos and later release them into the wild.
6. Males and females cohabit only during **breeding** time. Offspring live with their mothers for up to 18 months. From then on, their existence is solitary.
7. Zoos also try to keep animals that are endangered. There are many programs that work to **breed** endangered animals.
8. **Breeding** has eliminated some wolf behaviors to make dogs better pets.
9. He was the last of a dying **breed** of men who refused to let machines change their lives.
10. The smallest is a pony the size of a big dog, while the largest is a draft horse-a **breed** so strong it's often used to pull plows across fields.

selection

se · lec · tion

Definition

noun

1. something or someone selected.

   Maya is our selection for team captain.

2. a group from which things or people may be selected.

   The market offers a large selection of vegetables.

Advanced Definition

noun

1. an act, instance, or process of selecting, or the condition of being selected.

   His selection of a tie for work was always done with impatience.

   No one could understand the boss's selection of this person for the job.

   The selection of class president is done by a vote.

   She was surprised at her selection for this honor.

2. something or someone selected.

   She is this year's selection for the award.

   He wasn't really happy with his selection of dessert.

3. a group from which things or people may be selected.

   This store has a large selection of vegetables.

4. in biology, the process by which one organism survives over another; natural selection.

Spanish cognate

selección: The Spanish word *selección* means selection.

These are some examples of how the word or forms of the word are used:

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1. Natural **selection** is a process that drives evolution, favoring the fittest forms of living things.
2. In 2006, the major fast-food companies signed a voluntary agreement to help promote their healthier menu **selections**.
3. Female choice is only one kind of sexual **selection**. Another is male competition-males battling one another for access to females. Picture two elk duking it out with their antlers.
4. Hopefully, these types of robots will enter our lives soon. The Cornell researchers will just have to keep brainstorming different types of robot bodies, so we can always have the best **selection** of traits to pick from.
5. The difference between natural **selection** and artificial selection is simple: natural selection occurs in nature, and artificial selection is done by people. Artificial selection started when farmers realized they could improve their livestock and crops by only breeding together the very best of what they had.
6. Everything about them, their fur, their feet, and the shape of their beaks, has been determined by natural **selection**. Nature has tried many variations. The ones that succeeded, conferring individuals some advantage in their environment - for instance, making eating or hiding easier - spread and keep spreading wildly.

Name: _____ Date: _____

1. According to the text, what is artificial selection most often called?

A. natural selection

B. evolution

C. selective breeding

D. desirable traits

2. What does the text describe?

A. experiments completed to analyze the differences and similarities between animals bred for certain traits and animals not bred for certain traits

B. the attitudes of different societies to selective breeding

C. different examples of animals that have evolved through adaptation to their surroundings

D. different examples of selective breeding and the impact of selective breeding on some animals

3. The text explains that selective breeding involves breeding animals or plants for specific desirable traits. For example, humans bred different types of dogs to accomplish certain jobs. Farmers breed chickens for having more meat and laying a greater amount of eggs. Cattle are often selectively bred either for more meat or for more milk production. The text also notes that breeding animals for size and strength interferes with natural animal processes.

Based on this information presented in the text, who benefits from the traits different animals are bred for?

A. humans breeding the animals

B. the animals being bred by the humans

C. both the humans breeding the animals and the animals being bred by the humans

D. animals not being bred by humans

4. The author includes examples of broiler chickens whose legs can't support their bodies and dairy cows that burn out quickly. How do these examples support the author's statement that "selective breeding comes with both benefits and drawbacks"?

A. These examples highlight the benefits.

B. These examples highlight the drawbacks.

C. These examples highlight both the benefits and drawbacks.

D. These examples highlight the benefits of natural selection.

5. What is this passage mostly about?

A. breeding for "tamability" in dogs

B. the history of selective breeding from the Romans to today

C. the advantages and disadvantages of selective breeding

D. the problems associated with selective breeding in industrial farms

6. Read the following sentence: "Even though people selectively breed to **yield** animals with desired traits, there are dangers to selective breeding."

What does "**yield**" mean as used in the text?

A. to produce

B. to surrender

C. to endanger

D. not worth much money to remove

7. Choose the answer that best completes the sentence below.

Temple Grandin, an animal welfare advocate, notes that breeding animals for size and strength interferes with natural animal processes. _____, breeding roosters for muscle can make them top-heavy and unsteady on their feet, interfering with their courtship dances.

A. For example

B. As a result

C. Most importantly

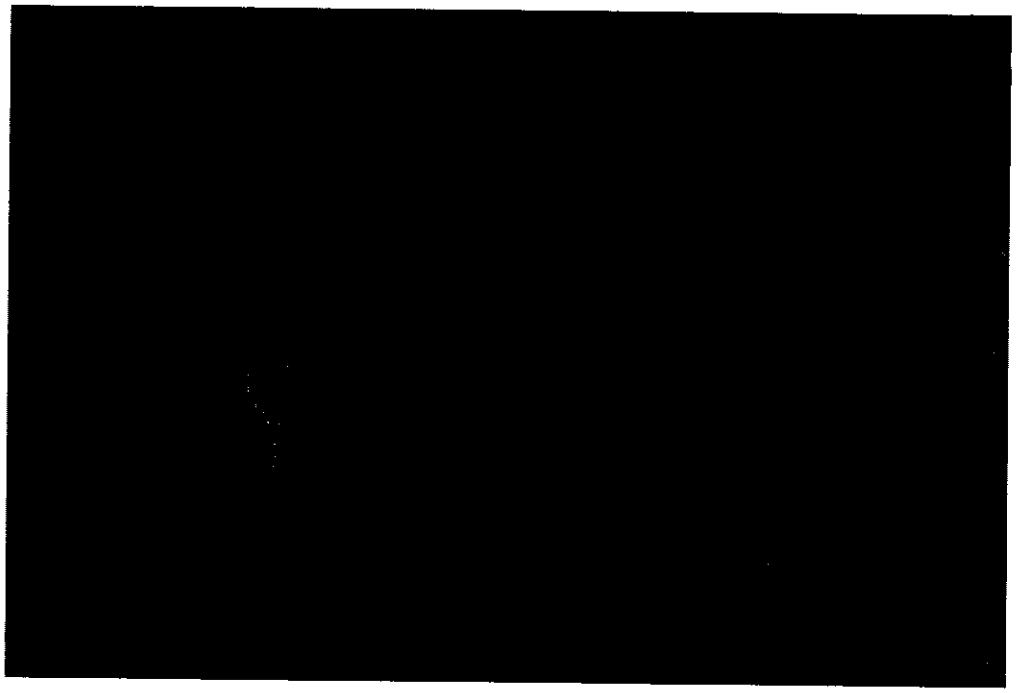
D. In contrast

8. Give an example of a positive effect of selective breeding.

9. Give an example of a negative effect of selective breeding.

10. How can the author's view of selective breeding best be described? Use information from the text to support your answer.

Meet the Microbes



viridans group streptococcus bacteria

Germs are all around us. They're in the soil, in the air, and in the water. Germs are even found on us and in us! They live on your hair, skin, teeth, and in your stomach. But even if you look carefully, you can't see them. Germs are so tiny that they can only be seen with the help of a microscope. This is why germs are sometimes called *microorganisms* or *microbes*.

Friends Or Enemies?

Germs have a bad name because they can cause disease. But most of them are harmless. Some germs actually help us. Germs in our throats protect us by making substances that keep other, more harmful germs from invading our bodies. And there are germs in our stomachs that help us digest our food.

But some germs do cause disease, and sometimes even death. Here are four of the common types of disease-producing germs.

1. Viruses

Viruses are the smallest of germs.

You need a special microscope called an electron microscope to see them. Viruses cause many mild illnesses such as the common cold. But they also cause more serious, even deadly, diseases, such as AIDS and SARS (severe acute respiratory syndrome).

Viruses make you sick by invading the cells of your body. They attach to your cells and *replicate* (REH-plih-kate; make more virus cells). The new virus cells in turn attack more of your body cells. Eventually, there are enough virus cells floating around in your body to make you feel ill. You may have symptoms such as a fever, sore throat, runny nose, or a cough.

2. Bacteria

Bacteria are larger than viruses. Unlike viruses, bacteria do not need to attach to cells to replicate. They can multiply on their own.

Bacteria were one of the first life forms to appear on the earth billions of years ago. They are very tough germs. Some can live in boiling hot temperatures or freezing cold temperatures. But most like it best where it is pleasantly warm and moist. This is why they love to live on and in your body. In fact, every surface of your body has bacteria living there. The harmless bacteria that live on and in our bodies are called *normal flora*.

There are many other bacteria that cause disease. Strep throat is caused by bacteria. Eating food that has harmful bacteria growing in it may cause food poisoning.

3. Fungi

When you think of fungus, you may think of mushrooms. Mushrooms are one of thousands of different types of *fungi* (FUN-jigh). Most fungi do not cause disease. In fact, many of them are helpful to us. One kind of fungus, yeast, is used to make some soft drinks and candy. Yeast is also used in breads, rolls, and pizza crust. One of the most important uses of fungi is in making antibiotics such as penicillin. Antibiotics are medicines that kill harmful bacteria.

Some types of fungi can cause infections, though. Ringworm and athlete's foot are caused by fungi that grow on the skin. Molds are a kind of fungus that can cause allergies and asthma complications.

4. Protozoa

Protozoa are germs that live in almost all soil, including the hot desert sand. They live in all water too. But most of the protozoa that live in water do not cause disease.

Sometimes water becomes contaminated with protozoa that do cause disease. The protozoa get into the water through the waste of sick people or the droppings of animals. Then those people who drink the contaminated water can get sick too. One kind of protozoan disease spread through water is *amoebic dysentery* (uh-ME-bik DIS-un-tair-ee), which causes diarrhea.

The Invaders

In order to cause disease, harmful germs must first find a way to get into the body. Most often, they enter through the eyes, nose, or mouth. Germs can enter your body when you touch a sick person's hands or something they have just touched, like a doorknob or a faucet handle. Then when you touch your eyes, nose, or mouth, the germs can get into your body. If someone has a cold and sneezes or coughs into the air around you, you can breathe cold germs into your nose or mouth. Germs can also enter through a cut in your skin.

Germ Busters

With all of the germs living on and around us, it is a wonder we don't get sick more often! One of the reasons most people stay healthy is their immune system. Your immune system is on duty all of the time to protect you against invading germs. It does this by killing harmful germs as soon as they enter your body.

But sometimes the immune system is not strong enough. It may not be able to kill all of the germs. Then you may become ill. If the disease is due to bacteria, the doctor may give you antibiotics to help you get better. Antibiotics don't work against viruses.

In Your Hands

You will not be able to prevent all illnesses caused by germs. But there are some things that you can do to reduce your chances of getting sick. Paul McHenry, M.D., works with people who have diseases or infections caused by harmful germs. Dr. McHenry says, "The most

important thing you can do to avoid infections is to wash your hands."

This may sound too easy. But if you think about it, it makes sense. Washing your hands often will wash away many of the harmful germs that you pick up from touching other people or objects. Then you will not be able to transfer the germs to your eyes, nose, mouth, or to other people.

When should you wash your hands? Here are the most important times:

- Before and after preparing food
- Before you eat
- After you use the bathroom
- After handling animals or animal waste
- When your hands are dirty

Of course, you should wash your hands more often when someone in your family is sick.

Added Protection

Here are some other things you can do to help prevent disease caused by germs:

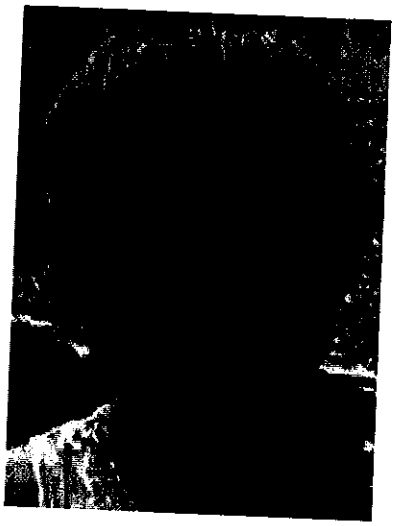
Get immunized. Nobody likes shots. But getting the recommended shots can keep you from catching some diseases caused by germs. Some of the diseases that can be prevented by immunization are measles, mumps, rubella (German measles), tetanus, whooping cough, and hepatitis.

Avoid sharing. Sharing can be good. But sharing germs is not! Avoid sharing utensils, drinking glasses or bottles, and toothbrushes.

Develop good health habits. Keep your immune system healthy and ready to fight invading germs by practicing good health habits. Get enough sleep, eat lots of healthy foods such as fruits and vegetables, and exercise.

Menacing Meningitis

by Guy Falotico



Courtesy of Lauren Leeber

You wouldn't know it now, but Lauren Leeber of New York was once very sick. She got sent home from day care on the day before Halloween, and by the next day, she was in the hospital with a type of the disease called *meningitis,* fighting for her life. It got so bad that she lost a hand, some fingers, and parts of her legs. Later, she needed a new kidney.

Although it's been years since Lauren came down with meningitis, she recalls enough from that time to know that what she went through was very difficult. "I would not wish meningitis on my worst enemy," she says.

What Is It?

Meningitis is a disease that involves swelling of the meninges, which are tissues that cover your brain and spinal cord. The disease can be *contagious*. That means it can be passed from infected people to others. Meningitis can spread through contact with fluids from an infected person's mouth or throat. For example, you may get the disease if an infected person coughs or sneezes on or close to you.

Meningitis is hard to diagnose because its early symptoms are similar to those of the flu. They include fever, headache, stiff neck, and throwing up. Rashes are also common. But if

meningitis is not picked up on by a doctor quickly, serious problems-even death-can occur in just a few hours.

When meningitis is caught early enough, people have a greater chance of beating it. For example, take Kaeley Hamilton, of Florida, who was 8 when she got sick with meningitis.

"I had all the typical symptoms of the flu, but the fever was really high and made my mom nervous, so we went to the doctor," recalls Hamilton. "They caught the meningitis early."

There are different types of meningitis, but two types are more common. One, *viral meningitis,* is caused by a virus. There is no medicine to treat most viral meningitis cases, but viral meningitis is usually not as severe as the other common type. People sick with viral meningitis usually get better on their own. *Bacterial meningitis* is the more dangerous form, especially when it is caused by bacteria called *meningococcus.* It is treated with antibiotics. But those drugs can work only if the disease is caught early.

Meningococcal meningitis is rare. It strikes fewer than 5,000 Americans each year. Still, teens and young adults have a greater chance of getting the disease compared with many other people. That's because they are more often in crowded settings that can give this type of meningitis a chance to spread, such as schools, college dormitories, or summer camps.

Kayla St. Pierre, of Massachusetts, had meningococcal meningitis when she was 10. "One day I felt sluggish at school, and the nurse said I had the flu and sent me home," says St. Pierre. "The next morning I had a rash all over my body. I didn't know what it was, but my parents knew something was wrong, so we went to the emergency room."

Once she got there, they found out what was wrong. But the disease had already taken hold. Both of her legs needed to be *amputated*, or removed, at the knee. She lost a few fingers too. St. Pierre went through months of surgeries to repair the skin damage from the rash, and she was in physical therapy to strengthen her muscles.

About 15 percent of all of the people who survive meningococcal meningitis end up with other health problems, such as brain damage, kidney disease, or damaged arms and legs.

Fighting Back

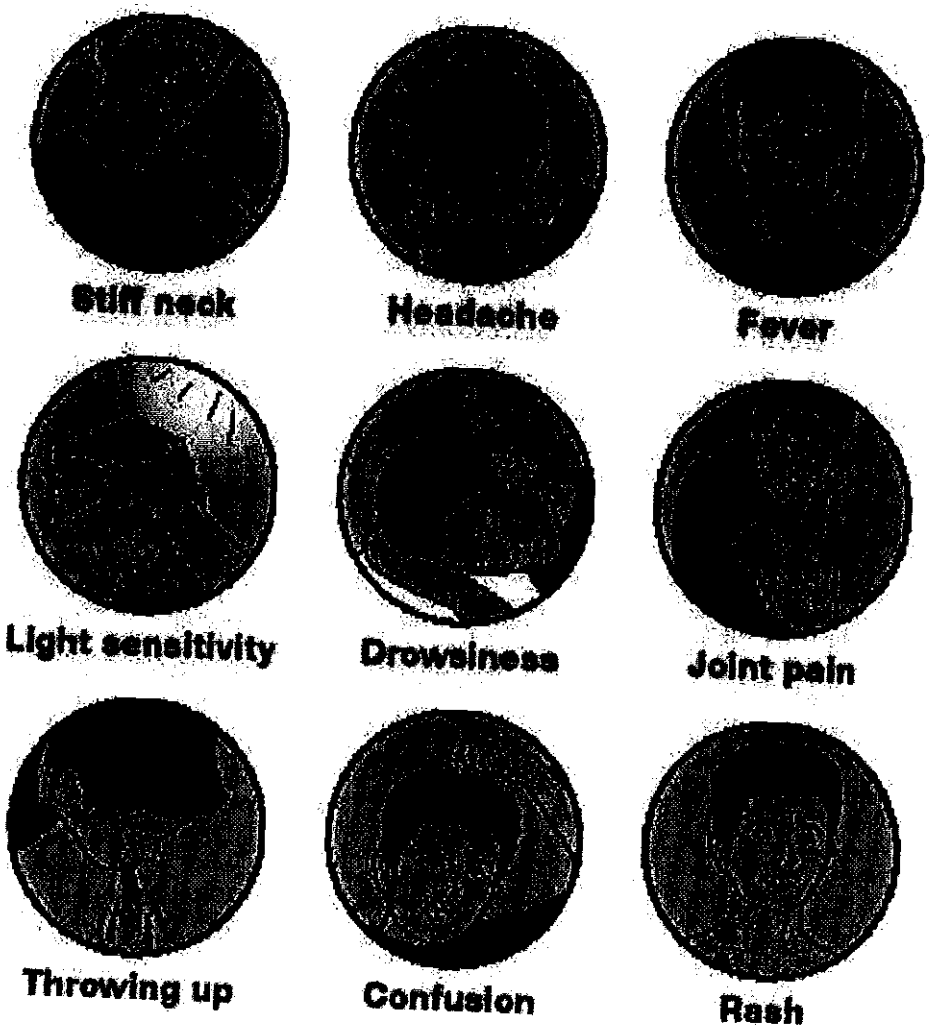
The good news is that meningococcal meningitis can be prevented with a vaccine. Health experts recommend that most people between the ages of 11 and 18 get the shot.

Not everyone should get vaccinated, however. Some people have allergies to the vaccine's ingredients. But for almost everyone else, the benefits of getting the vaccine far outweigh the risks.

"The most important message is to get vaccinated," says Dr. John Sinnott. He is an infectious disease specialist at the University of South Florida in Tampa. Vaccination against meningitis is "absolutely essential," he says, "and one of the greatest advances in medicine."

Meningitis Signs

It can be hard to tell whether a person has meningitis. That's because the symptoms, or signs, of the disease can look similar to other illnesses. Meningitis symptoms are serious. They include:



Jason Lee

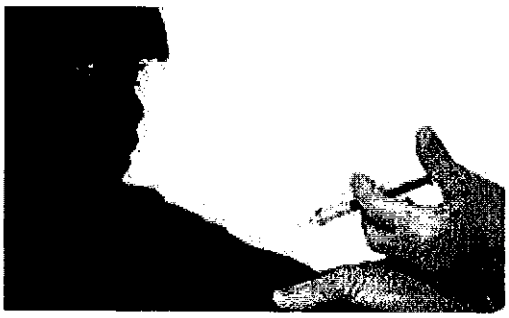
How to Protect Yourself

The best way to avoid meningitis is by getting the vaccine. Here are some other ways to try to keep from being infected.

- **Don't share water bottles,** drinking glasses, or eating utensils with friends.
- **Don't share lip balms** or lip glosses.
- **Wash your hands often,** especially before eating. Use warm water and soap, and lather for at least 20 seconds.
- **Eat healthy foods** for a strong immune system.
- **Get enough sleep each night** to help your immune system.

What Is a Vaccine?

A vaccine is a shot that prevents a certain disease. It's made with very small parts of the germs it was created to fight. The vaccine teaches your body how to fight the disease for itself. Some types of vaccines need only one shot to protect you for the rest of your life. Other types, such as the one for seasonal flu, change from year to year and need to be given annually.



iStock

Name: _____ Date: _____

Use the article "Meet the Microbes" to answer questions 1 to 2.

1. How do harmful germs most often enter a person's body?

2. Why might it be a good idea to wash your hands more often when someone in your family is sick? Support your answer with evidence from the article.

Use the article "Menacing Meningitis" to answer questions 3 to 4.

3. Meningitis is a contagious disease. How is this disease usually passed from person to person?

4. Why is it important to prevent meningitis, or to recognize that you have it early on in the sickness?

Use the articles "Menacing Meningitis" and "Meet the Microbes" to answer questions 5 to 6.

5. How can you help prevent yourself from getting sick? Use evidence or examples from both texts in your answer.

6. Based on these texts, if you are sick, how could you help prevent other people from catching your disease? Use evidence from both texts to support your answer.

Name: _____

Hurricanes: Nature's Wildest Storms

by Erin Ryan

You may already know that hurricanes are major tropical storms that can cause devastating waves, wind, and rain. They happen during "Hurricane Season," which is from June 1st until November 30th in the Atlantic Ocean and from May 15th until November 30th in the Pacific Ocean. A hurricane that forms in the Atlantic Ocean begins as tropical disturbance. This is a large area of windy thunderstorms that forms over the warm ocean, near the equator. When the storms grow larger, rains and wind pick up, and the "disturbance" can develop into a full-fledged hurricane.

Stages of a Hurricane: Simple Storms Grow Into Giants

A storm progresses through four different stages before it is actually considered a hurricane. First is a tropical disturbance, which has thunderstorms and rotating winds, or what scientists call cyclonic circulation. Next is a tropical depression, which is similar to a tropical disturbance, but has winds between 23 and 39 miles per hour. A tropical storm is the next level, which has stronger wind speeds between 40 and 73 miles per hour. Once winds reach 74 miles per hour, the storm is officially classified as a hurricane. The winds pick up energy from the warm surface ocean water.

Hurricanes rotate counterclockwise in the Northern Hemisphere and clockwise in the Southern Hemisphere. Hurricanes can vary in size and can grow to have a diameter of up to 600 miles, which is longer than the entire state of Florida!

As a hurricane crosses over land, it begins to dissipate, or break apart and reduce in strength. This is because it is no longer over the warm ocean water that it needs for energy. At this point, a hurricane can still cause a lot of damage because of high winds, rain, and flooding, but unless it makes its way back over the open ocean, it is downgraded from a hurricane back to a tropical storm.

Hurricane Dangers

When a hurricane makes landfall, it can be very dangerous along coastlines because of a storm surge, where ocean waters rush onto land. When this is combined with heavy rainfall, there can be devastating floods.

The center of a hurricane is called the eye. While most of a hurricane contains dangerously strong winds, the eye is actually a calm area in the storm. When the eye of a hurricane passes over land, people might think that it's over, but before long the wind and rain increase again as the second part of the hurricane moves through.

Name: _____ Part 2

Furious Hurricanes

by Erin Ryan

Predicting Hurricanes and Protecting People!

What's the difference between a hurricane watch and a hurricane warning? During a hurricane watch, there is the possibility that a hurricane will make landfall within 36 hours, and people are advised to prepare for a possible storm ahead. When a hurricane warning is issued, a hurricane is definitely on the way, and will make landfall within 24 hours.

The National Hurricane Center, located in Miami, Florida issues watches and warnings before hurricanes approach the coastline. They use computers with satellite images to figure out where and when a hurricane will come on shore. Sometimes, if a hurricane is strong enough, officials may require citizens to evacuate, or leave their homes, and travel to a safer place.

Can you imagine flying a plane through a hurricane? If you're a hurricane hunter, it's your job! Hurricane Hunters, who work for the Air Force Reserve, fly airplanes called WC-130's on weather missions to help the National Hurricane Center make predictions about hurricanes, and gives them the information needed to issue accurate warnings. Pilots determine how fast the winds are blowing, how big the hurricane is, and which direction it's moving. This helps people to be better prepared for hurricanes as they approach shore.

Categories of Hurricanes

There are five categories of hurricanes, which are based on wind speeds. The categories help to make people aware of how much damage a hurricane may cause because the greater the wind speed, the more dangerous the storm.

Category 1 – Winds 74 – 95 mph
Winds snap branches, uproot trees, and overturn mobile homes that aren't secured to the ground.

Category 2 – Winds 96 -110 mph
Winds are strong enough to destroy weak doors and windows, and create 8-foot ocean waves.

Category 3 – Winds 111 - 130 mph
Intense winds cause major flooding near the coast, which can destroy homes and businesses.

Category 4 – Winds 131 - 155 mph
Winds are strong enough to destroy some buildings. Causes heavy damages to building roofs.

Category 5 – Winds greater than 155 mph
Buildings along the shorelines are washed away. Buildings can be completely destroyed.

Name: _____ Part 3

Wild, Wicked Hurricanes

by Erin Ryan

What's Your Name, Hurricane?

Hurricanes and tropical storms are given names to help people identify them. Scientists refer to hurricanes and storms by name as they track them across the ocean.

Before 1953, hurricanes were not given official names. From 1953 through 1978, hurricanes were only given female names, like Isabel, Camille, Claudette, and Wilma. Beginning in 1979, hurricanes were given the names of both women and men. Today, the names alternate by gender, and they are named alphabetically.

For example, in 2010, storms were named as follows:

Alex (male)
Bonnie (female)
Colin (male)
Danielle (female)
Earl (male)
and so on...

There are six different lists of names that change, so the same names are used every six years. The only way that a new name is added is when a hurricane has been particularly deadly or costly and the name is retired, then replaced with a new one.

Hurricane Katrina: One of the Deadliest Storms in History

Hurricanes can leave behind lots of destruction. In 2005, Hurricane Katrina ripped through Louisiana, Alabama, Mississippi and Texas. This was the sixth windiest hurricane on record, and it was one of the deadliest hurricanes in history.

Many people are surprised to learn that Katrina's wind didn't cause most of the damage. The wind had caused levees in New Orleans to break, (Levees are embankments that hold water away from cities.) When the levees broke, water from the Gulf of Mexico rushed into the low-lying land. Over 80% of the city of New Orleans was buried in flood water.

Hurricane Katrina hurricane took 1,833 lives and caused over 76 billion dollars in damages.

Tornado versus Hurricane: Which is stronger?

Hurricanes can cover an area hundreds of miles wide, while tornadoes are almost always less than a mile wide. While they are smaller than hurricanes, tornado winds can be stronger and more powerful. Some tornadoes have winds of over 300 miles per hour, while hurricanes rarely exceed 200 miles per hour.

Name: _____ Part 4

Wild, Wicked Hurricanes

by Erin Ryan

Hurricane Safety Tips

There is no way to stop a hurricane or make it change direction, so if you ever find yourself in the path of a hurricane, be sure to be follow any emergency procedures that your community has in place. Here are some other hurricane safety tips.

- Be sure you have a battery-powered radio, batteries, fresh drinking water, and a supply of food. Also, if anyone in your family needs special medication, be sure you have a full supply.
- Tell neighbors, friends, and family members your emergency plans. Tell them where you'll go if you need to leave your home.
- If you live near the ocean, in low-lying area, or in a mobile home, leave your home and travel inland to a safe place. You could stay with a friend or family member, in an inland hotel/motel, or in an emergency shelter area.
- Keep listening to the radio if a hurricane is approaching. If local authorities instruct you to evacuate, do it immediately.
- Before a hurricane arrives, be sure your family's car is filled with fuel. If the electricity goes out, the fuel pumps at gas stations will not work.
- Stay inside during the storm. You could be seriously injured if you go outside.

But what about my pets?

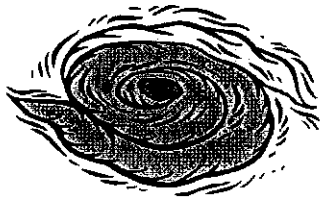
We should always take good care of our pets and keep them indoors during a storm. If you have to evacuate your home, remember that pets are not allowed in most emergency shelters and hotel rooms. If you leave a pet behind, be sure you set out plenty of food and water for them. Also, be sure they're wearing a collar with your family's name and phone number on it.

The Five Worst Hurricanes in U.S. History

	Hurricane	Year	State(s) Hit	Category	Death Toll
5.	Sea Islands	1893	South Carolina, Georgia	3	1,000
4.	Cheniere Caminanda	1893	Louisiana	4	1100
3.	Hurricane Katrina	2005	Louisiana, Mississippi, Texas, Alabama	5	1,833
2.	Lake Okeechobee Hurricane	1928	Florida	4	2,500
1.	Great Galveston Hurricane	1900	Texas	4	8,000

Name: _____ Questions - Set A

Hurricanes



1. Complete the chart by listing the correct category for each hurricane.

Hurricane Name	Top Wind Speed	Category
Hanna	102 mph	
Arthur	160 mph	
Fey	80 mph	
Cristobal	129 mph	

2. Explain the difference between a hurricane watch and a hurricane warning.

_____

_____

_____

3. Billy tells his teacher that his grandfather lived in the state of Florida in 1969 and survived Hurricane Michael. His teacher does not believe him. Why not? Use information from the hurricane packet to support your answer.

_____

_____

Name: _____ Questions - Set B

Hurricanes

1. Which of these hurricanes had the strongest winds?
   - **a.** Sea Islands Hurricane, in 1893
   - **b.** Hurricane Katrina, in 2005
   - **c.** Lake Okeechobee Hurricane, in 1928

2. What does a hurricane hunter do?
   - **a.** use computers with satellite images to predict the paths of hurricanes
   - **b.** issue official watches and warnings to notify people of danger
   - **c.** fly airplanes through hurricanes

3. Which sequence of storm stages is in the correct order?
   - **a.** tropical depression, tropical disturbance, tropical storm, hurricane
   - **b.** tropical disturbance, tropical depression, tropical storm, hurricane
   - **c.** tropical storm, tropical depression, tropical disturbance, hurricane

4. What would you observe if you were in the eye of a hurricane?
   - **a.** strong, spinning winds
   - **b.** calm or very little wind
   - **c.** heavy rain, thunder, and lightning

5. What caused the most destruction during Hurricane Katrina in 2005?
   - **a.** floods due to breaking levees
   - **b.** houses being blown away
   - **c.** people going outdoors during the storm

6. In 2011, the first tropical storm will be named Arlene, then Brett, then Cindy, then Don. Which storm name might come next?
   - **a.** Eric
   - **b.** Emily
   - **c.** Olivia

7. What happens when a hurricane crosses over land?
   - **a.** it breaks apart and forms tornadoes
   - **b.** it moves more quickly
   - **c.** it loses strength

Name: _____ Questions - Set C

Hurricanes

Tell whether each statement is true or false.

_____ **1.** When a hurricane warning is issued, a hurricane will definitely hit landfall within 24 hours.

_____ **2.** From 1953 through 1978, all tropical storms were given male names.

_____ **3.** The Great Galveston Hurricane hit Florida in 1903.

_____ **4.** Hurricanes form over warm, ocean water.

_____ **5.** Hurricanes begin to lose strength when they hit land.

_____ **6.** More people were killed by Hurricane Katrina than by the Great Galveston Hurricane.

_____ **7.** Hurricanes in the Northern Hemisphere rotate counterclockwise.

_____ **8.** The center of a hurricane is called the eye.

_____ **9.** Hurricanes are given names and tropical storms are not.

_____ **10.** Category 4 hurricane has winds over 155 miles per hour.

_____ **11.** Mobile homes are a safe place to stay during a hurricane.

_____ **12.** Hurricanes were not given official names before 1953.

_____ **13.** Hurricane Katrina flooded the city of New Orleans in 2005.

_____ **14.** Scientists can make hurricanes change direction.

_____ **15.** A levee keeps ocean water away from cities.

Name: _____ Questions - Set D

Hurricanes

Complete each statement with a word from the box at the bottom of the page. Not all words from the box will be used.

1. In the Atlantic Ocean, hurricane season runs from _____ 1st through November 30th.

2. A tropical _____ has winds between 29 and 39 miles per hour.

3. A tropical _____ has winds between 40 and 73 miles per hour.

4. In the Southern Hemisphere, hurricanes rotate _____.

5. Hurricane names are reused every _____ years.

6. Hurricane Katrina flooded the city of _____.

7. During a hurricane _____, there is a possibility that a hurricane will reach landfall.

8. During a hurricane _____, a hurricane will definitely reach landfall.

9. The National Hurricane Center is located in the city of _____

10. If a hurricane is strong enough, citizens might be required to _____, or leave their homes.

Word Box

four	June	Louisiana	Miami	clockwise	disturbance
ten	May	New York	Florida	counterclockwise	depression
six	April	New Orleans	storm	evacuate	tornado
watch	warning	satellite	weather	category	eye

Name: _____ Questions - Set E

Hurricanes

Match each vocabulary word on the left, to its definition on the right.

1. _____ levee
2. _____ hurricane hunter
3. _____ equator
4. _____ tropical depression
5. _____ tropical storm
6. _____ hurricane
7. _____ dissipate
8. _____ coastline
9. _____ evacuate
10. _____ tornado

a. area where the ocean meets the shore

b. to be forced to leave a home because of danger

c. a wall or embankment that holds ocean water away from a city

d. a pilot who flies airplanes through hurricanes to measure the wind speed

e. an area of swirling thunderstorms over the ocean with wind speeds between 23 and 39 miles per hour

f. an area of thunderstorms over the ocean with wind speeds between 40 and 73 miles per hour

g. a giant wind and rain storm that forms over warm water with winds between 74 and 155 miles per hour

h. an imaginary line around the center of the Earth

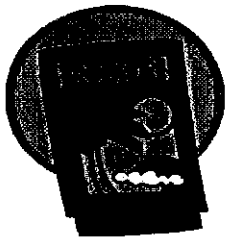
i. a spinning storm that is less than one mile wide, with swirling winds that can reach over 300 miles per hour

j. to break apart and reduce in strength

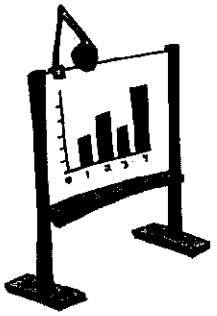
Name: _____ Questions - Set E

Hurricane Projects

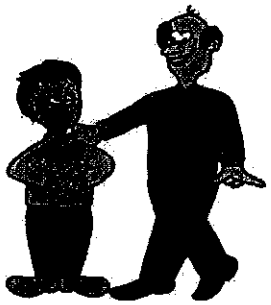
1. Make a tri-fold hurricane safety brochure. Your brochure should include information about how to stay safe during a hurricane. Illustrate your brochure with colorful pictures.



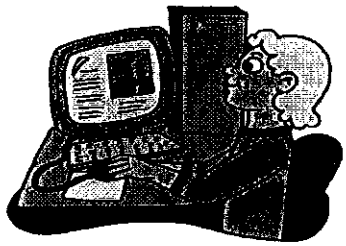
2. Use graph paper to make a bar graph that shows the wind strengths of historical hurricanes. Be sure your graph has a title, a scale, and axis labels. Be sure the bars on your graph are drawn neatly and spaced evenly.



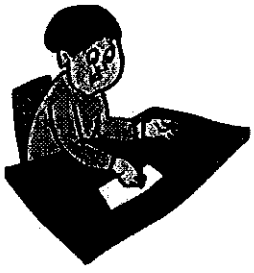
3. Interview someone who has survived a hurricane. Ask them 10 or more questions about their experiences. Write down their answers.



4. Make a PowerPoint presentation on hurricane safety. Include at least 5 slides with information about how to stay safe during a hurricane.



5. Write a realistic fiction story about a hurricane. Be sure your story has a happy ending and no people or animals are hurt. Your story should be about 3 pages long. Include an illustration.



Name _____ Date _____

Oceans Word Search Worksheet

Directions: All words are positioned left to right, right to left, and diagonally.

L S D G J C J N M G H E D Z I K A G Y P O O H
K H E V A T O L L N T F K W H M I G K J K V C
C A T N O Y V N Q D G S X U B F Y S J J Y C T
R C C I B A O B P Y Q P D N I W U P N A R Z W
T X O I D O Z N C I L P L M C B H K U U U C J
V Y R W G E S T U A R Y H P M O S R S E U W U
W T M A M D O H T W W W A E T B E T F K M C E
I N L T V O C O R A L B R O E T A I J A I L J
T E T N A L M L M X Q S S Y A C V B M A B A V
F M T G B V Z F G U I Y U W E M O M Z P O Y G
O I P G X O G C B B N Z A A G N A J L C L H X
J D W W S A F O L T I E N Z N L M P Y G V T W
J E C J K Z C E H N S S M X W O L L P U R I S
V S S W A E S E S R M O K K M P B W A O F M H
Y M O K I B S U V Z W L C D H L O D Z U S S T
X I M B Y I H Y D Q V E L F E Q K E U D Z P K
Z O V Z S A B Y S S P L A N K T O N N N P J L
H S I S L N G E S Y X W Z K U R R F G R P W T

ABYSS	SEDIMENT	LAGOON	CRUSTACEANS
ESTUARY	PHOTOSYNTHESIS	PLANKTON	
SUBMERSIBLES	ATOLL	MAMMAL	
CORAL	SEAWATER	TIDE	

Name _____ Date _____

Oceans Word Chop Worksheet

Directions: The table below contains words that have been chopped in half. Find the pieces that fit together and write them in the answer area below.

sibles	kton	est	mam
ti	oll	ment	submer
oon	yss	ater	ab
photosy	co	nthesis	crust
de	sedi	mal	at
aceans	ral	lag	uary
seaw	plan		

Answers:

_____ _____

_____ _____

_____ _____

_____ _____

_____ _____

_____ _____

_____ _____

_____ _____

Worldwide Loss of Bees a Growing Concern

by Alissa Fleck

When we think of bees, we think of pesky, buzzing insects that sting us and ruin outdoor gatherings. We might wonder: how badly can we possibly need bees? The truth is, bees are an incredibly important part of our ecosystem on Earth-no matter how annoying they may be to humans. Unfortunately, bees have been disappearing around the world for some time now, and their mass disappearance continues to present new problems around the planet.

According to Reuters news source, scientific researchers have been trying desperately for the past 15 years to understand why honeybees around the world are dying off at frighteningly high rates. Over 1 million bee colonies disappear every year, never to return, Reuters reporters noted in 2012.

Kevin Hackett, the national program leader for the bee and pollination program at the U.S. Department of Agriculture (USDA), called the massive honeybee disappearance "the biggest general threat to our food supply."

How could something so small be so important to us as humans? Bees are used to pollinate many crops, for instance a large portion of California's almond crop, which relies heavily on bee pollination. Bees are also essential for the pollination of apple and citrus fruit crops. Without the pollination by bees, these plants are unable to reproduce and may die off.

The mass deaths of honeybees have been linked to something known as Colony Collapse Disorder (CCD)-a mysterious loss of bee colonies with many potential causes-as well as a variety of pesticides, parasites and disease, all of which hurt bee populations. Other possible causes include land development and changes in agricultural practices around the world.

There are numerous kinds and species of bees, and honeybees are not the only ones disappearing in large quantities. Bumblebees can be added to the list of pollinators whose widespread disappearance

worries scientists. While the dangers of losing bees, such as the damage to our food supplies, have long been known, researchers are uncovering even more distressing information about the loss of these ecologically crucial insects.

According to researchers who published their findings in the Proceedings of the National Academy of Sciences in 2013, the disappearance of bumblebees offers new cause for concern: certain plants are having difficulties reproducing with the loss of their bumblebee pollinators, and are at higher risk for extinction.

Two scientists, who conducted research on the impact of bumblebee loss on plant reproduction, found that when a particular species of bumblebee was removed from the pool of pollinators, other bees did not completely take over the pollinating duties. Instead, with less competition from the bees which had been removed from the pool, the remaining bumblebees flew between many different plants and were less likely to be faithful to one kind of plant.

The researchers noted this experiment had damaging effects. For instance, the larkspur, a purple wildflower, requires pollination from its own species-other larkspurs-to survive. The researchers found with fewer bumblebees, the remaining bees were "less faithful" to a particular plant, meaning the larkspur was unable to survive as it would have before the loss of bumblebees.

This particular study highlights the importance of bees to the continuation of, not just our food supply, but also all biodiversity, as the effects of this study do not end with the larkspur plant alone, but point to a much larger issue. The larkspur is just one example of this issue.

In 2012, the USDA and Environmental Protection Agency (EPA) released a joint statement discussing the issue of bee loss, and the search for a solution to the cycle of problems caused by bees dying off.

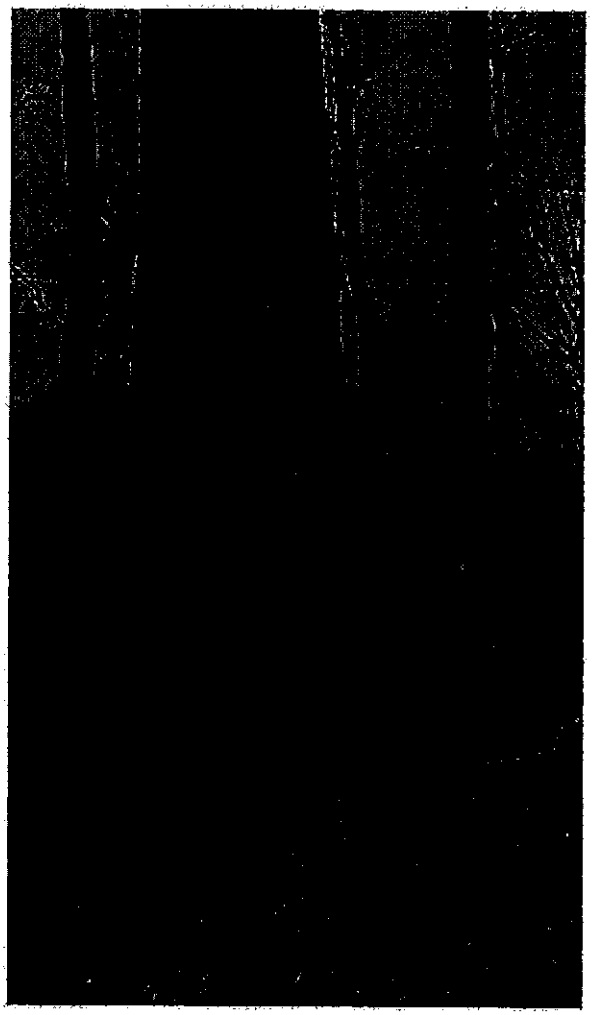
The organizations concluded: "No single silver bullet will solve the problems affecting honey bees and other pollinators."

In terms of solutions, the organizations proposed: "Habitat enhancement...targeted pesticide use, improved colony management techniques and improved disease and pest resistant stocks of bees are collectively needed to improve the health of honey bee colonies."

"It is imperative that we increase honey bee survival both to make beekeeping profitable," the statement noted, "but more importantly to meet the demands of U.S. agriculture for pollination and thus ensure of [sic] food security."

The American Chestnut

by ReadWorks



You've probably never seen an American chestnut tree-at least, not one that's fully grown. But only one hundred years ago, this enormous tree covered the eastern coast of the United States. People constructed buildings from its smooth, glowing wood. They ate nuts from the trees every fall and winter. Now the American chestnut has practically disappeared. Scientists are working hard to find a way to save it-but time is running out.

The American chestnut, *Castanea dentata,* stands tall at almost 100 feet with a trunk diameter of 10 feet. Its wood is hard and naturally resistant to termites and other pests, making it ideal for buildings and furniture. It is a deciduous tree-throughout the seasons the leaves change color from green to orange, yellow and red, making the mountains look as though they are on fire and, eventually, they fall.

When chestnuts were common in the United States, they could be found all the way from the northern tip of Maine to the warm, southern foothills of Mississippi. In some states, like Pennsylvania, 30% of the hardwood forests were of chestnut trees. The total number of chestnut trees in North America was

estimated to be at least one billion! Now there are only a few thousand surviving. Scientists are careful to protect them, in the hope that, within these trees' genes, is the secret to saving the species.

What caused the decline of the American chestnut? It all began when travel between continents increased in the past hundreds of years. For thousands of years the chestnut trees in North America were isolated. But as modes of transportation improved, people began to trade with other continents more often.

Though the North American chestnuts had been isolated, they weren't the only chestnut trees in the world. There were also European chestnut trees and Asian chestnut trees. Though these trees are all part of the same species, their genes are quite different. This is because they evolved in different habitats, interacting with different species. Even trees within the same habitat have genes that are a tiny bit different.

Over time, a process called natural selection occurred. In each habitat, trees faced changes in their environment. The trees that were able to adapt to these changes and survive had different genes from the trees that died off. Over thousands of years, this made the species noticeably different. Asian chestnuts co-evolved with a fungus called *Cryphonectria parasitica*. Both Japanese and Chinese chestnut trees are usually able to resist the fungus and are not killed by the infection. But the American chestnut trees had not been previously exposed to this fungus and were especially vulnerable. It is thought that the fungus, commonly known as the chestnut blight, was accidentally brought to the United States around 1900. In 1904, the first American chestnut tree sick with the blight was spotted in the Bronx, a borough of New York City.

The fungus enters the tree through cuts and grows beneath the bark, eventually killing the tree. The first symptom of the fungus is a small orange-brown area on the tree bark which then spreads and grows. These spots, called cankers, split the bark of the tree and gradually kill it.

Before the American chestnut disappeared, it made up 25% of all of the hardwood forests in the Appalachians, the main mountain range in the eastern United States. The disappearance of the chestnut tree had several negative consequences for the people in this region. Previously, their houses had been built out of chestnut wood. They had relied on the trees for nuts. They had sold the lumber from the trees to make money to support themselves and their families.

Pockets of the American chestnut still survive in the Northwestern United States, where the climate is too cold for the fungus to survive. On the East Coast, chestnut trees still sprout, but they typically die while they are still very young and before they have a chance to produce nuts.

The last large group of surviving chestnut trees is in West Salem, Wisconsin. About 2,500 trees exist there, the descendants of trees planted generations ago by a settler named Martin Hicks. For most of the twentieth century, these trees escaped the blight. But in 1987, scientists found the fungus among them, as well.

Scientists are now working hard to save the American chestnut, but it is a long and arduous process. Surviving chestnut trees are rare and must be protected from exposure to the fungus. In 2008, government officials in Ohio announced they had found an adult chestnut tree in a marsh. Though the officials had known about the tree for seven years, they waited to announce its existence because they wanted to protect it. The exact location of the tree remains a secret for its own protection from the fungus.

Scientists are trying different approaches to save the American chestnut. Researchers at the American Chestnut Foundation, an organization in western North Carolina, have been cross-breeding the American chestnut with the Chinese chestnut. The goal is to create a tree that has all the characteristics of the American chestnut, but keeps the Chinese chestnut tree's resistance to the blight. Because the Chinese chestnut co-evolved with the fungus, it is not killed by the fungus.

Other scientists are attempting to modify the American chestnut genes to make them resistant to the fungus. Researchers at the State University of New York College of Environmental Science and Forestry have inserted genes from wheat into the American chestnut genes. These genes help (the gene) create an enzyme (a complex protein) that kills the fungus. However, genetic modification is highly controversial. Trees that have been genetically modified need approval from the government before they can be planted in the wild. The scientists doing genetic modification defend their work. They point out that there are around 45,000 genes in the chestnut tree, and the researchers are adding one-to-three additional genes.

But whether the genetically modified trees can be grown in the wild comes down to whether government regulators think those added genes are dangerous. Right now, these trees are only permitted to be planted in specific areas where there is no danger of spreading pollen to other, non-genetically modified trees. From 2006 to 2012, the researchers planted hundreds of genetically modified chestnut trees in Syracuse. They also planted over 150 trees in other New York locations. Each tree begins as a group of cells grown in a Petri dish. It takes two years before those cells are large enough to have a seedling that can be planted in the ground.

Ultimately, these researchers want to repopulate the hardwood forests of the eastern United States with the American chestnut tree. Chestnuts aren't the only trees from ancient American forests that have nearly disappeared. Elms have fallen prey to Dutch elm disease, a fungus that devastated native elms in both Europe and America (in spite of the fungus's name, it actually originated in Asia, not the Netherlands). The disease was introduced to the United States from Europe in 1930. The disease spread unusually rapidly due to the European elm bark beetle, which spreads the fungus as it feeds on the twigs and bark of elm trees. The white pine tree, native to northeastern United States, was attacked by another fungus called "blister rust." The first sighting of blister rust occurred in New York in 1906, just two years after the first documentation of the chestnut blight.

Collaborations between scientists, government and preservationists may be able to save all of these trees and bring back healthy American forests.

Name: _____ Date: _____

Use the article "Worldwide Loss of Bees a Growing Concern" to answer questions 1 to 3.

1. Colony Collapse Disorder, pesticides, and land development are all possible causes of the disappearance of bees. What is one effect of the disappearance of bees?

2. What are three solutions that the USDA and EPA have proposed to help improve the health of honey bee colonies?

3. What is the main idea of this text? Support your conclusion with evidence from the text.

Use the article "The American Chestnut" to answer questions 4 to 6.

4. What caused the decline of the American chestnut?

5. How are scientists attempting to save the American chestnut? Describe two approaches they are taking.

6. What is the main idea of this text? Support your conclusion with evidence from the text.

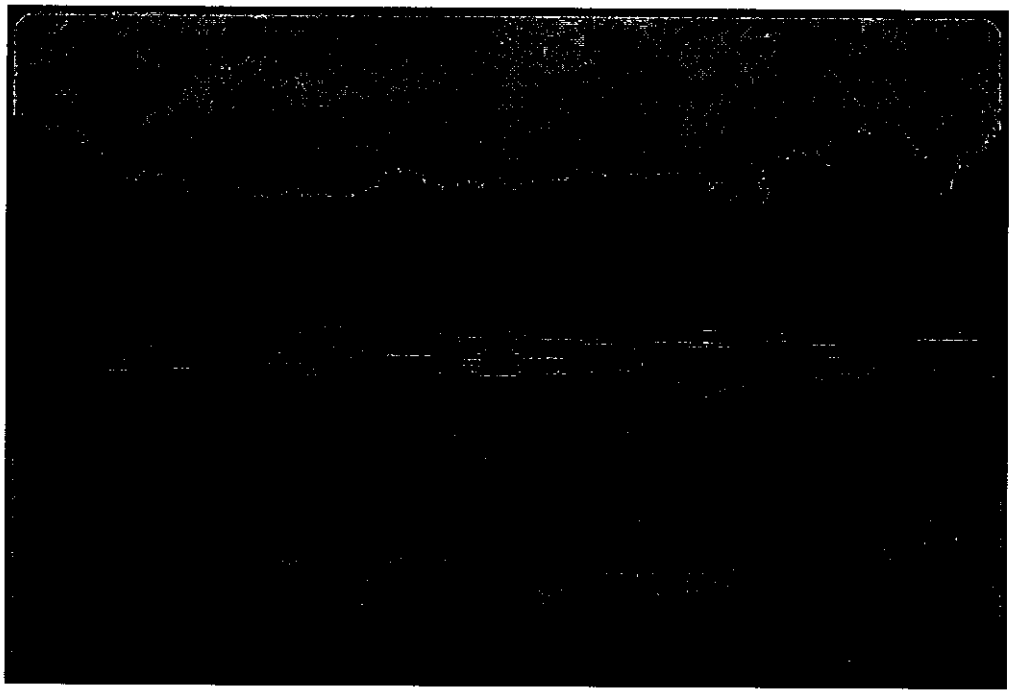
Use the articles "Worldwide Loss of Bees a Growing Concern" and "The American Chestnut" to answer questions 7 to 8.

7. Explain whether the main ideas of these two articles are related. Use evidence from both texts to support your answer.

8. Understanding the causes and effects of the disappearance of a species can help people find ways to protect that species. Use evidence from both texts to support this statement.

Wetlands and Habitat Loss

by Elaine Mao



What image comes to mind when you think of a swamp? How about a marsh or a bog? Chances are you had a similar image in your mind for all of these. That's because these are, in fact, very similar environments. In everyday use, it is common to use these terms interchangeably, and while there are minute differences among the three land areas, they all belong to the same general category: wetlands.

A wetland is an area of land that is filled or covered with water for at least part of the year. Wetlands are neither completely dry nor completely underwater. They are known as "transition zones" because they are the link between water and land, and they have a unique combination of the characteristics of both. The special characteristics of these "transition zones" enable them to support plant and animal life not found anywhere else. A common nickname for wetlands is "nurseries of life."

Chances are, however, when you envisioned a swamp (or a marsh or a bog), you conjured up an image of a rather unpleasant place: creepy and shadowy, muddy, overrun with snakes and insects. Would it ever occur to you that this could be the kind of place we would want to save and preserve? Probably not.

Wetlands have historically been regarded as wastelands and centers of disease and insect infestation, and humans have sought to avoid or eliminate them when possible. Since the 18th century, more than half of the original wetlands in the United States have been degraded or destroyed. In the 19th century, there was a massive push to drain the wetlands, which harbored malaria-bearing mosquitoes, after a series of yellow fever epidemics. Since then, further destruction has occurred as a result of human activities, such as agriculture, industrialization and development.

Wetlands have been drained and converted to farmland, filled in to provide more opportunities for residential and industrial development, or used as dumping grounds for waste. Other human activities, such as pollution, while not directly targeted at eliminating wetlands, have also played a role in the process.

However, in recent decades, attitudes about wetlands have changed. People have begun to realize that wetlands are valuable and productive ecosystems that fulfill an essential function for both humans and wildlife. Due to their unique characteristics, wetlands can support a wide diversity of plants, mammals, reptiles, birds and fish. They also control floodwaters and protect us from storms and hurricanes. Wetlands also improve water quality by filtering, cleaning and storing water. Lastly, many people rely on wetlands for their livelihood, as they are important centers for hunting, fishing and recreation.

The state of Louisiana, in the United States, relies heavily on wetlands, and is one of the regions of the country that has been most adversely affected by wetlands destruction. Southern Louisiana has some of the most extensive wetlands in the United States, containing approximately 40 percent of the country's total wetlands area. This is because Louisiana is located at the drainage gateway where the Mississippi River meets the Gulf of Mexico. Much of the region's economy and culture is built around the wetlands. However, Louisiana's wetlands are quickly disappearing. Although the state has only 40 percent of the country's wetlands, it also bears 80 percent of the country's wetland losses. Every 38 minutes, the equivalent of a football field is lost. This has serious implications for the region's wildlife and economy, as well as the ability of the region to withstand natural disasters.

The Louisiana wetlands are home to a variety of animals, including alligators, snakes, turtles, coyotes, muskrats, armadillos, pelicans and egrets, among others. The wetlands are a crucial resource for many endangered species. In fact, more than one-third of the United States' threatened and endangered species live only in wetlands, and more than one-half use the wetlands at some point in their lives for breeding, nesting or raising their young. Many species of migratory birds depend on the wetlands and would go extinct if the wetlands were destroyed.

The wetlands are also essential to the state's fishing industry, providing a habitat for fish, shrimp, oysters and crabs. As of 2013, Louisiana's commercial fishing industry is responsible for 25 percent of all seafood produced in the United States, with the highest production of shrimp, oysters and freshwater fish in the nation. Approximately one in every 70 jobs in the state is related to the fishing industry. The destruction of the wetlands would have disastrous consequences for the economy of the area and the livelihoods of many of Louisiana's residents.

In addition to endangering the wildlife and economic prosperity of an area, the loss of wetlands also puts humans at risk. Wetlands serve as a natural buffer zone against storms and hurricanes, slowing down the storms and reducing their force before they move inland. However, as the wetlands disappear, some cities are becoming more exposed.

The city of New Orleans, Louisiana, has already suffered the consequences of this gradual depletion of wetland buffer zones. In 2005, Hurricane Katrina, one of the deadliest and most destructive hurricanes in the entire history of the United States, hit the Gulf Coast. There were more than 1,800 casualties, with the greatest number of them concentrated in New Orleans. Eighty percent of the city was flooded, and there were more than 700 dead. Many blamed the destruction of New Orleans on the failure of the levees, which are manmade barriers that prevent water from flooding into a city. However, scientists and researchers believe that the hurricane would have done far less damage to

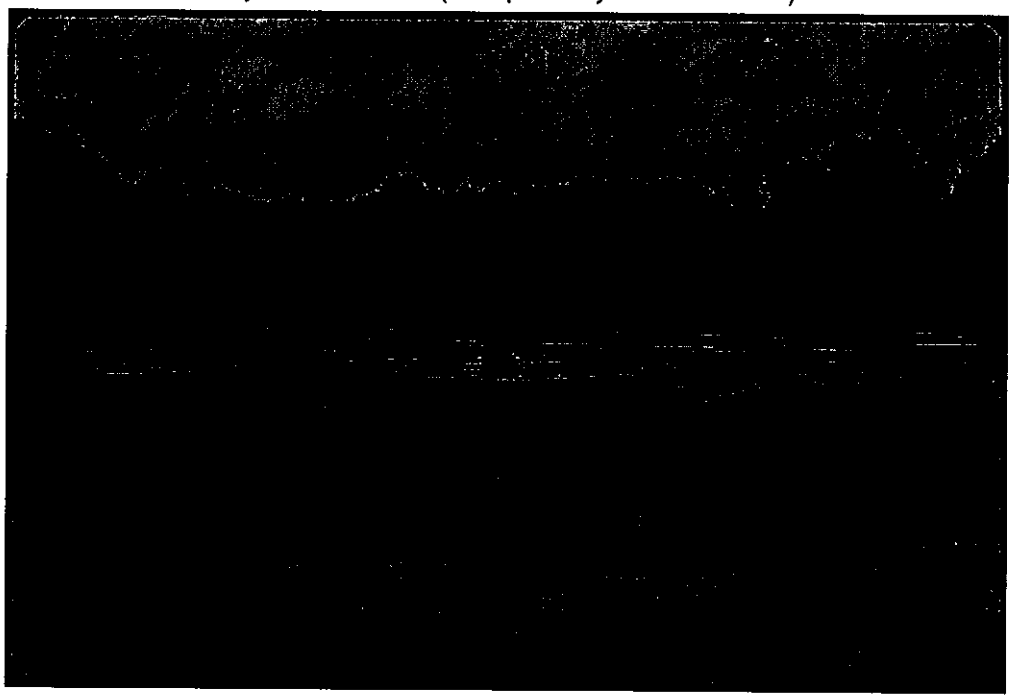
the city if the surrounding wetlands had been intact. Since the storm, there has been a greater national focus on preserving and restoring the wetlands on the Gulf Coast. Preserving our wetlands and maintaining a buffer zone against storms will only become more crucial in the future, as climate change may increase both the frequency and the severity of extreme weather events such as hurricanes.

In recent decades, since the importance of wetlands became apparent, there has been a push toward better education and regulation. The U.S. Environmental Protection Agency (E.P.A.) has declared the month of May to be American Wetlands Month, which is dedicated to celebrating the ways in which wetlands enrich our lives and the environment.

Regulation has also been an important tool in the fight against wetlands loss. Since 1998, the United States has maintained a "no net loss" wetlands policy. This means that the total area of wetlands in the country must either remain constant or increase. If wetlands are destroyed for agriculture, development, or any other reason, the effect must be balanced out by restoring or reclaiming wetlands elsewhere. The policy has had a dramatic effect in slowing the rate of wetlands loss.

Wetlands and Habitat Loss

by Elaine Mao (Adapted by ReadWorks)



What do you picture when you think of a swamp? What about when you think of a marsh or a bog? You probably had a similar picture in your mind for all three. That's because swamps, marshes, and bogs are similar environments. People even use these words as if they all meant the same thing. Although there are small differences among these land areas, they all belong to the same category: wetlands.

A wetland is an area of land that is filled or covered with water for at least part of the year. Wetlands are neither completely dry nor completely underwater. They are known as "transition zones" because they are a link between water and land. They have a combination of characteristics of both water and land. This combination is not found anywhere else. As a result, "transition zones" are home to some plants and animals that do not live in any other environments.

When you pictured a swamp, marsh, or bog, that picture was probably not pleasant. Maybe you imagined a place that looked creepy, shadowy, muddy, and full of snakes and insects. Would you ever think that this could be the kind of place people would want to preserve and keep around? Probably not.

For a long time wetlands have been thought of as places that were not good for much of anything. They were thought to be full of insects and disease, so people tried avoiding or getting rid of them. Since the 1700s, more than half of the wetlands in the United States have been damaged or destroyed. In the 1800s, people made a big effort to drain the wetlands. That was because many people at the time were getting a disease carried by mosquitos in the wetlands. Since then, human activities such as farming and building have destroyed even more wetlands. Wetlands have been

drained and turned into farmland. They have been filled in with materials like rocks and concrete so that houses can be built there. They have been used as places to dump waste. Pollution caused by other human activities has also damaged the wetlands.

However, the way people feel about wetlands has started to change. In recent decades, people have begun to realize that these ecosystems are important to both humans and wildlife. Because of the special characteristics of wetlands, many different plants, mammals, reptiles, birds, and fish can live there. Wetlands also protect people from storms and can help prevent flooding. They improve water quality by filtering, cleaning, and storing water. Lastly, wetlands are important centers for hunting, fishing, and recreation. Many people depend on these activities and the wetlands to make money and support their families.

In the United States, wetlands are very important to the state of Louisiana. They are important to the people and businesses there. The south part of the state has some of the largest wetlands in the United States. They make up about 40 percent of the all the wetland area in the United States. There are so many wetlands in Louisiana because it is located where the Mississippi River meets the Gulf of Mexico. There is a lot of water where the river meets the gulf.

However, Louisiana's wetlands are quickly disappearing. The state is one of the parts of the country that have been harmed the most by the destruction of wetlands. Louisiana may have 40 percent of the country's wetlands, but it's also where 80 percent of the country's wetland loss is happening. Every 38 minutes, a section of wetlands in Louisiana as big as a football field is lost. This loss has serious consequences for the state's wildlife, as well as the people and businesses there.

The wetlands in Louisiana are home to many different animals. These animals include alligators, snakes, turtles, coyotes, muskrats, armadillos, pelicans, and egrets. The wetlands are a very important resource for many endangered animals. In fact, more than one-third of the United States' threatened and endangered species live only in wetlands, and more than one-half of them use the wetlands at some point in their lives for breeding, nesting, or raising their young. Many species of birds that migrate from one place to another would go extinct if the wetlands were destroyed.

The wetlands are also important to the fishing that is done in Louisiana. The wetlands provide a place for fish, shrimp, oysters, and crabs to live. As of 2013, Louisiana's fishing business produced more shrimp, oysters, and freshwater fish than anywhere else in the United States. About one in every 70 jobs in Louisiana is connected to the fishing industry. The destruction of the wetlands would have terrible consequences for businesses and workers in the state.

In addition to making it harder for people to earn money, wetland destruction can also threaten human life. Wetlands serve as natural buffer zones against storms such as hurricanes. Wetlands slow down storms coming from the ocean and lessen their force before the storms reach dry land. However, as the wetlands disappear, some cities are losing their buffer zones.

One example of this is the city of New Orleans, Louisiana. New Orleans has suffered the consequences of the slow disappearance of wetland buffer zones. In 2005 one of the deadliest and most destructive hurricanes in the history of the United States hit Louisiana and other states along the Gulf of Mexico. More than 1,800 people died because of the hurricane, and 700 of them were living in New Orleans. 80 percent of the city was flooded. Many blamed the destruction of New Orleans on the failure of the levees, which are manmade barriers that prevent water from flooding into a city. However, scientists believe that the hurricane would have done much less damage to the city if the

surrounding wetlands had been left untouched by people. Since the storm, people have made a greater effort to preserve the wetlands in Louisiana and nearby states. Preserving these wetlands and having a buffer zone against storms will only become more important in the future, as climate change may increase the number of storms that happen and the power of those storms.

As people have begun to realize how important wetlands are, they have been making an effort to preserve them. Part of that effort involves teaching others about the importance of wetlands. Also, the United States government has declared the month of May to be American Wetlands Month. The month is dedicated to celebrating the ways in which wetlands make our lives and the environment better.

Another part of the effort to preserve wetlands involves making rules to protect these areas. Since 1998, the United States has maintained a "no net loss" wetlands policy. This means that the total area of wetlands in the country must either stay the same or increase. If any wetland area is destroyed for farming, building, or any other reason, the same amount of wetland area must be restored or recreated somewhere else. This policy has slowed down the loss of wetlands.

buffer

buff · er

Advanced Definition

noun

1. a device, such as a bumper, that absorbs the force of a collision.
2. something that prevents or moderates the interaction of two people, things, groups, countries, or the like.
3. in chemistry, a substance that preserves the relative acidity or alkalinity of a solution when an acid or base is added.
4. in computer terminology, a portion of the hardware used to hold information temporarily.

transitive verb

1. to add a buffer to (a chemical solution).
2. to diminish the undesirable effects of.

These are some examples of how the word or forms of the word are used:

1. "It's a floor **buffer**. It polishes the floors."
2. Wetlands serve as a natural **buffer** zone against storms and hurricanes, slowing down the storms and reducing their force before they move inland. However, as the wetlands disappear, some cities are becoming more exposed.

preserve

pre · serve

Definition

verb

1. to keep safe from loss or harm.

The court will preserve the right to freedom of speech.

noun

1. an area of land or water where plants and animals are protected.

Hunting is not allowed in animal preserves.

Advanced Definition

transitive verb

1. to protect from injury, harm, or mishap.

She prayed that the children would be preserved from harm.

Using this polish will help preserve the wood.

2. to keep safe from loss.

We don't know how many endangered species can be preserved.

Will the court preserve my right to dissent?

3. to maintain in a relatively unchanged condition, esp. historic buildings or wildlife environments.

They're doing what they can to preserve the animal's habitat.

4. to prepare (food) so that it can be kept for a long period of time.

They often preserved meat by preparing it with salt and smoking it.

intransitive verb

1. to treat fruit or vegetables so as to retard spoilage.

noun

1. (usu. pl.) fruit or vegetables that are preserved in sugar.

She opened a jar of strawberry preserves and spread some on her bread.

2. an area set aside for the protection and propagation of fish, animals, or plant life.

They established a wildlife preserve in the wetlands.

Spanish cognate

preservar: The Spanish word *preservar* means preserve.

These are some examples of how the word or forms of the word are used:

1. Canopic jars are special containers used to hold the **preserved** organs of the dead.
2. The group has asked the federal government to name Route 15 as a National Scenic Byway. That designation would help protect the area. Preservationists will ask Congress for money to **preserve** historic areas.
3. As the consequences of modern industrial agriculture have become apparent, farmers have been encouraged to take steps to reduce erosion. It is now considered good practice to minimize plowing of the land to **preserve** the integrity of the soil.
4. By covering grass with cement, we may force the animals that live there to move into another area. It is important to understand that we have to work to **preserve** the habitat of the native plants and animals in order to keep the ecosystem healthy.

transition tran · si · tion

Advanced Definition

noun

1. change from one position, stage, or situation to another.

There were painful experiences during his transition from boyhood to manhood.

Spanish cognate

transición: The Spanish word *transición* means transition.

These are some examples of how the word or forms of the word are used:

1. I left the coffee shop and walked straight to my bench in the park, only peripherally aware of the few minutes it took to get there. The **transition** from traffic noises to park noises was as familiar, and taken for granted, as the transition from inhale to exhale.
2. Another challenge of working in food is the change in what ingredients are available. "Working with seasonal ingredients has been especially challenging," said Monika, "Especially during our first **transition** from summer to winter." At a Fare Trade NYC meeting, Monika helped explain to a young woman starting a soup business the difficulty of working with seasonal ingredients and worked with her to create a plan for finding the right ingredients for her soups.
3. John Tyler's **transition** into the presidency wasn't easy. Tyler was a Southern Democrat during most of his early political career. While running for office with Harrison, he left the Democrats. He became part of the Whig party instead. But when he became president, he disagreed with the Whigs on many issues.
4. One of the first books printed in Italy was a beautiful long poem, Divine Comedy. An Italian writer named Dante Alighieri penned it. The poem's main theme is life after death. Dante himself is the main character. The book is a perfect example of the **transition** from the Middle Ages to the Renaissance.

Name: _____ **Date:** _____

1. What is a wetland?

A. a business that makes its money from hunting or fishing

B. a city on a coast where floods occur, often resulting in the loss of human life

C. a "no net loss" policy requiring the amount of something to remain constant or increase

D. an area of land that is filled or covered with water for at least part of the year

2. destruction of wetlands is an effect. What is one of its causes?

A. Regulation has been an important tool in protecting wetlands.

B. Wetlands have been drained and converted to farmland.

C. Many species of migratory birds depend on the wetlands.

D. Louisiana has some of the most extensive wetlands in the United States.

3. Wetlands serve important purposes for humans.

What information from the passage supports this statement?

A. Wetlands have historically been regarded as centers of disease and insect infestation.

B. Wetlands can protect people from storms and help them earn a living through fishing.

C. Louisiana is located at the drainage gateway where the Mississippi River meets the Gulf of Mexico.

D. Hurricane Katrina caused more than 1,800 casualties, including over 700 in New Orleans.

4. How have attitudes about wetlands changed in recent decades?

A. People have become less willing to regulate the destruction of wetlands than they used to be.

B. People have become more concerned about the threat of disease from wetlands than they used to be.

C. People have become more interested in protecting wetlands than they used to be.

D. People have become less interested in protecting wetlands than they used to be.

5. What is this passage mainly about?

A. Louisiana

B. Hurricane Katrina

C. malaria

D. wetlands

6. Read the following sentence: "Chances are, however, when you envisioned a **swamp** (or a marsh or a bog), you conjured up an image of a rather unpleasant place: creepy and shadowy, muddy, overrun with snakes and insects."

What does the word **swamp** mean in the sentence above?

A. a piece of land that is partly covered by water

B. a state that is on the Gulf of Mexico

C. a job related to the hunting or fishing industry

D. an animal species that is in danger of dying out

7. Choose the answer that best completes the sentence below.

For years people wanted to avoid or destroy wetlands; _____, many people want to save wetlands.

A. previously

B. currently

C. in closing

D. as an illustration

8. What is happening to Louisiana's wetlands?

9. If Louisiana's wetlands were destroyed, what would happen? Support your answer with evidence from the passage.

10. Should wetlands be protected? Explain why or why not, using evidence from the passage.

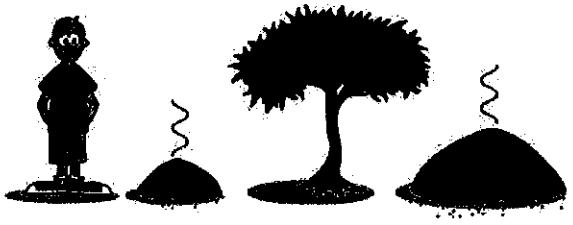
What Is the Big Deal with Carbon?

This text is from NASA's "Climate Kids."

Why are they called fossil fuels?

They're called fossil fuels because the fuel in your gas tank comes from the chemical remains of prehistoric plants and animals!

All living things on Earth contain carbon. Even you contain carbon. Lots of it. If you weigh 100 pounds, 18 pounds of you is pure carbon! And plants are almost half carbon!



Courtesy NASA/JPL-Caltech.

You are 18 percent carbon. Plants are 45 percent carbon.

With so much carbon, why isn't everything black and sooty? How can dogs be white and trees green? Because carbon, an element, combines easily with other elements to form new materials. The new stuff, called compounds, are quite different from pure carbon.

An atom is the tiniest possible particle of any element, like carbon or oxygen. A carbon atom combines easily with two oxygen atoms to make the compound carbon dioxide.

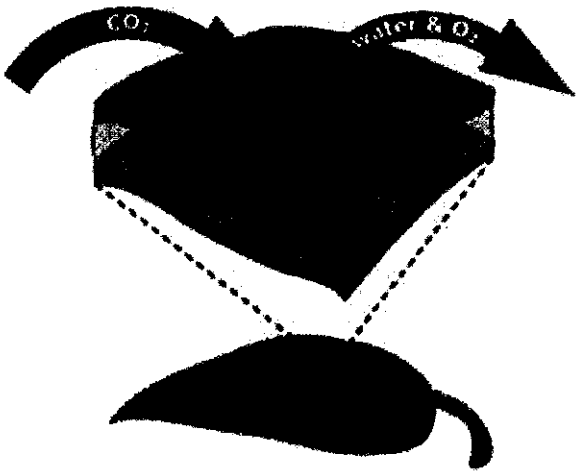
"C" stands for carbon, "O" stands for oxygen, so carbon dioxide is often called "C-O-2." Carbon dioxide is a gas. It is invisible. Carbon dioxide is really important.

[. . .]

How does carbon get into living things?

Plants take in carbon dioxide. They keep the carbon and give away the oxygen. Animals breathe in the oxygen and breathe out carbon dioxide.

Plants and animals depend on each other. It works out well. For hundreds of millions of years, plants and animals have lived and died. Their remains have gotten buried deep beneath Earth's surface. So for

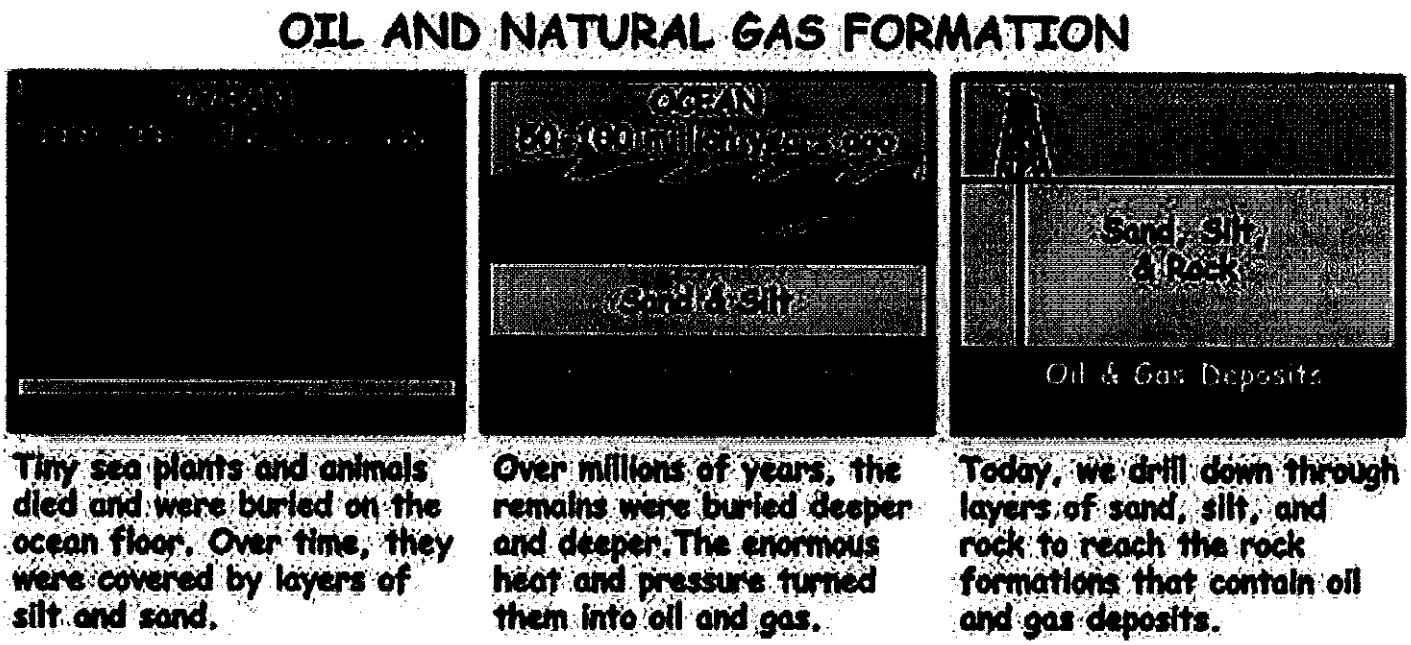


Courtesy NASA/JPL-Caltech.

Carbon dioxide in, water and oxygen out.

hundreds of millions of years, this material has been getting squished and cooked by lots of pressure and heat.

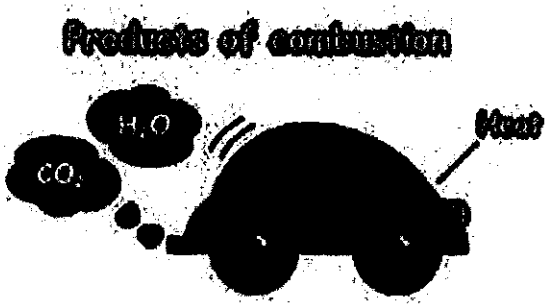
So what happens to all this dead plant and animal stuff? It turns into what we call fossil fuels: oil, coal, and natural gas. This is the stuff we now use to energize our world. We burn these carbon-rich materials in cars, trucks, planes, trains, power plants, heaters, speed boats, barbecues, and many other things that require energy.



Courtesy NASA/JPL-Caltech.

For hundreds of millions of years, dead plants and animals were buried under water and dirt. Heat and pressure turned the dead plants and animals into oil, coal, and natural gas.

How does the carbon get out of living things?

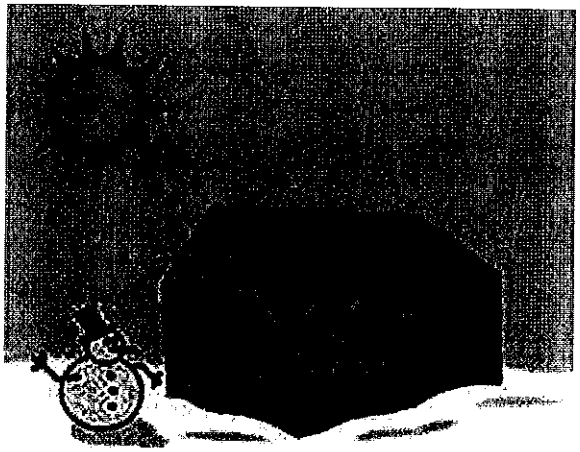


Courtesy NASA/JPL-Caltech.

When fossil fuels burn, we mostly get three things: heat, water, and carbon dioxide. We also get some solid forms of carbon, like soot and grease.

So that's where all the old carbon goes. All that carbon stored in all those plants and animals over hundreds of millions of years is getting pumped back into the atmosphere over just one or two hundred years. (Did you know that burning 6.3 pounds of gasoline produces 20 pounds of carbon dioxide?)

Is carbon in the air good, bad, or just ugly?



Courtesy NASA/JPL-Caltech.

A greenhouse traps the Sun's energy inside and keeps the plants warm.

Here's the big, important thing about carbon dioxide: It's a greenhouse gas. That means carbon dioxide in the atmosphere works to trap heat close to Earth.

It helps Earth to hold on to some of the energy it gets from the Sun so the energy doesn't all leak back out into space. If it weren't for this greenhouse effect, Earth's oceans would be frozen solid. Earth would not be the beautiful blue and green planet of life that it is.

So, carbon dioxide and other greenhouse gases are good-up to a point. But carbon dioxide is so good at holding in heat from the Sun, that even a small increase of it in the atmosphere can cause Earth to get even warmer. Throughout Earth's history, whenever the amount of carbon dioxide in the atmosphere has gone up, the temperature of Earth has also gone up. And when the temperature goes up, the carbon dioxide in the atmosphere goes up even more.

burn burn

Definition

verb

1. to be on fire.

   The forest burned for three days.

2. to cause to be on fire.

   He burned his trash in the back yard.

3. to hurt or damage by too much heat.

   She burned her hand on the stove.

noun

1. an injury caused by heat or fire.

   He got a burn from touching a hot pan.

Advanced Definition

intransitive verb

1. to be in flames; be on fire.

   The forest burned for three days.

2. to be very hot.

3. to sting or hurt sharply.

4. of food, to become overcooked or charred.

5. of a person, to be overexposed to the sun.

6. to experience strong emotion, such as anger or desire.

7. to emit bright light.

   Are the front lights burning?

transitive verb

1. to cause (something) to be set on fire.

2. to injure or damage by excessive exposure to heat, as from flame or sunlight.

3. to use as a source of energy.

Our furnace burns oil.

4. to cause to lose money through trickery; swindle.

5. to cause to be humiliated.

noun

1. an injury caused by heat.

2. an instance of burning.

These are some examples of how the word or forms of the word are used:

1. Near the end of the war, Sherman successfully captured the strategic city of Atlanta, Georgia. He **burned** all the Confederate supplies there, along with many of the city's buildings.

2. They threw rocks at the windows. They **burned** a likeness of Tyler in protest. They even tried to impeach him as president. But the soft-spoken Tyler stood firm in his beliefs.

3. Hold the **burned** area under cool (not cold) running water for about 15 minutes, or apply a cold compress to it. Cooling reduces swelling by conducting heat away from the skin.

4. Miraculously, the light in the temple **burned** for 8 days with that same, small amount of oil. This was exactly the amount of time needed for the new oil to be made.

5. Before the festival, people make krathongs. A krathong is a small boat made of a banana leaf. Each krathong contains a flower, a candle, and three incense sticks. Incense sticks produce a pleasant smell when **burned**.

6. Fire was one of the greatest dangers for a medieval town. Most houses were made of wood. Only the wealthy had stone and brick houses. One city in France **burned** to the ground six times between 1200 and 1255 CE!

7. Dad was eating his **burned** toast with honey, and trying to mop up a gloppy mess on the floor. He did not look happy. Miranda was at the table eating a bowl of Kix. She threw one at me. I decided to skip cereal.

8. The British invasion caused Madison and his wife, Dolly, to flee Washington, D.C. Dolly was famous for throwing lavish parties at the White House. The fact that the White House was **burned** by the British didn't stop her. She continued her presidential entertaining from a new Washington home.

fossil

fos · sil

Advanced Definition

noun

1. the remains or trace of a living organism from an earlier geologic age, embedded in earth or rock.

2. something or someone that is outdated and cannot accommodate new ideas or practices.

adjective

1. of or pertaining to the remains or traces of living organisms of former geologic ages or the earth or rock layers in which such traces are found.

fossil remains

fossil fuel

Spanish cognate

fósil: The Spanish word *fósil* means fossil.

These are some examples of how the word or forms of the word are used:

1. Once we started finding **fossils**, it got really exciting. We found fossils of bugs, fish, and small plants.

2. Millions of years ago, before humans existed, dinosaurs ruled the earth. Their **fossils** have been found all over the world.

3. Paleontologists have the coolest job. They get to spend some days digging in the earth looking for **fossils**. How cool is that?

4. Scientists recently found dinosaur **fossils** that are unlike any they had seen before. Fossils are remains of plants and animals that lived long ago.

5. Sue is super! She is the largest and most complete T. rex **fossil** ever found. A fossil is the remains of an animal or a plant that lived long ago.

6. Scientists have been able to learn a lot about prehistoric people. How? They study the clues these people left behind. The clues include **fossils** and tools buried in the ground for thousands of years.

7. Most of the energy people use comes from coal, oil, and gas. They are called **fossil** fuels. Those fuels come from fossils under the ground. Fossils are the remains of plants and animals that lived long ago.

8. The dinosaur's **fossils** were actually found almost 30 years ago. They were put in a drawer for

safekeeping. A scientist took the fossils out a few years ago. He decided to study them. That led him to make the discovery.

9. Dinosaurs died out 65 million years ago. No people were alive during that time. Then how do we know so much about dinosaurs? People have found dinosaur **fossils** in the ground. Fossils are remains of plants and animals that lived long ago.

10. Scientists recently reported finding fossils of the largest bird ever known. (A **fossil** is the remains of a plant or an animal that lived long ago.) The creature is one of a group called terror birds. They lived millions of years ago in Argentina, a country in South America.

temperature tem · per · a · tu

Definition

noun

1. the degree of heat or cold in an object or an environment.

   The temperature is higher in the afternoon than in the evening.

2. a condition when the body is warmer than normal because of illness; fever.

   John stayed in bed because he had a temperature.

Advanced Definition

noun

1. the degree of heat or cold of a body or an environment.

   I don't mind the temperature during the winter, but I hate shoveling snow.

   The temperature in the office was uncomfortable to work in.

2. the specific level of heat or cold in a body or environment expressed as a number of degrees and determined by measuring with a thermometer or other standard instrument.

   Did the meteorologist say what the temperature was?

   The temperature was 85 degrees Fahrenheit in the mid afternoon.

3. abnormally high body temperature because of infection or illness; fever.

Spanish cognate

temperatura: The Spanish word *temperatura* means temperature.

These are some examples of how the word or forms of the word are used:

1. Jeremy's dad put a hand on his forehead and checked for a **temperature**. Nothing.
2. In northern states such as New Jersey, this happens around early June when the **temperature** warms up to about 64 degrees.
3. Wind is really just air that moves across the Earth. One reason that air moves is because of changes in **temperature**.

4. "The rain cloud means that today it is going to rain all day. And here it says the**temperature**: 85 degrees Fahrenheit."

5. The oil and gas could soon become easier to reach. **Temperatures** in the Arctic are rising. That is causing the sea ice there to melt.

6. A reptile is an animal that has hard, dry skin. Reptiles are cold-blooded. Their body **temperature** changes as the temperature of the air or water they live in changes.

7. Other scientists say hotter **temperatures** are to blame. They say the weather is warmer for longer periods now, so plants bloom longer. Plants release pollen (left), which is a common allergen.

8. Some people find that when the **temperature** goes down, so do their spirits. Those people sometimes feel sad for no reason. They eat more and gain weight. They have trouble sleeping. They can't think clearly.

9. Ice cubes and water have differences, but they are made out of the same stuff. So why do they look and feel different? The answer is **temperature**. Temperature is how hot or cold something is.

10. Our bodies are covered with skin tissue. Our skin receptors deliver messages to our brains when our skin comes into contact with different surfaces. These receptors allow us to feel things like pain, **temperature**, pressure and vibrations.

Fuels of the Future

by Brooke Ross

For some schools, protecting the environment starts in the classroom.

Fifth graders at Carolina International School (CIS) have a goal this Earth Day [2007]-to throw away as little trash as possible during lunch. To get their message across, students will encourage their peers to recycle. "I celebrate Earth Day every day," Nirvanna Madho, 10, told *WR News*. "I really don't throw anything away."

Participating in a zero-waste lunch is just one of many ways students at the school in Harrisburg, North Carolina, work to better the environment. Each April, the school organizes an Earth Day event. Students rotate through stations set up across the school's 36-acre campus, which includes forests and **wetlands.** Wetlands are moisture-rich lowland areas such as swamps or marshes. Students take part in hands-on environmental activities from testing water quality to checking out the latest models of battery-operated cars.

This year [2007], Earth Day at CIS kicks off a season of change. The school is preparing to go "green" with a major construction project,

set to begin early next year. Being green means protecting the world and its resources. The school's Earth-friendly makeover will include outdoor **solar,** or sun-powered, lighting and rooftop gardens. A water recycling system and other features to protect natural resources will also be built. The lobby will include a flat-panel touch screen on which students can watch how energy is being **conserved,** or saved, at their school.

"It's very important to educate children about environmental issues," says principal Deanna Duncan. "If we don't take care of [Earth], there isn't another one."

Jean-Phillippe Arles

Hoover Dam generates clean energy by using water to spin turbines.

Schools to the Rescue

photos.com

These wind turbines convert wind into electricity.

CIS is just one of hundreds of schools in the United States that are going green. A **green school** is built with recycled and environmentally friendly materials. Green schools are designed to use less energy than traditional school buildings.

The majority of the energy supply in the United States comes from the burning of **fossil fuels,** such as oil, coal, and natural gas. Fossil fuels were formed from the remains of prehistoric animals and plants. People use fossil fuels when they drive their cars, heat their homes, and power farms, factories, and cities.

Though people depend on fossil fuels, those energy sources have their drawbacks. Burning fossil fuels pollutes the air and releases gases that contribute to **global warming**, the gradual rise in Earth's average temperature.

Friendlier Fuels

Fossil fuels are gradually being used up. To conserve them, scientists are looking to renewable energy sources. **Renewable energy** is power from sources that can't be used up and do not pollute the environment. Water, wind, and solar power are types of renewable energy.

President George W. Bush announced an energy plan that calls on lawmakers to ensure that ecofriendly fuels are developed and made easily available to Americans. Gas is a fossil fuel used in cars, and the price to fill up a gas tank is rising. Gas costs about $3 a gallon in some parts of the United States [2007].

At CIS, students are excited for construction to begin on their new school building. "I think the school is going to be a lot better," Drew Barsody, 10, told *WR News*. "I'm looking forward to seeing the solar panels."

Clean Power

Here are some common environmentally friendly energy alternatives.

Solar Power: Solar energy can be converted into other forms of energy, such as heat and electricity. California and Arizona are two states that use solar power. One drawback of solar power is that energy can't be collected if the sun isn't shining.

Wind Power: Energy produced from windmills is used to generate electricity. The amount of electricity generated from wind has been growing in recent years, tripling since 1998 in the United States. Electricity is produced from wind in 30 states, including California, Texas, and Iowa.

Water: Water power, or hydropower, is one of the oldest sources of energy. Hydropower often comes from dams or waterfalls. Of all renewable energy sources, it is most often used to generate electricity. In 2004, it accounted for 7 percent of all the electricity generated in the United States.

Ethanol: Ethanol is a clean-burning fuel that can power cars. It is created from several sources, such as corn crops. Typically, a small amount of ethanol is combined with gasoline to fuel vehicles. That helps decrease the fuel's cost and harmful emissions.

alternative al · ter · na · tive

Definition

noun

1. one of two or more choices.

Our two alternatives are walking or taking a taxi.

adjective

1. different in a way that gives you a choice.

Paying by credit card and paying in cash are alternative ways to pay for something.

Advanced Definition

noun

1. one of two or more possibilities; option.

What do you think is the best alternative?

2. the choice of one or more options.

I'm sorry to do this, but I have no alternative.

The store gives customers the alternative of paying with a credit card or in cash.

adjective

1. being one of two or more possibilities.

Scientists in India offer an alternative explanation for this phenomenon.

2. offering or allowing a choice.

The store offers alternative payment methods.

3. nontraditional or unconventional.

He expresses his unique views in an alternative newspaper.

The hippies of the 1960s were not the first Americans to have an alternative lifestyle.

Spanish cognate

alternativo: The Spanish word *alternativo* means alternative.

These are some examples of how the word or forms of the word are used:

1. Almonds' soft texture and mild flavor makes them ideal for blending into a dairy-free milk **alternative**.
2. Horticulturalists took note of this development and began experimenting with **alternative** methods of growing rhubarb plants.
3. The incredibly high demand for oil allows for only modest decreases in price even if **alternative** suppliers arise.
4. We have always said that in our war with the Arabs we had a secret weapon - no **alternative**.
5. There are a number of ways to treat "trich," including therapy, medicines such as antidepressants, and **alternative** methods such as yoga and vitamins.
6. Proponents of increased offshore drilling argue that developing **alternative** domestic supplies of oil to compete with international suppliers will drive down the average cost of gas.
7. Through advances in research of **alternative** energy sources, the world is slowly changing from using fossil fuels to using wind power, water power, and solar energy.
8. He knew only the basics about his mom's profession, but was becoming more and more interested in **alternative** energy after living in Los Angeles for so long and experiencing the pollution and smog in the air.

Name: _____ **Date:** _____

1. The Carolina International School is more Earth-friendly than typical schools because

A. it celebrates Earth Day

B. the building will be reconstructed so it uses fewer resources.

C. the students participate in zero-waste lunch.

D. all of the above.

2. At green schools, the buildings use _____ than typical schools.

A. more coal

B. more solar energy

C. more electricity

D. more oil

3. _____ is a renewable resource that is providing electricity in over half of the United States.

A. Solar power

B. Wind power

C. Ethanol

D. Hydropower

4. _____ is a better resource to use than _____ because it will not run out.

A. Coal / hydropower

B. Oil / ethanol

C. Solar power / oil

D. Natural gas / wind power

5. What could your school do to become more Earth friendly?

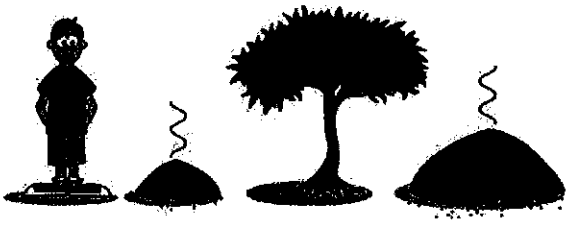
What Is the Big Deal with Carbon?

This text is from NASA's "Climate Kids."

Why are they called fossil fuels?

They're called fossil fuels because the fuel in your gas tank comes from the chemical remains of prehistoric plants and animals!

All living things on Earth contain carbon. Even you contain carbon. Lots of it. If you weigh 100 pounds, 18 pounds of you is pure carbon! And plants are almost half carbon!



Courtesy NASA/JPL-Caltech.

You are 18 percent carbon. Plants are 45 percent carbon.

With so much carbon, why isn't everything black and sooty? How can dogs be white and trees green? Because carbon, an element, combines easily with other elements to form new materials. The new stuff, called compounds, are quite different from pure carbon.

An atom is the tiniest possible particle of any element, like carbon or oxygen. A carbon atom combines easily with two oxygen atoms to make the compound carbon dioxide.

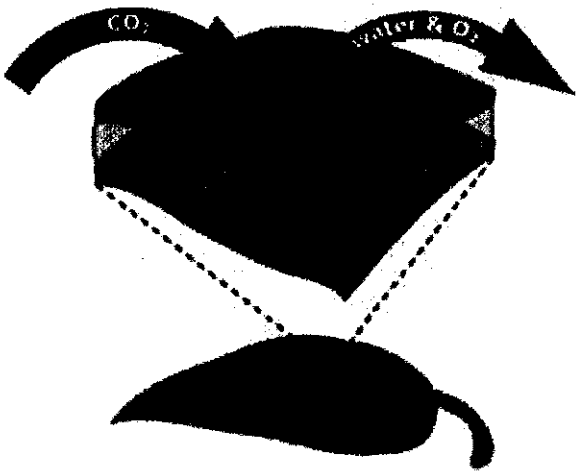
"C" stands for carbon, "O" stands for oxygen, so carbon dioxide is often called "C-O-2." Carbon dioxide is a gas. It is invisible. Carbon dioxide is really important.

[. . .]

How does carbon get into living things?

Plants take in carbon dioxide. They keep the carbon and give away the oxygen. Animals breathe in the oxygen and breathe out carbon dioxide.

Plants and animals depend on each other. It works out well. For hundreds of millions of years, plants and animals have lived and died. Their remains have gotten buried deep beneath Earth's surface. So for

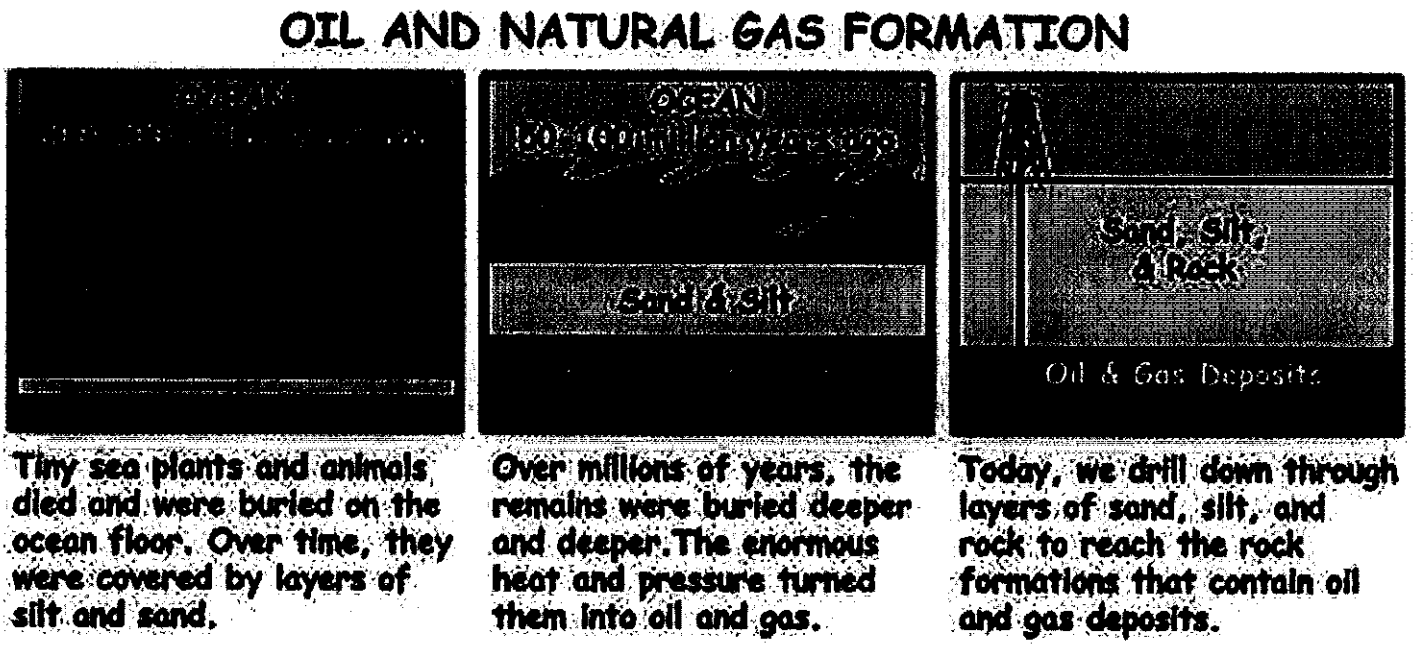


Courtesy NASA/JPL-Caltech.

Carbon dioxide in, water and oxygen out.

hundreds of millions of years, this material has been getting squished and cooked by lots of pressure and heat.

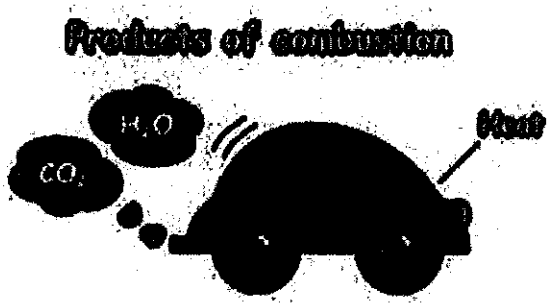
So what happens to all this dead plant and animal stuff? It turns into what we call fossil fuels: oil, coal, and natural gas. This is the stuff we now use to energize our world. We burn these carbon-rich materials in cars, trucks, planes, trains, power plants, heaters, speed boats, barbecues, and many other things that require energy.



Courtesy NASA/JPL-Caltech.

For hundreds of millions of years, dead plants and animals were buried under water and dirt. Heat and pressure turned the dead plants and animals into oil, coal, and natural gas.

How does the carbon get out of living things?

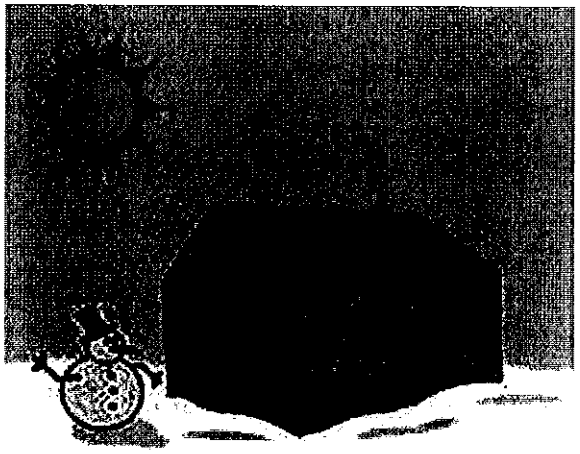


Courtesy NASA/JPL-Caltech.

When fossil fuels burn, we mostly get three things: heat, water, and carbon dioxide. We also get some solid forms of carbon, like soot and grease.

So that's where all the old carbon goes. All that carbon stored in all those plants and animals over hundreds of millions of years is getting pumped back into the atmosphere over just one or two hundred years. (Did you know that burning 6.3 pounds of gasoline produces 20 pounds of carbon dioxide?)

Is carbon in the air good, bad, or just ugly?



Courtesy NASA/JPL-Caltech.

A greenhouse traps the Sun's energy inside and keeps the plants warm.

Here's the big, important thing about carbon dioxide: It's a greenhouse gas. That means carbon dioxide in the atmosphere works to trap heat close to Earth.

It helps Earth to hold on to some of the energy it gets from the Sun so the energy doesn't all leak back out into space. If it weren't for this greenhouse effect, Earth's oceans would be frozen solid. Earth would not be the beautiful blue and green planet of life that it is.

So, carbon dioxide and other greenhouse gases are good-up to a point. But carbon dioxide is so good at holding in heat from the Sun, that even a small increase of it in the atmosphere can cause Earth to get even warmer. Throughout Earth's history, whenever the amount of carbon dioxide in the atmosphere has gone up, the temperature of Earth has also gone up. And when the temperature goes up, the carbon dioxide in the atmosphere goes up even more.

burn

burn

Definition

verb

1. to be on fire.

   The forest burned for three days.

2. to cause to be on fire.

   He burned his trash in the back yard.

3. to hurt or damage by too much heat.

   She burned her hand on the stove.

noun

1. an injury caused by heat or fire.

   He got a burn from touching a hot pan.

Advanced Definition

intransitive verb

1. to be in flames; be on fire.

   The forest burned for three days.

2. to be very hot.

3. to sting or hurt sharply.

4. of food, to become overcooked or charred.

5. of a person, to be overexposed to the sun.

6. to experience strong emotion, such as anger or desire.

7. to emit bright light.

   Are the front lights burning?

transitive verb

1. to cause (something) to be set on fire.

2. to injure or damage by excessive exposure to heat, as from flame or sunlight.

3. to use as a source of energy.

Our furnace burns oil.

4. to cause to lose money through trickery; swindle.

5. to cause to be humiliated.

noun

1. an injury caused by heat.

2. an instance of burning.

These are some examples of how the word or forms of the word are used:

1. Near the end of the war, Sherman successfully captured the strategic city of Atlanta, Georgia. He **burned** all the Confederate supplies there, along with many of the city's buildings.

2. They threw rocks at the windows. They **burned** a likeness of Tyler in protest. They even tried to impeach him as president. But the soft-spoken Tyler stood firm in his beliefs.

3. Hold the **burned** area under cool (not cold) running water for about 15 minutes, or apply a cold compress to it. Cooling reduces swelling by conducting heat away from the skin.

4. Miraculously, the light in the temple **burned** for 8 days with that same, small amount of oil. This was exactly the amount of time needed for the new oil to be made.

5. Before the festival, people make krathongs. A krathong is a small boat made of a banana leaf. Each krathong contains a flower, a candle, and three incense sticks. Incense sticks produce a pleasant smell when **burned.**

6. Fire was one of the greatest dangers for a medieval town. Most houses were made of wood. Only the wealthy had stone and brick houses. One city in France **burned** to the ground six times between 1200 and 1255 CE!

7. Dad was eating his **burned** toast with honey, and trying to mop up a gloppy mess on the floor. He did not look happy. Miranda was at the table eating a bowl of Kix. She threw one at me. I decided to skip cereal.

8. The British invasion caused Madison and his wife, Dolly, to flee Washington, D.C. Dolly was famous for throwing lavish parties at the White House. The fact that the White House was **burned** by the British didn't stop her. She continued her presidential entertaining from a new Washington home.

fossil

fos · sil

Advanced Definition

noun

1. the remains or trace of a living organism from an earlier geologic age, embedded in earth or rock.

2. something or someone that is outdated and cannot accommodate new ideas or practices.

adjective

1. of or pertaining to the remains or traces of living organisms of former geologic ages or the earth or rock layers in which such traces are found.

fossil remains

fossil fuel

Spanish cognate

fósil: The Spanish word *fósil* means fossil.

These are some examples of how the word or forms of the word are used:

1. Once we started finding **fossils**, it got really exciting. We found fossils of bugs, fish, and small plants.

2. Millions of years ago, before humans existed, dinosaurs ruled the earth. Their **fossils** have been found all over the world.

3. Paleontologists have the coolest job. They get to spend some days digging in the earth looking for **fossils**. How cool is that?

4. Scientists recently found dinosaur **fossils** that are unlike any they had seen before. Fossils are remains of plants and animals that lived long ago.

5. Sue is super! She is the largest and most complete T. rex **fossil** ever found. A fossil is the remains of an animal or a plant that lived long ago.

6. Scientists have been able to learn a lot about prehistoric people. How? They study the clues these people left behind. The clues include **fossils** and tools buried in the ground for thousands of years.

7. Most of the energy people use comes from coal, oil, and gas. They are called **fossil** fuels. Those fuels come from fossils under the ground. Fossils are the remains of plants and animals that lived long ago.

8. The dinosaur's **fossils** were actually found almost 30 years ago. They were put in a drawer for

safekeeping. A scientist took the fossils out a few years ago. He decided to study them. That led him to make the discovery.

9. Dinosaurs died out 65 million years ago. No people were alive during that time. Then how do we know so much about dinosaurs? People have found dinosaur **fossils** in the ground. Fossils are remains of plants and animals that lived long ago.

10. Scientists recently reported finding fossils of the largest bird ever known. (A **fossil** is the remains of a plant or an animal that lived long ago.) The creature is one of a group called terror birds. They lived millions of years ago in Argentina, a country in South America.

temperature

tem · per · a · tu

Definition

noun

1. the degree of heat or cold in an object or an environment.

   The temperature is higher in the afternoon than in the evening.

2. a condition when the body is warmer than normal because of illness; fever.

   John stayed in bed because he had a temperature.

Advanced Definition

noun

1. the degree of heat or cold of a body or an environment.

   I don't mind the temperature during the winter, but I hate shoveling snow.

   The temperature in the office was uncomfortable to work in.

2. the specific level of heat or cold in a body or environment expressed as a number of degrees and determined by measuring with a thermometer or other standard instrument.

   Did the meteorologist say what the temperature was?

   The temperature was 85 degrees Fahrenheit in the mid afternoon.

3. abnormally high body temperature because of infection or illness; fever.

Spanish cognate

temperatura: The Spanish word *temperatura* means temperature.

These are some examples of how the word or forms of the word are used:

1. Jeremy's dad put a hand on his forehead and checked for a **temperature**. Nothing.
2. In northern states such as New Jersey, this happens around early June when the **temperature** warms up to about 64 degrees.
3. Wind is really just air that moves across the Earth. One reason that air moves is because of changes in **temperature**.

RACE:

R - Restate question
A - Answer question
C - Cite text evidence
E - Explain the evidence

Text Evidence Stems:

Cite Evidence:

*According to the text...
*Based on what I read in the text...
*On page __ the text said...
*In paragraph __ the text stated...
*I know this because...
*Based on the illustration/graphic, I know...
*In the text, the author said...

Explain Evidence:

*This explains...
*This shows...
*This means...
*This proves...
*Now I understand...
*I believe/feel...
*Now I know...

Don't forget to use the RACE strategy when answering questions.

♡ Mrs. Norgard

9 Read the sentence.

Once Brigida set her mind on a goal, there was no stopping her. So when she decided she wanted to run a marathon, no one questioned her.

Which sentence could be added next to **best** maintain consistency in style?

A. It was a preposterous ambition when one took into account the fact that she was simply not an athlete.

B. It was a crazy goal—I mean, she didn't even like running.

C. The goal was aspiring; after all, she had never before shown any inclination toward running.

D. Never mind that she had never before run more than a few blocks in one stretch.

10 Read the sentence.

While I <u>was driving</u> to work yesterday, I <u>see</u> her <u>running</u> to <u>catch</u> the bus.

Which underlined word or phrase should be changed to correct a mistake?

A. was driving

B. see

C. running

D. catch

5 In which sentence does the underlined group of words function as a noun?

A. Mrs. Lopez is bringing extra chairs.

B. I am running late because of Steven.

C. Jenna said that she would save me a seat.

D. At what time will he arrive?

6 Read the sentences.

Joel needs to find a study partner for math. He thinks Jake would be perfect. Jake is patient and good at math.

Which revision **best** combines the sentences into one sentence?

A. If Joel needs to find a study partner for math, he thinks Jake would be perfect because Jake is patient and good at math.

B. Joel needs to find a study partner for math, and he thinks Jake would be perfect because Jake is patient and good at math.

C. Joel needs to find a study partner for math, so he thinks Jake would be perfect since Jake is patient and good at math.

D. Though Joel needs to find a study partner for math, he thinks Jake would be perfect as Jake is patient and good at math.

Answer the following questions.

1 Read the sentence.

Surprised by the sudden scream, the flashlight fell from Nancy's hand.

Choose the **best** way to revise the sentence to correct the misplaced modifier.

A. Surprised by the sudden scream, Nancy's hand dropped the flashlight.

B. Because of the sudden scream, the flashlight fell from a surprised Nancy's hand.

C. Surprised by the sudden scream, Nancy dropped the flashlight.

D. From Nancy's hand, the flashlight fell, surprised by the sudden scream.

2 Read the paragraph.

The city was full of music, and wandering around, Annabelle was exposed to its richness. She was convinced that everyone who lived in the city could sing or play some musical instrument. As she walked down the streets, Annabelle heard the sounds of jazz and blues—her favorite—coming from the clubs.

Which underlined pronoun is vague or unclear?

A. its

B. everyone

C. she

D. her

4 Read the sentence.

For her birthday, Stuart surprised his grandmother by baking her favorite dessert, apple pie, which she loved more than all other desserts, for her special day.

Which is the **best** way to revise the sentence to remove repetitive language?

A. Stuart, wanting to surprise his grandmother on her special day, made her favorite dessert—apple pie.

B. For her special day, Stuart surprised his grandmother with her favorite dessert.

C. Stuart baked his grandmother an apple pie.

D. For her birthday, Stuart surprised his grandmother by baking her an apple pie—her favorite dessert.

5 Read the sentences.

(1) "It's OK," Patel said, slowly approaching her cat, Scout. (2) The cat was pressed against the chain link fence, shaking and mewling piteously. (3) Her coat was filthy, looking darker than usual. (4) Fearing she would further scare the cat, Patel moved even more slowly.

Which sentence is the **most** descriptive?

A. sentence 1

B. sentence 2

C. sentence 3

D. sentence 4

Answer the following questions.

1 Read the paragraph

(1) One of the most important roles of the United Nations (UN) is to promote world peace. (2) The UN has been instrumental in bringing an end to conflicts throughout the world since the 1990s. (3) Peace was sometimes achieved through UN mediation. (4) Other times, peace was achieved through third parties with UN support.

Which revision that combines sentences 3 and 4 into one sentence shows the logical relationship between the two sentences?

A. Peace was sometimes achieved through third parties along with UN support and other times it was mediation by just the UN alone that brought peace.

B. Sometimes peace was achieved through UN mediation, while at other times third parties secured peace with UN support.

C. Peace was achieved sometimes through UN mediation alone, and sometimes it was achieved by third parties with the support of the UN.

D. Peace, sometimes through UN mediation and sometimes through third parties supported by the UN, was achieved.

2 Read the sentence.

Oliver, a locally famous artist in Dobbsville, soon became Jenny's teacher and mentor, teaching her how to make stained glass art from glass.

Which is the **best** way to revise the sentence to remove repetitive language?

A. Oliver soon became Jenny's mentor, teaching her how to make art from glass.

B. Oliver, a locally famous artist, soon became Jenny's mentor, teaching her how to make stained glass art.

C. Oliver, a famous artist in Dobbsville, soon became Jenny's teacher and mentor, teaching her how to make stained glass art.

D. Oliver, a locally famous artist in Dobbsville, soon became Jenny's mentor, teaching her how to make stained glass art.

Hint Make sure the sentence you choose removes repetitive details while keeping important information.

3 Read the sentence.

The goals you set for yourself should be specific and realistic. If a goal is vague, you will be unable to determine when you have achieved it.

Which sentence could be added next to **best** maintain consistency in style?

A. Likewise, a goal that is impractical will only lead to disappointment when you cannot achieve it.

B. Also, setting an idiotic goal will result in feelings of failure if you can't achieve it.

C. I mean, wouldn't you feel foolish if your goal were so unrealistic that you couldn't possibly achieve it?

D. Additionally, an impractical goal won't leave you feeling great when you fail.

Hint Are the words in the original sentences formal or informal? The sentence that follows should have the same type of word choice.

You can also use precise language for emotional impact. The words you use can give special attention to particular pieces of information. For example, if you want to emphasize the impact of a storm, you might write "The storm was devastating" instead of "The storm caused a lot of damage."

Sensory Language

Descriptive details can add richness and clarity to your writing. Sensory language uses one or more of the five senses (sight, smell, sound, taste, touch) to tell about something. Add details to the following sentence to make it more descriptive.

On her way to the bus stop, Brandi paused to watch the action at the construction site.

Punctuation

Punctuation, especially when used with parenthetical elements, can also be used in effective ways. A parenthetical element is information in a sentence that is not necessary to understanding the idea expressed in a sentence. You can use commas, parentheses, or dashes to separate parenthetical elements.

- Use dashes to emphasize information: *The shirt—which I only wore once and was very expensive—had a stain on it.*
- Use parentheses to deemphasize information: *The shirt (a light blue) had a stain on it.*

Language Spotlight • Eliminate Wordiness and Redundancy

You want your readers to pay attention to your words—not get distracted. As you write, use accurate and straightforward words. Use simple words that make your point, and eliminate words that repeat ideas.

Read the sentences below. Note which words were deleted in the second sentence.

wordy/redundant: Aaron is an awesome guitarist who plays the guitar well.

clear: Aaron plays the guitar well.

How would you eliminate wordiness and redundancy in the sentence below?

On the occasion of taking a shopping trip to the mall, I may buy two shirts.

LESSON 15

Style, Tone, and Effect

1 GETTING THE IDEA

There are many ways to make your writing more effective. This includes using a variety of sentence patterns and lengths and using words and punctuation to develop a writing style and tone.

Varying Sentence Patterns

If your writing consists of too many sentences with the same structure, your writing will read as dull and uninteresting. Using a variety of sentence types will make your writing more clear and engaging. There are several sentence types you can choose from when writing.

- A **simple sentence** has one independent clause.
- A **compound sentence** has two or more independent clauses connected by a coordinating conjunction.
- A **complex sentence** has one independent clause and one or more dependent clauses.
- A **compound-complex sentence** has two or more independent clauses and one or more dependent clauses.

Varying the lengths of your sentences makes your writing interesting and creates a rhythm.

- Use a short sentence to clearly show one idea. You can also use a short sentence to add emphasis.
- Use longer sentences to show the complex relationships between your ideas.
- Use transitional words and phrases such as *after all, also, and, but, despite, for example, however, in the meantime, still,* and *therefore.*

3 LESSON PRACTICE

Answer the following questions.

1 Which sentence contains an error?

A. We rode our bikes down the long dirt path.

B. The shiny, red, and fast car you saw belonged to Zoe.

C. That was an interesting, informative presentation.

D. Dad wore his navy, blue suit to Nicole's graduation.

2 Read the sentence.

I've already told you its too loose to stay on.

What change needs to be made to correct the error?

A. Change already to all ready.

B. Change its to it's.

C. Change too to to.

D. Change loose to lose.

3 Read the paragraph.

(1) Gina was happy to finally reach Pennsylvania after driving through Kentucky West Virginia, and Maryland. (2) She was there to visit her cousins, Robin, Mabel, and Sean. (3) Last year they spent the week visiting, museums; bicycling, around town; and eating, lots of great food. (4) She hoped this time they could visit the zoo, catch a ballgame, and eat more great food!

Which sentence uses commas correctly?

A. sentence 1

B. sentence 2

C. sentence 3

D. sentence 4

2 COACHED EXAMPLE

Answer the following questions.

1 Read the sentence.

It makes her nervous when visitors walk too close to the enormous cactus with its numerus spines.

Which underlined word in the sentence is spelled incorrectly?

A. nervous

B. enormous

C. cactus

D. numerus

Hint Remember that adjectives are spelled with *-ous* and nouns are spelled with *-us*. Look at each underlined word. Determine whether it is an adjective or a noun and whether it follows the spelling rule.

2 Read the sentence.

Michael an outstanding pitcher is attending a top university in the fall.

Which is the correct way to punctuate the sentence?

A. Michael an outstanding pitcher is attending (a top university) in the fall.

B. Michael an outstanding pitcher, is attending a top university, in the fall.

C. Michael—an outstanding pitcher—is attending a top university in the fall.

D. Michael an outstanding pitcher, is attending a top university in the fall.

Hint Which part of the sentence is not essential to the meaning of a sentence? That is the parenthetical element, and it should be separated from the rest of the sentence by commas, parentheses, or dashes.

Spelling

Incorrect spelling can distract readers from your ideas. To help you spell correctly without referring to a dictionary, remember the following spelling patterns.

i before *e* except after *c*

When spelling words with the vowels *i* and e:

- write *ie* in most words: *grieve, retrieve.*
- write *ei* if the letters come after c: *conceit, deceive.*
- write *ei* if the vowel sound is long: *reign, weigh.*
- write *ie* if the c has the /sh/ sound: *ancient, conscience.*

oi or *oy*

when spelling most words:

- write *oi* in the middle of words: *foil, joist.*
- write *oy* at the end of words: *coy, ploy.*

-ous or *-us*

- Write *-ous* if the word is an adjective: *momentous, prosperous.*
- Write *-us* if the word is a noun: *apparatus, census.*

-sion or *-tion*

- Write *-sion* if the ending comes after the letter *l*: *expulsion, revulsion.*
- Write *-sion* for most words in which the ending comes after the letters *n* or *r*: *mansion, version.*
- Write *-sion* for nouns based on words ending in *-ss* or *-mit*: *confess/confession, omit/omission.*
- Write *-tion* if the word is a noun related to a verb ending in *-ate*: *educate/education, meditate/meditation.*
- Write *-tion* for most words in which the ending comes after a consonant other than the letters *l, n,* or *r*: *contraption, traction.*

LESSON 14

Mechanics

1 GETTING THE IDEA

Besides grammar, using correct punctuation and spelling ensures that the message in your writing is clear.

Commas and Coordinate Adjectives

Coordinate adjectives are adjectives with equal weight, or importance, in describing a noun. To know whether the adjectives have equal weight, reverse the order of the adjectives in the sentence. If the adjectives still make sense, they are coordinate adjectives. Use a comma to separate two coordinate adjectives.

We got ready for some cold, windy weather.

We got ready for some windy, cold weather.

If you write a sentence with more than two coordinate adjectives, use commas and the word *and* to separate the adjectives.

We got ready for some cold, windy, and rainy weather.

A **non-coordinate adjective** is usually the last adjective in a series and is often considered part of the noun it precedes. Its order *cannot* be reversed with another adjective. Do not use a comma to separate a non-coordinate adjective from another adjective.

Our yard has a tall pine tree. (NOT *a pine, tall tree*)

Read the following sentences. Which sentence has coordinate adjectives? Correct the punctuation in that sentence.

Clinton is donating his two blue windbreakers to the clothing drive.

Clinton hiked on the steep narrow path.

5 Read the sentences.

The girls walked into the restaurant. Grandmother waved them over. The bracelet on Grandmother's wrist sparkled.

Which revision **best** combines the sentences into one sentence?

A. If the girls walked into the restaurant, Grandmother waved them over and the bracelet on her wrist sparkled.

B. When the girls walked into the restaurant, Grandmother waved them over, and the bracelet on her wrist sparkled.

C. The girls walked into the restaurant and Grandmother waved them over because the bracelet on her wrist sparkled.

D. The girls walked into the restaurant and Grandmother waved them over although the bracelet on her wrist sparkled.

3 LESSON PRACTICE

Answer the following questions.

1 Read the paragraph.

Jemma and Katie were in charge of making posters for the school play. They worked on the posters for weeks. Everyone who saw the posters praised them. The girls were proud of their hard work.

Which underlined pronoun is vague or unclear?

A. They

B. Everyone

C. them

D. their

2 Read the sentences.

Duane said he learns about the theft on the news, but I think he was there.

Which underlined word should be changed to correct a mistake?

A. said

B. learns

C. think

D. was

2 COACHED EXAMPLE

Answer the following questions.

1 Read the sentences.

As the rain poured, it pelted the windows. The rain finally ends after an hour, and then everything was quiet.

Which underlined word should be changed to correct a mistake?

A. poured

B. pelted

C. ends

D. was

Hint Remember that the verb tense should be the same throughout a piece of writing unless there is a need to show a shift in time. Which of the underlined verbs is in a different tense?

2 Read the sentence.

Cindy gathered the overdue books so she could return _____ to the library.

Which word correctly completes the sentence?

A. her

B. it

C. their

D. them

Hint What is the antecedent of the missing pronoun? Is it singular or plural? Is it male, female, or neutral? The correct pronoun should match the noun in number and gender.

Subject-Verb Agreement

For your writing to make sense, you must make sure your subjects and verbs agree in both number and tense. Singular subjects require singular verbs. Plural subjects require plural verbs.

singular subject: Carlos is going to the park with his friends.

plural subject: Carlos and his friends are going to the park.

Shifts in Verb Tense

The tense of a verb tells whether an action or state of being takes place in the past, present, or future. For the most part, you should use the same verb tense throughout a piece of writing. However, there may be times when you need to change the verb tense to show something happening at a different time. Correct the verb tense in the sentence below.

The book *The Two Towers* is a book by J.R.R. Tolkien that is published in 1954.

Pronouns

Be on the lookout for pronoun-antecedent agreement. A **pronoun** takes the place of a noun. The **antecedent** is the noun the pronoun replaces. Without proper pronoun-antecedent agreement, readers may get confused about the subjects and objects in your sentences.

- Singular nouns require singular pronouns, and plural nouns require plural pronouns.
- If the pronoun's antecedent replaces two or more singular nouns, the pronoun is plural.
- The nouns and pronouns must also agree in gender: male nouns require male pronouns, female nouns require female pronouns, and neutral nouns require neutral pronouns.

singular, neutral noun/pronoun: I bought the phone last month, but it is already outdated.

plural, neutral noun/pronoun: I left the phones on the table so you could take **them** back to the store.

LESSON 13

Grammar and Usage

1 GETTING THE IDEA

Good writers communicate their messages clearly in their writing. **Grammar** is the system of language you use when you write. Knowing grammar rules will help you make your writing more effective.

Phrases and Clauses

Sentences are made up of phrases and clauses. Understanding what they are and how they function can help you write better. Including phrases and clauses in your writing can add extra details that make your writing more interesting.

A **phrase** is a group of related words without a subject and predicate. A phrase is used as a single part of speech.

in the park; on Saturday

A **clause** is a group of words with a subject and a predicate. An **independent clause** expresses a complete thought and can stand on its own. A **dependent clause** expresses an incomplete thought and cannot stand on its own. A **noun clause** functions as a noun.

independent clause: I baked chocolate chip cookies.

dependent clause: which smelled delicious

noun clause: the treat that is my favorite dessert

Sentence Types

Using a variety of sentence types helps you show different relationships among ideas in your writing.

A **simple sentence** expresses one complete thought; it is an independent clause. It has a subject and a predicate. Underline the subject in this sentence.

The beachcombers looked for unusual shells.

6 "A Linnet in a Gilded Cage," "A Song of Flight," and "The Story of an Hour" all explore the same theme. Write an essay that identifies the common theme. In your essay, compare and contrast how the authors of these texts use different literary devices, such as character development, description, plot elements, and figurative language, to convey this theme. Be sure to include specific details from each text to support your response.

Writer's Checklist for the Text-Dependent Analysis Prompt

PLAN before you write

- Make sure you read the prompt carefully.
- Make sure you have read the poems and passage carefully.
- Think about how the prompt relates to the poems and passage.
- Organize your ideas on scratch paper. Use a thought map, outline, or other graphic organizer to plan your essay.

FOCUS while you write

- Analyze the information from the poems and passage as you write your essay.
- Make sure you use evidence from the poems and passage to support your response.
- Use precise language, a variety of sentence types, and transitions in your essay.
- Organize your paper with an introduction, body, and conclusion.

PROOFREAD after you write

- ☐ I stayed focused on responding to the prompt.
- ☐ I used evidence from the poems and passage to support my response.
- ☐ I corrected errors in capitalization, spelling, sentence formation, punctuation, and word choice.

3 Read the following claim about the passage.

Mrs. Mallard has some sadness about her husband's death but finds her new independence incredibly freeing.

Which sentences from the passage **best** support this claim?

A. When the storm of grief had spent itself she went away to her room alone. She would have no one follow her.

B. She knew that she would weep again when she saw the kind, tender hands folded in death; . . . But she saw beyond that bitter moment a long procession of years to come that would belong to her absolutely.

C. There would be no one to live for during those coming years; she would live for herself.

D. And yet she had loved him—sometimes. Often she had not. What did it matter!

4 Reread the last sentence from the passage.

When the doctors came they said she had died of heart disease—of the joy that kills.

Based on what you have read, how would you assess the doctors' point of view on Mrs. Mallard's death?

A. The doctors are correct on both points; the joy of seeing her husband shocked her fragile heart and killed her.

B. The doctors are correct on one point; her heart failed, but it was because of the fright of seeing her husband.

C. The doctors are correct on one point; her heart failed, but it was because of the realization that she was not free of her husband.

D. The doctors are correct on one point; she was overjoyed to see her husband, but falling down the stairs killed her.

Reading Guide

Why does Mrs. Mallard now wish that her life will be long?

How does the author show how Mrs. Mallard reacts when she sees that her husband is still alive?

What do the doctors say about Mrs. Mallard's death? What do the doctors think happened? How does this relate to Mrs. Mallard's true feelings?

Josephine was kneeling before the closed door with her lips to the keyhole, imploring for admission. "Louise, open the door! I beg; open the door—you will make yourself ill. What are you doing, Louise? For heaven's sake open the door."

"Go away. I am not making myself ill." No; she was drinking in a very elixir of life through that open window.

Her fancy was running riot along those days ahead of her. Spring days, and summer days, and all sorts of days that would be her own. She breathed a quick prayer that life might be long. It was only yesterday she had thought with a shudder that life might be long.

She arose at length and opened the door to her sister's importunities. There was a feverish triumph in her eyes, and she carried herself unwittingly like a goddess of Victory. She clasped her sister's waist, and together they descended the stairs. Richards stood waiting for them at the bottom.

Someone was opening the front door with a latchkey. It was Brently Mallard who entered, a little travel-stained, composedly carrying his gripsack and umbrella. He had been far from the scene of the accident, and did not even know there had been one. He stood amazed at Josephine's piercing cry; at Richards' quick motion to screen him from the view of his wife.

When the doctors came they said she had died of heart disease—of the joy that kills.

Use the Reading Guide to help you understand the passage.

The Story of an Hour

by Kate Chopin

Reading Guide

Pay close attention to how the author describes Mrs. Mallard.

How does Mrs. Mallard react to her husband's death in this section?

What does the author reveal about Mrs. Mallard's character?

Knowing that Mrs. Mallard was afflicted with a heart trouble, great care was taken to break to her as gently as possible the news of her husband's death.

It was her sister Josephine who told her, in broken sentences; veiled hints that revealed in half concealing. Her husband's friend Richards was there, too, near her. It was he who had been in the newspaper office when intelligence of the railroad disaster was received, with Brently Mallard's name leading the list of "killed." He had only taken the time to assure himself of its truth by a second telegram, and had hastened to forestall any less careful, less tender friend in bearing the sad message. . . .

She wept at once, with sudden, wild abandonment, in her sister's arms. When the storm of grief had spent itself she went away to her room alone. She would have no one follow her.

There stood, facing the open window, a comfortable, roomy armchair. Into this she sank, pressed down by a physical exhaustion that haunted her body and seemed to reach into her soul. . . .

She was young, with a fair, calm face, whose lines bespoke repression and even a certain strength. But now there was a dull stare in her eyes, whose gaze was fixed away off yonder on one of those patches of blue sky. It was not a glance of reflection, but rather indicated a suspension of intelligent thought.

There was something coming to her and she was waiting for it, fearfully. What was it? She did not know; it was too subtle and elusive to name. But she felt it, creeping out of the sky, reaching toward her through the sounds, the scents, the color that filled the air.

Answer the following questions.

1 Which statement about **both** poems is true?

A. Both poems use allusions to classical texts to express a theme related to freedom.

B. Both poems use the metaphor of flying to express a theme related to freedom.

C. Both poems use personification of the sun and the wind to express a theme related to freedom.

D. Both poems use similes about nature to express a theme related to freedom.

Hint Look for examples of each type of literary device in each poem. Remember that the literary device must appear in both poems, not just one.

2 Reread the lines from the poem below.

In frosty winter one might doubt **Which bird is luckier now.**	**Which linnet is the luckier bird,** **Oh who could doubt it now?**

Which of these **best** describes how the author uses the repetition of *luckier* and *now* to express a theme?

A. The author uses repetition to make a point that a bird that has a warm home in winter is the luckier bird.

B. The author uses repetition to pose a question about which bird is luckier and then answers the question by saying the bird that is free is luckier.

C. The author uses repetition to have the reader consider which bird is luckier and then concludes by asking the reader to reconsider.

D. The author uses repetition to repeat the same statement: that a free bird is luckier.

Hint Reread each set of lines in the context of the poem. Does anything change in the poem between these two lines? Do the lines express the same idea or different ideas?

Finishing Up

Be sure you reread your writing to check that your opinion is clear and your reasons are logically organized. Proofread your work for errors in grammar, mechanics, and spelling.

Use the following checklist to guide your revision.

- ☐ Does my response answer all parts of the prompt?
- ☐ Is my position clearly stated?
- ☐ Do I use enough textual evidence to support my claim?
- ☐ Is the response well organized and focused?
- ☐ Is my writing free of errors?

Language Spotlight • Misplaced and Dangling Modifiers

Modifiers are words or phrases that tell about who is doing the action in a sentence or what action is being done. If a modifier is misplaced or dangling, it can cause confusion about what is happening in a sentence or who is doing the action.

Suppose you wanted to say that John won an art award but no other awards. Look at how the placement of the word *only* changes the sentence below.

Misplaced Modifier: Only John won the art award.
Corrected Use of Modifier: John won only the art award.

The first sentence below includes a dangling modifier (underlined).

Dangling Modifier: By keeping the farm, injustice was fought by Cassie's family.
Corrected Use of Modifier: By keeping the farm, Cassie's family fought injustice.

In the first sentence, the phrase "by keeping the farm" is a dangling modifier because it is not clear from the rest of the sentence who is doing this action. In the second sentence, it is clear that Cassie's family is keeping the farm.

Suppose you wanted to say that you were about to fall down the stairs but did not. Underline the sentence that correctly places the modifier to express this meaning.

I almost fell all the way down the stairs. I fell almost all the way down the stairs.

Rewrite the sentence below to fix the dangling modifier.

Looking into the distance, the hills looked small to me.

LESSON 12

Write a Text-Dependent Analysis

1 GETTING THE IDEA

When you write a **text-dependent analysis**, you make a claim about one or more texts. You should make your claim after reading and reflecting upon the texts, using textual evidence to support your ideas. You can write an analysis on fiction or nonfiction texts, or you can compare and contrast texts across genres.

Understanding a Prompt

You will often be asked to respond to a writing prompt about a text or texts you've read. This response may ask you to focus on one or more elements of a text or texts. For example, you might be asked to analyze character, plot, setting, or author's style. Or, you might be asked to explain how one or more of these elements contributes to the text's theme, or central message.

Read the example below and circle the titles of the two texts. Then, underline the verbs in the prompt that identify what it is asking you to do with these texts.

> Compare and contrast the ways in which racism affects Cassie, the narrator of Mildred Taylor's novel *Roll of Thunder, Hear My Cry*, and the first-person narrator of Langston Hughes's poem "I, Too, Sing America."

Stating a Claim

Because the prompt above asks you to *compare* and *contrast* the ways in which racism affects the narrators in the two texts, you'll have to make a claim about how their challenges in the face of racism are alike and different. To state a claim that satisfies all parts of a prompt, it can be helpful to turn the prompt into questions that guide your writing.

- How does racism affect Cassie in *Roll of Thunder, Hear My Cry*?
- How does racism affect the first-person narrator of "I, Too, Sing America"?
- How are the characters' situations alike and different?

To make a claim, think about what you believe about the texts and the characters. To find supporting evidence for your claim, think about what details from the text led you to make it. Look over notes you took as you read, or reread the texts with the writing prompt in mind.

6 "On the Slopes—or Not?" and "Snowboarding 101" are both about the winter sport of snowboarding. Based on what you have read in these passages, write a letter to a friend, persuading him or her to try snowboarding. Be sure your argument includes a strong claim about the benefits of snowboarding as well as counterclaims to any objections that your friend might raise. Use evidence from **both** passages in your response.

Writer's Checklist for the Text-Dependent Analysis Prompt

PLAN before you write

- Make sure you read the prompt carefully.
- Make sure you have read the passages carefully.
- Think about how the prompt relates to the passages.
- Organize your ideas on scratch paper. Use a thought map, outline, or other graphic organizer to plan your essay.

FOCUS while you write

- Analyze the information from the passages as you write your essay.
- Make sure you use evidence from the passages to support your response.
- Use precise language, a variety of sentence types, and transitions in your essay.
- Organize your paper with an introduction, body, and conclusion.

PROOFREAD after you write

- ☐ I stayed focused on responding to the prompt.
- ☐ I used evidence from the passages to support my response.
- ☐ I corrected errors in capitalization, spelling, sentence formation, punctuation, and word choice.

Answer the following questions.

1. Which statement **best** describes the main idea of the passage?

   A. Snowboarding is a popular winter sport that requires special equipment and dedication to master.

   B. To get onto the chairlift, skate up to the line and wait for the attendant to signal when it's safe to move into position.

   C. Despite its humble beginnings as a kids' toy, snowboards and snowboarding have become a major force in winter sports.

   D. For your first excursion in snowboarding, find a flat area or one with a gentle slope.

2. Which two skills should you master before getting on a chairlift and snowboarding downhill?

   A. staying dry and warm

   B. skating and gliding

   C. traversing and stopping

   D. edging with the board downhill

3. Read the following sentence.

   Located above the back binding, [the stomp pad] gives you a secure place to rest your foot while gliding.

   Which of the following **best** explains the purpose of the independent clause in the sentence?

   A. to describe where the stomp pad is located

   B. to explain the purpose of the stomp pad

   C. to give another idea for using a stomp pad

   D. to stress the importance of buying a stomp pad

Reading Guide

How are the details organized in the sections "Equipment" and "Starting Out"?

Why is it important to organize the details in this way?

How would a different organization make the comprehension more difficult?

Equipment

It is highly recommended that you visit a sports equipment store to get your snowboarding gear fitted by a trained, professional fitter. He or she will know how to identify your "lead," or controlling, foot—the one that goes into the binding at the front of the snowboard. The fitter can also identify a board that's the right length and width for you, depending on your height and weight. Consider getting a stomp pad, which is similar to a friction plate. Located above the back binding, it gives you a secure place to rest your foot while gliding.

Choose your boots before selecting your bindings; the boots should fit snugly without pinching or rubbing. Check to be sure that your foot doesn't slide around inside the boot; because if you can't control your foot inside the boot, you won't be able to control the snowboard. There are two kinds of bindings that you can choose to fit your boots: strap bindings and speed-entry bindings. Speed-entry bindings are, of course, more convenient, but they are also more expensive, so weigh your options when choosing your equipment.

Last but not least, you will need a leash, which is simply a strap that keeps the snowboard attached to your body so that it doesn't go flying away. The humble leash is inexpensive and important because most ski resorts won't let you snowboard without one.

Starting Out

For your first excursion in snowboarding, find a flat area or one with a gentle slope. Strap in your lead foot, leaving the other foot free. Keeping your knees bent, balance on your lead foot and kick off with your other foot, as you would if you were skateboarding. Keep propelling yourself forward with this skating motion until you feel comfortable and balanced. With that step mastered, you're reading to try gliding, which is just putting the loose foot on the snowboard (or stomp pad) instead of the ground.

4 This question has two parts. Answer Part One and then answer Part Two.

Part One

What is the climax, or turning point, in the story?

A. Jose is tired of practicing how to glide on the snowboard.

B. Jose sends his friends off to snowboard.

C. Jose follows a group of kids who turn out to professionals.

D. Jose joins a man who is teaching his children to snowboard.

Part Two

Which sentence from the passage **best** supports the answer in Part One? Choose **one** answer.

A. Jose watched his friends board the chairlift, and his stomach churned and knotted up.

B. The three of them did precisely what Mr. Trotter demonstrated; before Jose knew it, he was traversing the slope and he reached the bottom of the mountain without incident!

C. After making a few more runs with Mr. Trotter, Jose practiced by himself.

D. When Jose was too exhausted to make another run, he spotted Matt, Lola, and Jenna watching him snowboard from the bottom of the chairlift.

Hint Think about the conflict Jose faces. Which event shows a turning point during which Jose might begin to resolve his conflict?

After successfully negotiating the chairlift, Jose felt ready to conquer the world—that is, until he stood at the top of the slope for his first descent. It looked like he was going down Mount Everest! Mr. Trotter grinned at the expression on Jose's face and reassured him that everyone felt that way on his first descent. Mr. Trotter helped Jose and his kids secure their bindings.

"Follow me," instructed Mr. Trotter, "and imitate my body movements exactly." The three of them did precisely what Mr. Trotter demonstrated; before Jose knew it, he was traversing the slope and he reached the bottom of the mountain without incident! Jose looked back at the slope he had just snowboarded and was amazed to see what he had accomplished. After making a few more runs with Mr. Trotter, Jose practiced by himself.

When Jose was too exhausted to make another run, he spotted Matt, Lola, and Jenna watching him snowboard from the bottom of the chairlift. They all high-fived, congratulating Jose on his progress.

Answer the following questions.

1 What is the setting of "On the Slopes—or Not?"

A. an ice-skating rink

B. Trotter Mountain

C. a snowy playground

D. a winter sports resort

Hint Think about the surroundings and the objects in them that indicate where the story takes place.

Revising

Revising is the process of polishing, or improving, your writing. Look for more facts or details to add and places where transitions can help you connect ideas. Also look for repeated or unrelated information to delete. Check the order of your details or evidence to be sure they are arranged from most to least important.

Editing

Editing refers to correcting mistakes in spelling, grammar, usage, and mechanics. When time is short, you may need to combine the revising and editing processes. Use the following checklist to guide your revision.

- ☐ Does my response answer all parts of the prompt?
- ☐ Is my claim or main idea clear?
- ☐ Do I use enough relevant details to support my claim or main idea?
- ☐ Are my ideas presented in a logical order?
- ☐ Is my writing style appropriate for my task, purpose, and audience?
- ☐ Is my writing free of grammar, spelling, usage, and mechanics errors?

Publishing

Publishing is making a clean copy of your paper that incorporates the changes made while revising and editing. If you don't have time to rewrite your draft, be careful to follow your writing plan closely and to make your revisions clearly.

Language Spotlight • Clauses and Phrases

A **clause** is a group of words with a subject and verb. A **phrase** is a group of related words that does not contain both a subject and a verb. Knowing how to use phrases and clauses will help make your writing smoother.

	Function	Example
independent clause	tells a complete thought; can stand alone as a sentence	*The girls built a snowman.*
dependent clause	does not tell a complete thought; cannot stand alone as a sentence	*Although it was snowing,* everyone wanted to go.
phrase	shows a relationship between a noun or pronoun and another word in a sentence	The boys went *to the ice rink.*

On a separate piece of paper, write three sentences that include clauses and phrases. Then, have a partner identify each clause or phrase.

LESSON 11

Writing Foundations

GETTING THE IDEA

You are often asked to produce different kinds of writing for school—narratives, reports, and arguments. Whatever the task, using the **writing process** will help you produce a complete, polished piece. The steps in the writing process include prewriting, drafting, revising, editing, and publishing.

Prewriting

Prewriting is the first step in the writing process. It starts with deciding on a topic. Try to choose a topic that isn't too broad or too narrow. For example, the topic "Winter Sports" is too broad because there are too many winter sports. "How to Carry a Snowboard" is too narrow because it could be covered in just a few sentences. However, the topic "Snowboarding" would be a good choice.

After selecting your topic, brainstorm subtopics related to it. A graphic organizer or an outline is a good way to organize your thoughts.

Snowboarding			
Clothing		**Equipment**	
jacket	helmet	board	boots
gloves	goggles	bindings	leash

Prewriting also includes deciding on your audience and purpose. In a school, your **audience** will probably be your teacher and your purpose will be to respond to a prompt. Here are some types of writing you might be asked to write.

Text Type	Definition	Language
narrative	describes an event or series of events, which may be true or made up	may be formal or informal
argument	used to influence readers to agree with a claim or to take action; often called persuasive writing	formal
informative/ explanatory	provides facts about real-life people and/or events or explains how to do something	formal

Your audience and purpose help determine your style, language, and **word choice**. For example, a dialogue in a narrative may use **informal language**, but an argument or informational article requires **formal language**.

RACE:

R - Restate question
A - Answer question
C - Cite text evidence
E - Explain the evidence

Text Evidence Stems:

Cite Evidence:

*According to the text...
*Based on what I read in the text...
*On page __ the text said...
*In paragraph __ the text stated...
*I know this because...
*Based on the illustration/graphic, I know...
*In the text, the author said...

Explain Evidence:

*This explains...
*This shows...
*This means...
*This proves...
*Now I understand...
*I believe/feel...
*Now I know...

8th grade

Don't forget to use the RACE strategy when answering questions.

Mrs. Norgard

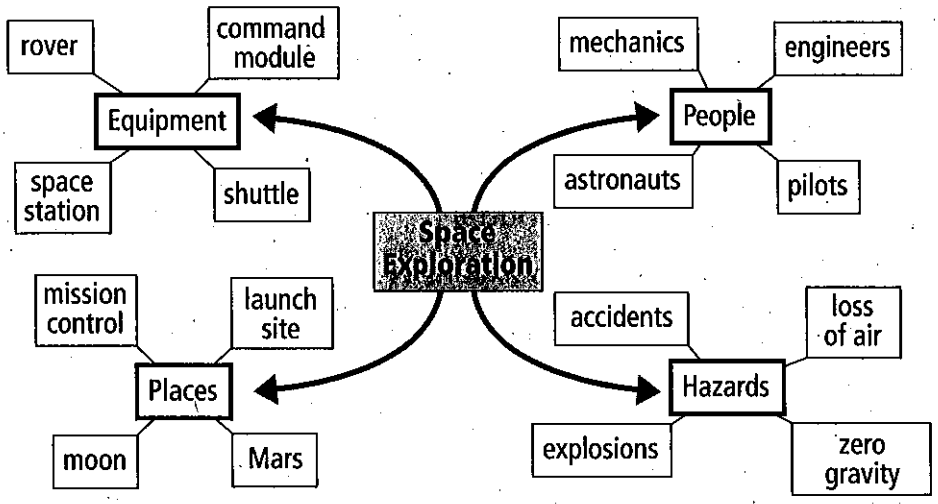
CHAPTER 3

Writing and Language

Grade 8- Make sure to read all of the lessons and instructions before you begin working.

The next step is to brainstorm for ideas and details related to the topic you have chosen. Many people brainstorm using a **graphic organizer**, such as a web or chart, to examine the relationships between ideas and details. Though you may end up using only a few of these ideas in your writing, it is helpful to see how they relate to each other.

Look at the graphic organizer below. How do the arrows show the relationships between words and concepts? The student who came up with this graphic organizer is most likely writing for which purpose?



Once you have a solid plan for which topics and main points to include in your writing, it's time to organize your thoughts. Most types of writing have three main parts.

- The **introduction** presents the topic that will be explored, as well as the author's unique position on the topic. In a narrative, the **exposition** acts as an introduction by establishing the characters, setting, plot, and conflict.
- The **body** is the main part of the writing, whether it is providing reasons, details, and evidence in support of the main idea or detailing the plot events in which characters take part.
- The **conclusion** summarizes the major points the author has presented and leaves the reader with something to think about. In a narrative, the **resolution** acts as a conclusion by wrapping up the plot events and emphasizing the narrative's theme.

One way to plan for writing is to use an **outline**, a list of ideas organized by numbers and letters to show order and importance. Keep in mind that your supporting details should be arranged from most important to least important. An outline like the one on the next page helps you visualize the presentation of information in an argument, though it could also be adapted for a narrative.

The **editing** step of the writing process is your last chance to correct mistakes in spelling, grammar, usage, and mechanics. These errors can distract the audience from the message of your writing and make them question your authority on the topic.

For some assignments, you will need to combine the revising and editing steps due to time constraints. Use the following checklist to guide your review.

- ☐ Does my writing address all parts of the task or prompt?
- ☐ Do I have a straightforward main idea, claim, or plot?
- ☐ Have I provided enough relevant supporting details?
- ☐ Are my ideas presented in a logical order?
- ☐ Do I express my ideas clearly and concisely?
- ☐ Is my writing style appropriate for my purpose and audience?
- ☐ Have I included a thoughtful introduction/exposition and conclusion/resolution?
- ☐ Is my writing free of grammar, spelling, usage, and mechanics errors?

Publishing

To **publish** a written work is to make a clean copy that is suitable for your audience. Published writing should contain all your revisions and edits. In some situations, you may not have time to rewrite your draft, so it is important to follow your writing plan closely and to write clearly. You will not get credit for something your teacher cannot read.

Language Spotlight • Verbals

Verbals are words or phrases created from verbs but used as different parts of speech. Verbals include participles, gerunds, and infinitives.

A **participle** ends with *-ing* (in the present) and can be used as an adjective. What does the underlined participle modify in this sentence?

The rapidly developing space program was very expensive.

Like the present participle, a **gerund** ends with *-ing,* but it is used as a noun. Is the underlined gerund in the subject or the predicate of the sentence?

Building a spacecraft requires many experts in different fields.

The word *to* usually precedes the verb in an **infinitive,** and it can be used as a noun or as a modifier. How is the underlined infinitive used in the following sentence?

American's goal was to win the space race.

Just then, Mom had hushed the kids because Armstrong was making his way down the module's ladder. A camera on the side of the module had been deployed to beam pictures back to Earth. Everyone had sat mesmerized by the images. When Armstrong set foot on the surface of the moon, he uttered his famous words: "It's one small step for man, one giant leap for mankind."

Conversation had come to an abrupt halt then, and there had been tears in everyone's eyes. Not another word had been spoken until the end of the broadcast after President Nixon spoke to the history-making astronauts through the Mission Control center in Houston.

When the broadcast ended, Levi and Patala had gotten ready to leave. "Maybe we'll have transporters someday, like the ones in *Star Trek.*" Levi had commented. "Then we could just beam ourselves home."

Janelle smiled at that memory and remembered thinking at the time that Kennedy would have been so proud of the Apollo 11 mission. Then she said to herself, "Now I think Kennedy would be even prouder of the quick-thinking Apollo 13 astronauts and the dedicated ground crew who brought the mission to a safe conclusion!"

Answer the following questions.

1. Which statement **best** explains how the setting relates to the central message the author wants to convey?

   A. Setting the passage in Janelle's home enables the author to share the dramatic events surrounding Apollo 13 and how relieved people were when the astronauts were able to splash down safely.

   B. Setting the passage in Janelle's home enables the author to show the concern and excitement that people during this time period had for the space program and how it impacted their daily lives.

   C. Setting the passage in Janelle's home enables the author to share Janelle's thoughts and feelings as well as those of her family and friends.

   D. Setting the passage in Janelle's home enables the author to share the fact that President Kennedy had convinced Congress to fund the space program.

Hint The passage is about Janelle's reaction to different events in the history of space exploration. What does the setting reveal about these events?

4 This question has two parts. Answer Part One and then answer Part Two.

Part One

What trait does Janelle exhibit in the passage?

A. selflessness

B. sensitivity

C. aggressiveness

D. generosity

Part Two

Which of the following sentences **best** supports the answer in Part One? Choose **one** answer.

A. She thought back to the Apollo mission she had watched last July.

B. She had cried then, too, but those were tears of pride and joy, not tears of fear and relief.

C. Her friends Levi and Patala had come over to watch the moon landing with her and her family.

D. She had made sandwiches, and they had brought snacks and soft drinks.

Hint Recall how Janelle reacts to the events in the passage. What do her actions tell you about the kind of person she is?

Reading Guide

Pay close attention to how the author has organized the passage.

What did Armstrong and Aldrin do on the moon?

How did the *Columbia* get back to Earth?

Just two months later, the Apollo 8 crew flew the first lunar orbital mission. Americans sat spellbound as this spacecraft sent images of the moon's surface to TVs on Earth. Apollo 10 also successfully orbited the moon and returned. But NASA still didn't know if astronauts could land on the moon and return. It was up to Neil Armstrong, Michael Collins, and Edwin "Buzz" Aldrin to find out.

On July 16, 1969, Aldrin, Armstrong, and Collins boarded the command module *Columbia* with the lunar module *Eagle* already onboard. They were beginning a 935,000-mile journey that would last eight days. Lift-off occurred at 9:32 a.m. Millions of people watched the launch on TV. On July 19, Apollo 11 entered the lunar orbit after traveling 240,000 miles in seventy-six hours. The next day, Armstrong and Aldrin boarded the lunar module. Collins remained in the command module. The lunar module separated from the command module and began its two-hour descent to the surface of the moon. At 4:17 p.m., the lunar module touched down. Immediately, Armstrong radioed Mission Control in Houston, Texas, and said, "The *Eagle* has landed."

Several hours after touchdown, Armstrong opened the lunar module's hatch and made his way down the ladder. Hundreds of millions of people watched his every move thanks to a TV camera attached to the *Eagle* that beamed the signal back to Earth. At 10:56 p.m., Armstrong stepped off the ladder and planted his foot on the moon's surface. That's when he issued the famous words: "It's one small step for man, one giant leap for mankind."

Aldrin joined Armstrong about twenty minutes later. Together, they planted an American flag on the moon's surface and took pictures of each other and the terrain. They also spoke with President Richard Nixon via Mission Control in Houston. A plaque they left behind read: "Here men from the planet Earth first set foot on the moon—July 1969 A.D. We came in peace for all mankind."

After conducting some scientific experiments and collecting samples, Armstrong and Aldrin returned to the *Eagle*. Closing the hatch behind them, the men could finally relax. They slept in the lunar module and spent the night on the moon. On July 21 at 1:54 p.m., the *Eagle* began its ascent and successfully docked with the *Columbia* at 5:35 p.m. Aldrin, Armstrong, and Collins then began their long journey back home. They safely splashed down in the Pacific Ocean at 12:50 p.m. on July 24, thus fulfilling President Kennedy's dream.

Answer the following questions.

1. What was the author's purpose for including the timeline?

   A. to provide additional information about the events mentioned in the passage

   B. to focus on the contributions of Soviet cosmonauts

   C. to show the order of important dates in space exploration

   D. to show the sequence of events in the development of the Apollo Program

2. Which of the following **best** describes the main idea of the passage?

   A. Several hours after touchdown, Armstrong took his first steps on the moon as millions of people watched his every move.

   B. On July 16, 1969, Aldrin, Armstrong, and Collins began their historic journey to the moon.

   C. President Kennedy's dream to put a man on the moon before the end of the decade was realized when Apollo 11 astronauts landed on the moon and returned safely in July of 1969.

   D. The Apollo Program was shut down because it was too expensive and labor-intensive to maintain.

3. Read the following sentence.

   After the successes of Projects Mercury and Gemini, the Apollo Program was formed to land a man on the moon.

   How does the transition word in the sentence show a relationship between ideas?

   A. The transition shows that NASA worked on other missions in preparation for the moon landing.

   B. The transition shows that rockets from earlier programs needed to be more powerful.

   C. The transition names the projects that were part of the Apollo Program.

   D. The transition signals that the Soviet Union was also in the space race.

6 In "Tears of Fear, Tears of Joy," you read about how a character reacted to the successful splashdown of Apollo 13 and the American astronauts' first walk on the moon. In "From Dream to Reality," you read about the early years of the space program leading up to the moon walk. Write an argument proposing that astronauts are courageous people. Include details about the risks astronauts take and how people feel about astronauts' bravery. Use evidence from both passages to support your response.

Writer's Checklist for the Text-Dependent Analysis Prompt

PLAN before you write

- Make sure you read the prompt carefully.
- Make sure you have read the passages carefully.
- Think about how the prompt relates to the passages.
- Organize your ideas on scratch paper. Use a thought map, outline, or other graphic organizer to plan your essay.

FOCUS while you write

- Analyze the information from the passages as you write your essay.
- Make sure you use evidence from the passages to support your response.
- Use precise language, a variety of sentence types, and transitions in your essay.
- Organize your paper with an introduction, body, and conclusion.

PROOFREAD after you write

- ☐ I stayed focused on responding to the prompt.
- ☐ I used evidence from the passages to support my response.
- ☐ I corrected errors in capitalization, spelling, sentence formation, punctuation, and word choice.

Stating a Claim

Because the prompt on the previous page asks you to *compare and contrast* the actions of two characters, you'll have to make a claim about how their actions are alike and different. To state a claim that satisfies all parts of a prompt, it can be helpful to turn the prompt into questions that guide your writing.

- What does Brian from *Hatchet* have to do to survive?
- What does Hercules from *The Twelve Labors of Hercules* have to do to survive?
- How are their struggles to survive alike and different?

To make a claim, think about what you believe about the texts and the characters. To find supporting evidence, think about what parts of each text led you to this belief in the first place. Look over notes you took as you read, or reread the texts with the writing prompt in mind.

Organizing Your Ideas

Using a graphic organizer or outline is a good way to map out your ideas before you begin writing. A student has started planning a response using the following outline.

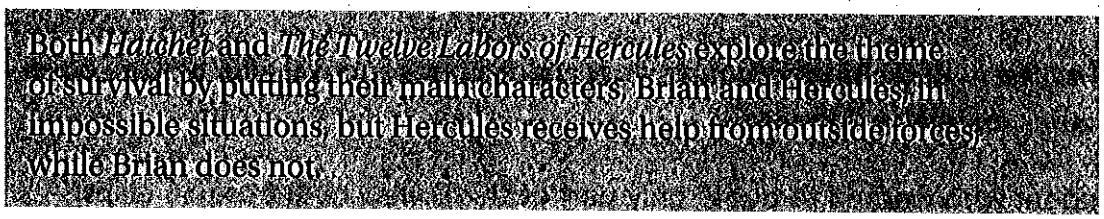
I. **Claim:** Brian from *Hatchet* and Hercules from *The Twelve Labors of Hercules* are similar in that they survive seemingly impossible situations, but their ability to do so is shaped by different factors.

   A. **Reason:** Both Brian and Hercules survive attacks by ferocious animals.

      1. **Support:** Brian survives a moose attack.
      2. **Support:** Hercules fights a lion.

Developing Your Response

You may begin writing once you have a solid plan in place. When you write an **introduction** to a text-dependent analysis, include the titles of the texts you're discussing and state your claim in an opening statement. For example:


Both *Hatchet* and *The Twelve Labors of Hercules* explore the theme of survival by putting their main characters, Brian and Hercules, in impossible situations, but Hercules receives help from outside forces, while Brian does not.

Once you've stated your claim, make a case for why it's valid. The **body** of your response will present the reasons and evidence that led you to make this claim. To support the claim above, you'd look for moments from *The Twelve Labors of Hercules* in which Hercules receives outside help and moments from *Hatchet* in which Brian figures things out on his own.

2 COACHED EXAMPLE

Read the passage.

excerpted from

Frankenstein

by Mary Shelley

In this excerpt, Victor Frankenstein, accompanied by his close friend, Henry Clerval, is reflecting on the monster he has created.

I trembled excessively; I could not endure to think of, and far less to allude to, the occurrences of the preceding night. I walked with a quick pace, and we soon arrived at my college. I then reflected, and the thought made me shiver, that the creature whom I had left in my apartment might still be there, alive and walking about. I dreaded to behold this monster, but I feared still more that Henry should see him. Entreating[1] him, therefore, to remain a few minutes at the bottom of the stairs, I darted up towards my own room. My hand was already on the lock of the door before I recollected myself. I then paused, and a cold shivering came over me. I threw the door forcibly open, as children are accustomed to do when they expect a spectre[2] to stand in waiting for them on the other side; but nothing appeared. I stepped fearfully in: the apartment was empty, and my bedroom was also freed from its hideous guest. I could hardly believe that so great a good fortune could have befallen me, but when I became assured that my enemy had indeed fled, I clapped my hands for joy and ran down to Clerval.

We ascended into my room, and the servant presently brought breakfast; but I was unable to contain myself. It was not joy only that possessed me; I felt my flesh tingle with excess of sensitiveness, and my pulse beat rapidly. I was unable to remain for a single instant in the same place; I jumped over the chairs, clapped my hands, and laughed aloud. Clerval at first attributed my unusual spirits to joy on his arrival, but when he observed me more attentively, he saw a wildness in my eyes for which he could not account, and my loud, unrestrained, heartless laughter frightened and astonished him.

. . . I was in reality very ill, and surely nothing but the unbounded[3] and unremitting[4] attentions of my friend could have restored me to life. The form of the monster on whom I had bestowed existence was forever before my eyes, and I raved incessantly[5] concerning him. Doubtless my words surprised Henry; he at first believed them to be the wanderings of my disturbed imagination, but the pertinacity[6] with which I continually recurred to the same subject persuaded him that my disorder indeed owed its origin to some uncommon and terrible event.

By very slow degrees, and with frequent relapses that alarmed and grieved my friend, I recovered.

[1] **entreating**: pleading with

[2] **spectre**: ghost

[3] **unbounded**: without limits

[4] **unremitting**: not stopping

[5] **incessantly**: continuously; without end

[6] **pertinacity**: determined attitude

3 The author chose Victor rather than Henry Clerval to narrate this passage. What effect does this choice have on the narration?

A. Victor's point of view reveals where he lives and where the monster might be. If Henry were narrating, readers might have learned why he accompanied Victor.

B. Victor's point of view reveals how much he fears the monster and Henry's seeing it. If Henry were narrating, readers might have learned how Henry felt about the monster.

C. Victor's point of view reveals his joy at finding the monster gone. If Henry were narrating, readers might have learned how Henry perceived his friend's joy.

D. Victor's point of view reveals his troubled state of mind and fear of the monster. If Henry were narrating, readers might have learned about Henry's concern for Victor's actions.

Hint Compare Victor's state of mind with Henry Clerval's. How might the passage have been different if Henry were telling it?

4 This item has two parts. Answer Part One and then answer Part Two.

Part One

What is the cause of Victor Frankenstein's apparent excitement in the passage?

A. his arrival at his apartment

B. Henry's visit

C. the servant's breakfast

D. the monster's absence

Part Two

Which sentence from the passage **best** supports the answer to Part One? Choose **one** answer.

A. Entreating him, therefore, to remain a few minutes at the bottom of the stairs, I darted up towards my own room.

B. I threw the door forcibly open, as children are accustomed to do when they expect a spectre to stand in waiting for them on the other side; but nothing appeared.

C. I could hardly believe that so great a good fortune could have befallen me, but when I became assured that my enemy had indeed fled, I clapped my hands for joy and ran down to Clerval.

D. By very slow degrees, and with frequent relapses that alarmed and grieved my friend, I recovered.

Hint Review the passage to look for moments in the text in which Frankenstein describes his excitement. Remember, also, that the student's claim has to do with *why* Frankenstein is excited. Which of these moments in the text also seem to indicate horror or fear?

Reading Guide

Consider how the author uses dialogue to reveal information about the robot and move the plot along.

How does the author create suspense that something might go wrong?

"In addition to vacuuming, it can perform such tasks as doing the laundry, washing the dishes, and conveying household trash to the curb. I am in the process of procuring additional appendages to enable it to perform an even greater volume of chores."

"But how does it know what to do?" Greta asked. "Do you have to tell it everything?"

"No, it is designed to proactively determine which chores need to be completed, at which point it undertakes the chore-doing. Its sensors can tell when something is dirty and determine the nature of the dirty item. That is, it can tell a dirty T-shirt from a clean T-shirt, and a dirty T-shirt from a dirty dish. After it processes this information, it can clean the dirty item using the appropriate method."

"So the robot does all your chores and you don't even need to be here?" Greta asked.

The robot stopped vacuuming. Greta felt a sudden chill, and the little hairs on the back of her neck quivered; it felt like the robot had stopped vacuuming so it could eavesdrop on their conversation.

"No," Dev answered as the robot resumed vacuuming. Greta chided herself for being so jumpy. It was obviously just a coincidence that the robot had paused vacuuming a moment ago.

"I need to activate the robot using this control." Dev gestured with the repurposed TV remote control. "This is the failsafe."

"What's a failsafe?" asked Greta.

"It's something that can revert the robot to a safe condition in the unlikely event of a malfunction," Dev explained.

"So, if something goes wrong, you use that remote to turn it off," Greta clarified.

Dev nodded and put the remote down. The lights on the robot's midsection flashed purple, and the robot stopped vacuuming. The vacuum attachment appendage retreated to its hidden location.

"That's amazing," Greta was congratulating Dev when suddenly she noticed the robot's lights were flashing green, then blue.

"Uh, did you just give it another command?" she asked.

"No," Dev answered, as the robot spun on its wheels and headed into the kitchen.

Answer the following questions.

1. Which of the statements below **best** describes Dev's attitude toward his robot?

   A. troubled

   B. ecstatic

   C. unimpressed

   D. overconfident

2. How does third-person limited point of view of the passage affect what the reader knows and does not know?

   A. The reader learns equally about each character's thoughts and feelings.

   B. The reader learns only Dev's thoughts and feelings about what is happening and not how Greta thinks and feels about the robot.

   C. The reader hears only Greta's thoughts and feelings about what is happening and not how Dev thinks and feels about his creation.

   D. The reader learns what the robot is thinking as it begins to become independent and not how Greta and Dev feel about this independence.

5 This question has two parts. Answer Part One and then answer Part Two.

Part One

What is the main theme of "The Rebellious Robot"?

A. Everyone needs a friend.

B. Science is more important than art.

C. New technologies can have unexpected results.

D. Robots are useful, productive twenty-first century tools.

Part Two

Which excerpt from the passage **best** supports the answer in Part One? Choose **one** answer.

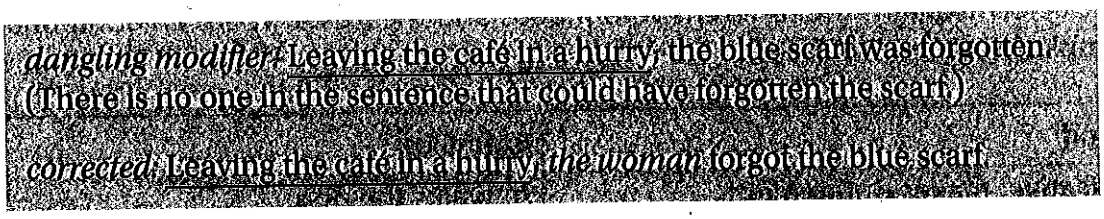
A. "Wow!" Greta was impressed. "What else can it do?"

B. "That should do it," Dev said, closing the panel and picking up the remote.

C. "Can you still come over to my house for dinner? Dad's making macaroni and cheese, and I could use your help with my science fair project."

D. There was no one home when the robot's lights turned green, then blue.

A **dangling modifier** occurs when the word it modifies is missing from the sentence.



Verbs

Verbals A **verbal** is a word or phrase created from a verb that can be used as a noun, an adjective, or an adverb. The chart below explains how to form and use the three types of verbals—gerunds, participles, and infinitives. Write an additional example for each kind of verbal.

Verbal	How to Form	How It Functions	Example
gerund	add *-ing* to the verb	used as a noun	Walking is good exercise.
present participle	add *-ing* to the verb	used as an adjective	I saw Ben eating.
		can take its own *object*	I saw Ben eating *his lunch*.
past participle	add *-ed* for regular verbs	used as an adjective	The wrecked car was towed.
		can take its own prepositional phrase	Wrecked on the rocks, the boat broke apart.
infinitive	the word *to* followed by the verb	used as a noun	To improve is hard work.
		used as an adjective	I have a party to attend.
		used as an adverb	He ran to catch the bus.

Shifts in Verb Tense The tense of a verb tells whether an action or state of being takes place in the past, present, or future. You should use the same verb tense throughout a piece of writing unless you need to show something happening at a different time. When you have a necessary shift in verb tense, include a time clue.

The movie was released last year, so it is not eligible for any awards this year.

Subject-Verb Agreement Singular subjects require singular verbs. Plural subjects require plural verbs.

singular subject: Jonah is walking to the movie theater with his friends.

plural subject: Jonah and his friends are walking to the movie theater.

Pronouns

A **pronoun** takes the place of a noun. The **antecedent** is the noun the pronoun replaces.

- Singular nouns require singular pronouns, and plural nouns require plural pronouns.
- Two or more singular nouns require a plural pronoun.
- Male nouns require male pronouns, female nouns require female pronouns, and neutral nouns require neutral pronouns.

Singular, neutral noun/pronoun: I want to see *The Last Marlon*, but it is not playing.

two singular, neutral nouns; plural, neutral pronoun: I want to see either *The Last Marlon* or the documentary about Iceland, but neither of them are playing.

2 COACHED EXAMPLE

Answer the following questions.

1 Read the information.

Rick studied for several hours he failed the test.

Choose the correct way to write the information as a complete sentence.

A. Rick studied for several hours; yet he failed the test.

B. Rick studied for several hours, yet, he failed the test.

C. Rick studied for several hours, yet he failed the test.

D. Rick studied for several hours yet, he failed the test.

Hint A compound sentence uses a coordinating conjunction and punctuation to join two independent sentences. Where does the punctuation go in a compound sentence?

2 Read the paragraph.

(1) On the afternoon of the Cupcake Challenge, participants of the competition waited to learn who would take home victory. (2) Moments later, the three judges, all former contestants, chose the best cupcake. (3) Ms. Ruiz, an inexperienced baker, was declared the winner. (4) After the announcement, waiters served cupcakes to the attendees with glasses of milk.

Which underlined group of words is misplaced?

A. of the competition

B. all former contestants

C. an inexperienced baker

D. with glasses of milk

Hint Remember that a modifier should be as close as possible to what it is modifying. In which sentence is the modifier too far from what it is modifying?

Answer the following questions.

1 Read the sentences.

Ms. Punjab's drama class were putting on their annual play. The students had been memorizing their lines for weeks. The show—all eight of its performances—was sold out. The students felt their hard work had paid off.

Which sentence corrects an inappropriate shift in pronoun number or person?

A. Ms. Punjab's drama class was putting on its annual play.

B. The students had been memorizing its lines for weeks.

C. The show—all eight of their performances—was sold out.

D. The students felt its hard work had paid off.

2 Read the paragraph.

(1) Picture an animal that has a bill and webbed feet like a duck, a tail like a beaver, and a small body like an otter. (2) If I was you, I would find it hard to believe. (3) Well, it does exist, and it lives in Australia. (4) The animal with the body parts of a duck, beaver, and otter is the platypus.

Which sentence in the paragraph contains an error in usage?

A. sentence 1

B. sentence 2

C. sentence 3

D. sentence 4

5 Read the paragraph.

(1) Tad and Emmitt grabbed their jackets on the way out of the house. (2) It was a bright, autumn day, but a chilly breeze hinted at the approach of winter. (3) He zipped up his jacket as they walked to the pet store. (4) Tad wanted to get a new fish for his tank.

Which sentence contains vague pronoun usage?

A. sentence 1

B. sentence 2

C. sentence 3

D. sentence 4

6 Read the paragraph.

(1) Vicky, whose dream it was to be a writer, was excited to learn she was accepted into the writing workshop in Canada. (2) To get into the workshop, she had to submit a recent writing sample. (3) The story she submitted—about a time traveler—was one of her favorites. (4) Too anxious to sleep, the bags were packed.

Which sentence contains a dangling modifier?

A. sentence 1

B. sentence 2

C. sentence 3

D. sentence 4

What punctuation would you use to set off the parenthetical elements in the sentences below?

The ring which is solid gold has been in my family for years.

I do not agree with your suggestion in fact, I think it is ridiculous that we tear down the bridge.

Indicating Pauses and Breaks Use a single dash or a pair of dashes to show a broken thought, an abrupt pause, or a sudden turn in thought, especially in dialogue.

"What do you—oh, I see what you're saying."

Liam stepped into the room—and then everyone stopped talking.

I had coffee with Mandi—have I told you about her?—after class.

Write a sentence that uses a dash or dashes to show an interruption.

Another kind of punctuation you can use to show a pause is the **ellipsis**. You can also use an ellipsis to show a trailing thought or hesitation.

She wasn't against going . . . she just wasn't sure if she should go.

I probably should have . . . Well, it doesn't matter now, does it?

"I'm not sure what I should do . . ." she said.

Write a sentence that uses an ellipsis to show a pause, a trailing thought, or hesitation.

Indicating Omissions Another use of the ellipsis is to indicate an omission in quoted text. If the omitted text comes at the end of a sentence but is not the end of the original quoted sentence, add end punctuation after the ellipsis.

Patrick Henry said, "Is life so dear, or peace so sweet, as to be purchased at the price of chains and slavery? . . . I know not what course others may take; but as for me, give me liberty or give me death!"

Patrick Henry said, "Is life so dear, or peace so sweet . . . ?"

Language Spotlight • Frequently Confused Words

Be careful when using words that sound alike or nearly alike but have different meanings. The chart below lists several frequently confused words. On a separate sheet of paper, write a sentence for each word.

Word	Definition
advice	"an opinion or a suggestion"
advise	"to offer an opinion or a suggestion"
breath	"the air taken into the lungs or let out from the lungs"
breathe	"to move air in and out of the lungs"
cite	"to quote or refer to"
sight	the sense that is related to vision; something that is seen
site	"an area of land"
lay	"to put or set down (an object)"
lie	"to rest horizontally"
weather	the state of the atmosphere, including temperature
whether	indicates a doubt or a choice between alternatives

3 Read the sentence.

I would advise you to lay aside your personal feelings, take a deep breathe, and decide whether it is worth the argument.

Which underlined word in the sentence is used incorrectly?

A. advise

B. lay

C. breathe

D. whether

Hint Look carefully at each underlined word and think of its meaning. Does that meaning make sense in the sentence?

4 Read the sentence.

The researchers advised in their latest publication that teens get 9 ¼ hours of sleep every night.

Which is the correct way to rewrite the sentence as a quotation with the underlined words removed?

A. "The researchers advised—that teens get 9 ¼ hours of sleep every night."

B. "The researchers advised; that teens get 9 ¼ hours of sleep every night."

C. "The researchers advised, that teens get 9 ¼ hours of sleep every night."

D. "The researchers advised . . . that teens get 9 ¼ hours of sleep every night."

Hint What kind of punctuation functions as a placeholder for omitted words in a quotation?

2 Read the sentences.

The various committee members made the senseible recommendation that all work be temporarily halted until the insurance issues were resolved.

Which underlined word is spelled incorrectly?

A. various

B. senseible

C. temporarily

D. insurance

3 Read the paragraph.

(1) Nearly three thousand military service dogs—are working right now. (2) These dogs most of whom receive training at Joint Base San Antonio-Lackland, often do jobs humans cannot. (3) A dog's sense of smell—thousands of times stronger than a human's—can detect faint traces of dangerous substances. (4) Because of this, most military dogs, are used to find explosives or drugs.

Which sentence is punctuated correctly?

A. sentence 1

B. sentence 2

C. sentence 3

D. sentence 4

6 Read the sentence.

Lamar was envious of his sister's unbelievable ability to easyly chat with anyone—even people she just met—while he clumsily fumbled through every conversation.

Which underlined word is spelled incorrectly?

A. envious

B. unbelievable

C. easyly

D. clumsily

Active and Passive Voice

Good writers use the active voice when constructing the majority of their sentences. In a sentence with **active voice**, the subject of the sentence performs the action. Sentences with active voice have strong, precise verbs. Using active voice is often preferred because it makes your meaning clear and keeps your sentences from getting confusing or unnecessarily complicated.

Kim rides the bike. (*Kim* is the subject and she performs the action, *rides*.)

In a sentence written using **passive voice**, the subject receives the action. Sentences with passive voice are often awkward and can seem flat and boring.

The bike was ridden by Kim. (*Bike* is the subject and it receives the action.)

However, there are times when using the passive voice is useful.

- to emphasize the object of the action

Fifty sponsors are needed to fund the literacy project.

- to create an objective tone

The literacy project is considered vital to the school's success.

- to show uncertainty or that the person or thing performing the action is unknown or unimportant

The bank was robbed yesterday.

To change passive voice to active voice, identify the action and who or what performs it. Then reorder the words so the subject performs the action.

passive voice: Traffic in both lanes was stopped by the accident. (The subject is *traffic* and it is receiving the action *stopped*, and *the accident* performs this action.)

active voice: The accident stopped traffic in both lanes.

On a separate sheet of paper, write two sentences in the passive voice. Then rewrite those sentences using the active voice.

Word Choice

Choosing precise language makes your meaning clear and helps your readers create strong mental images. **Precise language** includes specific nouns, vivid verbs, modifiers such as adjectives and adverbs, and domain-specific vocabulary.

vague language: A long time ago in Egypt, where most people could not read or write, people who could write were extremely important.

precise language: In ancient Egypt, where most people were illiterate, scribes were extremely important.

You can also choose words for emotional effect. For example, saying a friend is talkative puts him in a more positive light than saying he is gabby or blabby. Using language that appeals to the five senses is another way to make your writing interesting and effective.

However, be careful not to confuse being descriptive with being wordy. Be concise when you write—do not use more words than necessary. Likewise, avoid using longer, extravagant words when a simpler word is just as effective. Also, avoid being redundant, or repetitive.

Eliminate wordiness and redundancy in the sentence below.

It is my personal opinion that his past history prevailed on his decision.

Language Spotlight • Choose Punctuation for Effect

The punctuation you use can be as effective as your word choice.

- A dash or a colon can add emphasis: *Monica was relieved to have the blanket: she would have frozen otherwise.*
- Parentheses can deemphasize information: *The blanket (made of wool) was a lifesaver.*

What punctuation would you use in the sentence below?

Everyone in attendance all of whom were students felt insulted.

3 Read the sentence.

The jellyfish has cells in its _____ that can stun or paralyze its prey.

Which word or phrase is **most** effective in the sentence?

A. tentacles

B. limbs

C. long, flexible arms

D. arms

Hint Which word or phrase most specifically names the body part referred to in the sentence?

Answer the following questions.

1 Read the sentence.

The first prize had already been awarded in the dance category.

Without changing the meaning of the sentence, what is the **best** way to revise the sentence using active voice?

A. The first prize will have been awarded in the dance category by the judges.

B. The first prize had already been awarded in the dance category by the judges.

C. The judges had already awarded the first prize in the dance category.

D. The judges had been awarded the first prize in the dance category.

2 Read the paragraph.

(1) Military working dogs are an elite club. (2) They are bred, raised, and trained intensively for duty. (3) Expectations for their performance are high. (4) Only a few of the dogs raised for duty a low 30 percent are actually selected for service.

Which sentence should have punctuation to show emphasis?

A. sentence 1

B. sentence 2

C. sentence 3

D. sentence 4

5 Read the paragraph.

(1) Clara had seen posters announcing that a traveling circus was arriving that day. (2) But the circus was forbidden by her grandmother. (3) Still, Clara was curious about the attractions. (4) She hoped to catch a glimpse of the circus performers and animals at the rail yard where the circus train was parked.

Which sentence in the paragraph contains an error in verb voice?

A. sentence 1

B. sentence 2

C. sentence 3

D. sentence 4

6 Read the sentence.

We were all saddened to see that the old library had been _____.

Which word or phrase has the **strongest** effect when added to the sentence?

A. torn down

B. destroyed

C. smashed

D. demolished

3 Read the paragraph.

(1) Music therapy uses music to help people in a variety of settings. (2) For example, trained professionals in hospitals around the country use music therapy to help patients. (3) Often, the patients are young children who are anxious about tests or treatments. (4) Music helps calms these patients.

Which sentence in the paragraph contains an error in usage?

A. sentence 1

B. sentence 2

C. sentence 3

D. sentence 4

4 Read the paragraph.

The director of the theater announced in a television interview that he is holding open auditions next week.

Which is the correct way to rewrite the sentence as a quotation with the underlined words removed?

A. "The director . . . is holding open auditions next week."

B. "The director—is holding open auditions next week."

C. "The director, is holding open auditions next week."

D. "The director; is holding open auditions next week."

7 Read the sentence.

She had already been beaten by her sister at tennis once that week.

Without changing the meaning of the sentence, what is the **best** way to revise the sentence using active voice?

A. She has been beaten by her sister once that week.

B. She had already been beaten at tennis once that week.

C. Her sister had already crushed her at tennis once that week.

D. Her sister had beaten her at tennis once that week.

8 Read the paragraph.

If you were to ask Santiago what he most wanted to do, he would have said ride in a hot air balloon! It had been a dream of his since he was a child and he saw a hot-air balloon floating slowly across the sky.

Which underlined word or words should be changed to correct the inappropriate shift in verb tense?

A. were

B. would have said

C. had been

D. was

Name _____

Probability

Home-School Connection
Topic 7

Dear Family,

Your child is studying probabilities of simple and compound events. He or she is learning to use precise terms to describe actions and their possible outcomes, and to distinguish between and determine theoretical and experimental probabilities.

You can help your child understand probability concepts by playing the following game.

Number Cube Probability

Materials: Number cube, paper, and pencil for each player

Step 1 Each player lists three possible events when rolling a number cube:

- An event with probability $\frac{1}{6}$, such as "2"
- An event with probability $\frac{1}{3}$, such as "5 or 6"
- An event with probability $\frac{1}{2}$, such as "odd number"

Step 2 Player 1 rolls the number cube. If the result matches an event from Player 1's list, he or she places a check mark next to that event. A player may check no more than one event per turn.

Step 3 Players take turns rolling the number cube until one player has checked all three events on his or her list.

Observe Your Child

Focus on Mathematical Practices

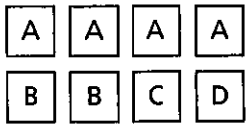
Construct viable arguments and critique the reasoning of others.

Help your child become proficient with this Mathematical Practice. Ask him or her to develop and explain a strategy for choosing events in Step 1. Consider playing the game several times to allow your child to use and compare different strategies.

Name _____

Reteach to Build Understanding
7-1

A box contains 8 equal-sized tiles labeled *A, A, A, A, B, B, C* and *D*. Jonah will randomly select one tile from the box. What is the probability that Jonah will select a tile labeled with the letter *B*? Describe this probability as *impossible, unlikely, neither likely nor unlikely, likely*, or *certain*.



There are 8 tiles. Two of the tiles have the letter *B*.

The probability is 2 out of 8; $\frac{2}{8} = \frac{1}{4}$.

It is unlikely that Jonah will select a tile labeled with the letter *B*.

A bag contains 5 green marbles and 2 purple marbles. Keisha will randomly select one marble from the bag. What is the probability that Keisha will select a green marble? Describe this probability as *impossible, unlikely, neither likely nor unlikely, likely*, or *certain*.

1. How many marbles are in the bag?

2. The probability that Keisha will select a green marble is ☐ out of ☐.

3. What is the probability that Keisha will select a green marble?

$\frac{\square}{\square}$

4. It is ☐ that Keisha will select a green marble.

On the Back!

5. A bag contains 10 black tiles and 10 white tiles. Caden will randomly select one tile from the bag. What is the probability that Caden will select a black tile? Describe this probability as *impossible, unlikely, neither likely nor unlikely, likely*, or *certain*.

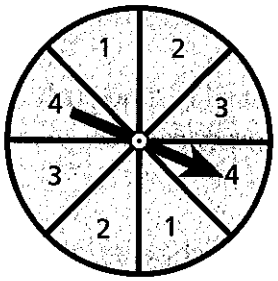
Name _____

Build Mathematical Literacy

7-1

Read the problem below. Then answer the questions to understand the problem.

Kendall designed this spinner for a contest. All sections of this spinner are equal in size. Did Kendall design a fair spinner? If yes, explain why it is a fair spinner. If not, explain how to make it a fair spinner.



1. Circle the question you need to answer.

2. What does it mean for the spinner to be "fair"?

3. How many sections does the spinner have? Underline the sentence in the problem that gives important information about the sections. What does this sentence tell you about the chance for the pointer to land in each section?

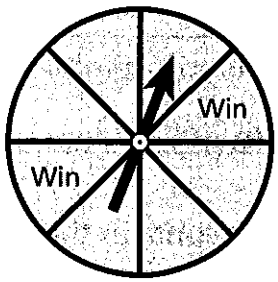
4. Use different colors to highlight the numbers on the spinner that are the same. How many times does each number appear?

5. After you have determined whether the spinner is fair, will you have completely solved the problem? Explain.

Name _____

Understanding
7-2

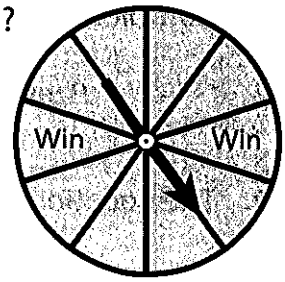
Out of 300 spins, how many times is the pointer of the spinner expected to land on Win?



Step 1 Find the possible outcomes of one spin. There are 8 equal-sized sections, so there are 8 possible outcomes.	**Step 2** Find the theoretical probability that the pointer will land on Win. $P(\text{Win}) = \frac{\text{number of Win sections}}{\text{total number of sections}}$ $\frac{2}{8} = \frac{1}{4}$	**Step 3** Use proportional reasoning to predict the likely number of winning spins, w. $\frac{1}{4} = \frac{w}{300}$ $\frac{1}{4} \cdot 300 = \frac{w}{300} \cdot 300$ $75 = w$

Out of 300 spins, you can expect the pointer to land on Win about 75 times.

On how many out of 200 spins do you expect the pointer to land on Win?



1. How many equal-sized sections does this spinner have?

2. Find the theoretical probability that the pointer will land on Win.

   $P(\text{Win}) = \frac{\text{number of Win sections}}{\text{total number of sections}} = \frac{\square}{\square} = \frac{1}{\square}$

3. Complete the proportion to find the number of expected wins, w, in 200 spins.

   $\frac{\square}{\square} = \frac{w}{\square}$

4. On how many out of 200 spins do you expect the pointer to land on Win?

On the Back!

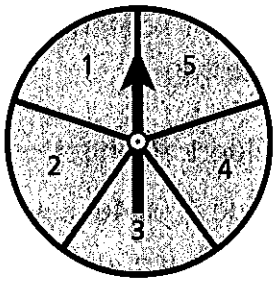
5. Of 8 equal-sized sections on a spinner, 3 are shaded green. On how many out of 400 spins do you expect the pointer to land in a green section?

Name _____

Build Mathematical Literacy
7-2

Read the problem below. Then answer the questions to understand the problem.

Contestants play a game at a neighborhood fair by spinning the pointer of a spinner with five equal-sized sections. A contestant wins if the pointer lands in section 3. How many winners are expected if 200 people play the game?



1. Underline the question you need to answer. Rewrite the question in a different way.

2. Highlight the word or words in the problem that provide important information about the sections. Why is this information important?

3. What information is given by the diagram?

4. For what event must the theoretical probability be determined to solve this problem?

5. Once you have found the theoretical probability, will you have solved the problem? Explain.

Name _____

Reteach to Build Understanding
7-3

A spinner has 8 equal-sized sections. Four of the sections are blue, two are red, and two are green. The pointer lands in a red section 8 times in 20 spins. How does this compare to the number of times the pointer is expected to land in a red section?

Step 1 Use the experiment's results to find the experimental probability that the pointer lands in a red section.

$$\text{Experimental probability} = \frac{\text{number of times pointer lands in a red section}}{\text{total number of spins}} = \frac{8}{20} = 40\%$$

Step 2 Find the theoretical probability that the pointer lands in a red section.

$$P(\text{red}) = \frac{\text{number of red sections}}{\text{total number of equal-sized sections}} = \frac{2}{8} = 25\%$$

The experimental probability is greater than the theoretical probability. The pointer landed in a red section more often than expected.

A spinner has 10 equal-sized sections labeled 1 through 10. In 40 spins, the spinner lands 3 times in section 5. How does this compare to the number of times the pointer is expected to land in section 5?

1. Find the experimental probability that the pointer lands in section 5.

$$\frac{\text{number of times pointer lands in section 5}}{\text{total number of spins}} = \frac{\quad}{\quad} = \quad\%$$

2. Find the theoretical probability that the pointer lands in section 5.

$$P(5) = \frac{\text{number of sections labeled "5"}}{\text{total number of equal-sized sections}} = \frac{\quad}{\quad} = \quad\%$$

3. How does the actual number of times the pointer landed in section 5 compare to the expected number?

On the Back!

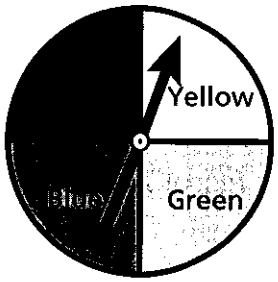
4. A spinner has 4 equal-sized sections labeled 1 through 4. In 25 spins, the spinner lands 5 times in section 3. How does this compare to the number of times the pointer is expected to land in section 3?

Name _____

Build Mathematical Literacy
7-3

Read the problem below. Then answer the questions to understand the problem.

Mary and Nyla are playing a game. They each spin the pointer of the spinner shown at right 100 times. The results after 40 spins for each player are recorded in the tables below.



Mary	
Red	9
Yellow	12
Green	9
Blue	10

Nyla	
Red	11
Yellow	10
Green	11
Blue	8

a. Based on theoretical probability, what are the expected results of 100 spins?

b. Should Mary and Nyla expect the same results after 100 spins? Explain.

c. Why might their results be different from the expected results based on theoretical probability?

1. How many questions must be answered to completely solve this problem? Underline each question.

2. What data are represented by the numbers in the tables?

3. Circle the first number in each table. What do these numbers represent in this problem situation?

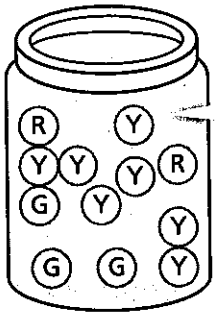
4. What information is provided by the diagram? Why is this information important?

Name _____

Reteach to Build Understanding

7-4

Omar randomly selects a marble from the jar shown.



G represents a green marble.
Y represents a yellow marble.
R represents a red marble.

Omar can develop a probability model based on theoretical probability.

A probability model consists of the sample space and a list of events within the sample space with their probabilities.

The sample space, *S*, is the set of all possible outcomes.

$$S = \{G, G, G, R, R, Y, Y, Y, Y, Y, Y, Y\}$$

The probabilities of all possible events in the sample space are described below.

Drawing a green marble: $P(G) = \frac{3}{12} = \frac{1}{4}$

Drawing a yellow marble: $P(Y) = \frac{7}{12}$

Drawing a red marble: $P(R) = \frac{2}{12} = \frac{1}{6}$

Ashley collects colored golf balls from a miniature golf course. She will randomly select one ball from her collection of 9 blue, 7 magenta, and 2 purple golf balls. Develop a probability model based on theoretical probability.

1. What is the total number of colored golf balls in Ashley's collection?

2. What is the sample space?
$S =$

3. What is the theoretical probability that each event in the sample space occurs?

On the Back!

4. Hannah selects a marble randomly from a jar containing 11 green, 5 yellow, and 4 red marbles. Develop a probability model based on theoretical probability.

Name _____

Build Mathematical Literacy
7-4

Read the problem below. Then answer the questions to understand the problem.

A jar contains 250 marbles. A marble is randomly selected from the jar and replaced after its color is recorded. Based on the results of 100 random selections shown in the table below, how many marbles of each color are expected to be the jar?

Color	Red	Blue	Yellow	Green
Number of Marbles Selected	28	24	32	16

1. What information will a complete answer to this problem contain?

2. Underline the questions you need to answer. What does the word "expected" tell you about your answer?

3. Circle the numbers in the problem and in the table. Describe any relationships among the numbers.

4. This problem can be solved by developing a probability model. Will the probability model be based on theoretical or experimental probability? Explain.

5. What is the sample space?

6. Let g represent the expected number of green marbles in the jar. Circle the proportion you can use to find g.

$\frac{16}{250} = \frac{g}{100}$ $\frac{16}{100} = \frac{g}{250}$ $\frac{16}{81} = \frac{g}{100}$ $\frac{16}{250} = \frac{g}{81}$

Name _____

Reteach to Build Understanding
7-5

A bag contains three equal-sized tiles labeled 3, 5, and 7. Lin will flip a coin and randomly choose a tile. Use an organized list or a table to show all possible outcomes. How many outcomes are possible?

Organized List

(Heads, 3) (Heads, 5) (Heads, 7)

(Tails, 3) (Tails, 5) (Tails, 7)

The list and table both describe all 6 possible outcomes.

		Tile Number		
		3	**5**	**7**
Coin	**H**	(H, 3)	(H, 5)	(H, 7)
	T	(T, 3)	(T, 5)	(T, 5)

A deli provides sandwich wraps for a school group on a field trip. Each wrap contains one meat, either chicken or turkey, and one vegetable, either spinach or tomatoes. What outcomes are possible if a student randomly selects a sandwich wrap?

1. What outcomes are possible for the meat in a randomly selected wrap? For the vegetable?

2. Complete the organized list below to describe the sample space.

(_____, Spinach) (_____, _____)

(Turkey, Spinach) (Turkey, _____)

3. How many outcomes are possible?

On the Back!

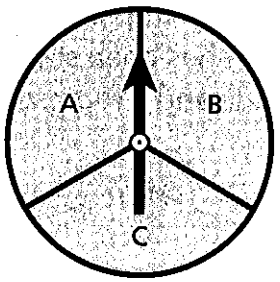
4. A bag contains three equal-sized tiles labeled 2, 4, and 6. A different bag contains three equal-sized tiles labeled with the letters *Q*, *R* and *S*. Inez will randomly choose one tile from each bag. What are all the possible outcomes?

Name _____

Build Mathematical Literacy
7-5

Read the problem below. Then answer the questions to understand the problem.

Megan will spin the pointer of the spinner shown and roll a number cube with sides numbered from 1 through 6. What are all the possible outcomes?



1. Underline the question you need to answer. What is the question asking you to do?

2. A compound event consists of two or more events. Is this a compound event? If so, what are the different events?

3. What are the possible outcomes for each simple event identified in Exercise 1?

4. A sample space shows all the possible outcomes of a compound event. What are three different strategies or methods that could be used to represent the sample space in this exercise?

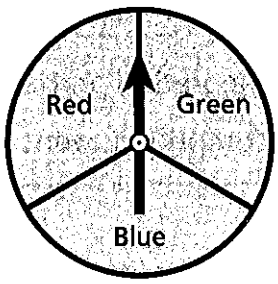
5. How many outcomes are possible for this compound event? Explain.

Name _____

Reteach to Build Understanding

7-6

In a certain board game, a player who lands on the *Double Spin* space earns two spins of the pointer shown. This player is awarded a free turn if the pointer lands in the red section both times. What is the probability that a player who lands on the *Double Spin* space will win a free turn?



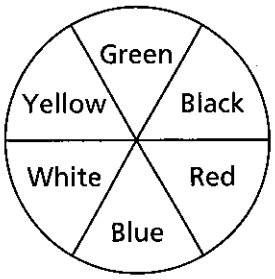
Make a table to describe the possible outcomes.

	Red (R)	**Green (G)**	**Blue (B)**
Red (R)	(R, R)	R, G	R, B
Green (G)	G, R	G, G	G, B
Blue (B)	B, R	B, G	B, B

- There are 9 possible outcomes.
- Each outcome is equally likely.
- The one favorable outcome is circled.

The probability that a player will win a free turn is $P(\text{R, R}) = \frac{1}{9}$.

To play a carnival game, a player tosses a coin into a large circular container. Equal-sized sections are painted different colors on the bottom of the container as shown. The player wins if the center of the coin lands in the green section and facing heads up. What is the probability that a player will win?



1. List all possible outcomes to describe where the the coin may land. Are the outcomes equally likely?

2. List all possible outcomes to describe the side of the coin that may be facing up when the coin lands in the container. Are the outcomes equally likely?

3. Describe all possible outcomes of the carnival game.

4. Find the probability that a player wins the carnival game.

On the Back!

5. Find the probability of winning the carnival game if a player wins when the center of the coin lands in the yellow section and facing tails up.

Name _____

Build Mathematical Literacy
7-6

Read the problem below. Then answer the questions to understand the problem.

Each month, students who volunteer as math tutors are entered into a drawing for one of two gift cards to use at the school store. Arnie, Carol Ed, Frank, and Liz volunteered this month and are all eligible candidates for the drawing. What is the probability that Arnie will win one of the two gift cards?

1. Underline the question you need to answer.

2. What is the meaning of the word *eligible* in this situation?

3. Describe a strategy that could be used to answer the question in this problem.

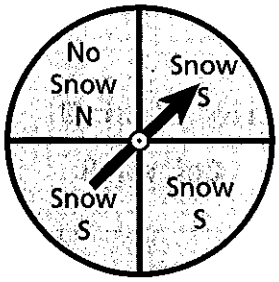
4. Describe all outcomes that are possible if Carol wins the first gift card.

5. What condition will be included in each favorable outcome in the context of the question asked?

Name _____

Understanding
7-7

Tom is considering going on a road trip this weekend. There is a 75% chance of snow each day. He uses a spinner to simulate whether snow will fall each day. Based on Tom's results, what is the probability that it will snow on both Saturday and Sunday?

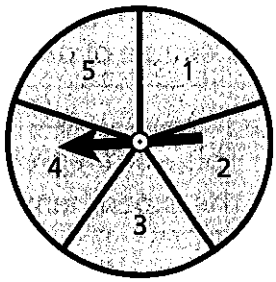


Trial 1	Result
Saturday	N
Sunday	S

Trial 2: S, S Trial 3: S, S
Trial 4: S, S Trial 5: N, N

Of 5 simulated trials, 3 predict snow on both days. Based on Tom's simulated results, the probability that it will snow both days is $\frac{3}{5}$.

Emma is successful on 80% of free throws she attempts this basketball season. She uses the spinner shown to simulate her next 4 attempts. The sections labeled 1 through 4 represent successful attempts, and the section labeled 5 represents missed attempts. Based on the simulated results shown below the spinner, what is the probability that Emma will successfully make exactly 2 of her next 4 attempted free throws?



1553 5341 5125 3121 1342

1. Describe the results of the first simulated trial.

2. For how many of the 5 simulated trials do the data predict exactly 2 successful baskets?

3. Based on the simulated data, what is the probability that Emma successfully will make exactly 2 of her next 4 attempted free throws?

On the Back!

4. Emma conducts 5 additional trials and records the simulated data below. Based on the results of all 10 trials, what is the probability that Emma will successfully make at least 3 of her next 4 attempted free throws?

3321 5414 2422 2335 4224

Name _____

Literacy
7-7

Read the problem below. Then answer the questions to help understand the problem.

In a board game tournament, Janelle and Rick will play 7 games. The winner of 4 games will win the championship. Janelle and Rick have played each other 10 times before, and each has won 5 games. What is the probability that Janelle will win the tournament?

1. Underline the question in this exercise.

2. How could you develop a probability model for this situation?

3. Circle the numbers in the text. What information do the numbers provide?

4. How can a simulation be used to answer this question?

5. Describe a tool that can be used to simulate a single board game. Explain.

6. How many trials should be conducted? Describe the possible advantage of conducting more trials.

Name _____

Connection
Topic 6

Congruence and Similarity

Dear Family,

Your child is studying transformations of figures, including translations, reflections, rotations, and dilations. He or she will apply transformations to determine whether figures are congruent or similar. Your child is also learning about angle relationships, such as the relationships among angles in a triangle and among angles created by different types of lines.

Here is an activity you can do with your child to help him or her practice transformations.

Transforming Shapes

Materials: Two identical shapes cut from paper, about 12 inches of string, coin or other small object

Step 1 Stack the paper shapes one on top of the other so that they align exactly.

Step 2 Choose a transformation: translation, reflection, or rotation. If you chose reflection, stretch the string in a straight line a few inches from the shapes. If you chose rotation, place the coin a few inches from the shapes and specify an angle of rotation, such as 90° or 180°.

Step 3 Have your child perform the selected transformation by picking up the top shape from the stack and translating, reflecting across the string, or rotating around the coin.

Step 4 Choose a different transformation and repeat.

Observe Your Child

Focus on Mathematical Practices
Attend to precision.

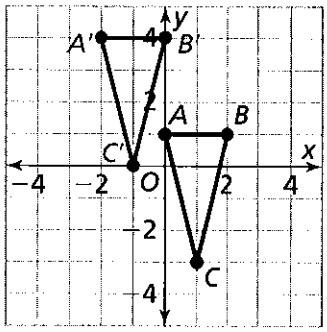
Help your child become proficient with this Mathematical Practice. Ask him or her to describe each transformation using the terms *preimage*, *image*, and *orientation*.

Name _____

Reteach to Build Understanding

6-1

Graph $\triangle A'B'C'$, the image of $\triangle ABC$ after a translation 3 units up and 2 units left.



Step 1

Translate each vertex of $\triangle ABC$.

From point A, move 3 units up and 2 units left. Graph and label point A'.

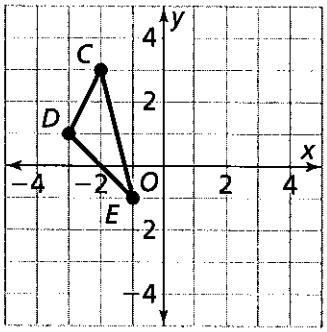
From point B, move 3 units up and 2 units left. Graph and label point B'.

From point C, move 3 units up and 2 units left. Graph and label point C'.

Step 2

Graph $\triangle A'B'C'$ by connecting points A', B', and C'.

Graph $\triangle C'D'E'$, the image of $\triangle CDE$ after a translation 4 units right and 1 unit down.



1. Start at point C. Move 4 units right and 1 unit down. Graph and label point C'.

2. From point D, move 4 units right and 1 unit down. Graph and label point D'.

3. From point E, move 4 units right and 1 unit down. Graph and label point E'.

4. Graph $\triangle C'D'E'$ by connecting points C', D', and E'.

On the Back!

$\triangle JKL$ has vertices $J(2, 3)$, $K(4, 5)$, and $L(6, 1)$. Graph and label the vertices of $\triangle JKL$ and $\triangle J'K'L'$, its image after a translation 3 units left and 5 units down.

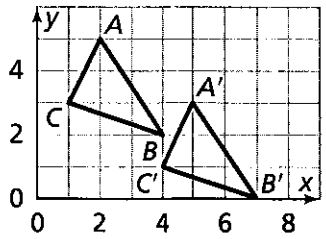
Name _____

Build Mathematical Literacy

6-1

Read the problem below. Then answer the questions to identify the steps for solving the problem.

$\triangle A'B'C'$ is a translation of $\triangle ABC$. Describe the translation.



1. Which figure is the preimage, and which figure is the image? How do you know?

2. Why do you need to distinguish the image from the preimage to solve the problem?

3. To describe a translation, what information must you include?

4. What are the coordinates of points A and A'?

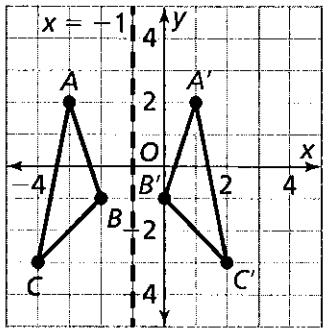
5. For a point in the preimage and its corresponding image, which coordinate changes in a horizontal translation? A vertical translation?

Name _____

Reteach to Build Understanding

6-2

Graph $\triangle A'B'C'$, the image of $\triangle ABC$ after a reflection across the line $x = -1$.



Step 1 Reflect the vertices of $\triangle A'B'C'$ across the line $x = -1$.

Each point in $\triangle A'B'C'$ is the same distance from $x = -1$ as its corresponding point in $\triangle ABC$, but on the opposite side.

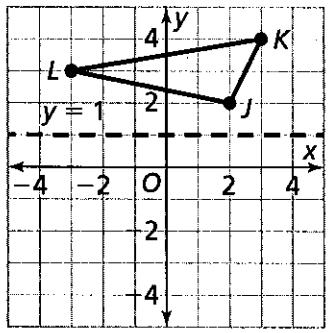
A is 2 units left of $x = -1$. Graph A' 2 units right of $x = -1$.

B is 1 unit left of $x = -1$. Graph B' 1 unit right of $x = -1$.

C is 3 units left of $x = -1$. Graph C' 3 units right of $x = -1$.

Step 2 Graph $\triangle A'B'C'$ by connecting A', B', and C'.

Graph $\triangle J'K'L'$, the image of $\triangle JKL$ after a reflection across the line $y = 1$.



1. Point J is located how many units above $y = 1$? How can you use this information to plot point J'? Plot point J'.

2. Point K is located how many units above $y = 1$? Use this information to plot point K'.

3. Point L is located how many units above $y = 1$? Use this information to plot point L'.

4. Graph $\triangle J'K'L'$ by connecting J', K', and L'.

On the Back!

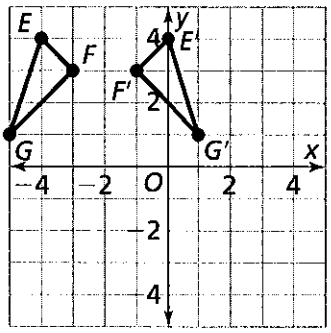
5. $\triangle RST$ has vertices $R(2, 1)$, $S(-2, -1)$, and $T(3, -2)$. Graph $\triangle RST$ and $\triangle R'S'T'$, its image after a reflection across the line $x = 2$.

Name _____

Build Mathematical Literacy
6-2

Read the problem and connect it to the graph.

What is a rule that describes the reflection that maps $\triangle EFG$ onto $\triangle E'F'G'$?



1. What does it mean that a reflection maps $\triangle EFG$ onto $\triangle E'F'G'$?

2. When describing a reflection, what information must you include?

3. On the graph, circle point E. Then circle the corresponding point in $\triangle E'F'G'$. What is true about these two points?

4. How can you tell whether a line of reflection in the coordinate plane is vertical or horizontal?

5. Draw the line of reflection on the graph.

Name _____

When a figure is transformed by a counterclockwise rotation about the origin, the x- and y-coordinates of its points change in predictable ways.

$\triangle A'B'C'$ is the image of $\triangle ABC$ after a 180° counterclockwise rotation about the origin.

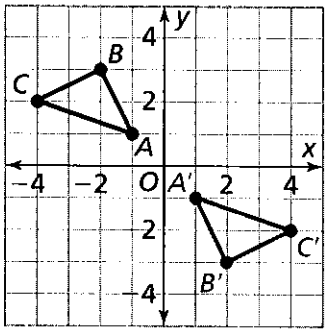
Each point (x, y) is mapped to $(-x, -y)$:

$A(-1, 1) \rightarrow A'(1, -1)$

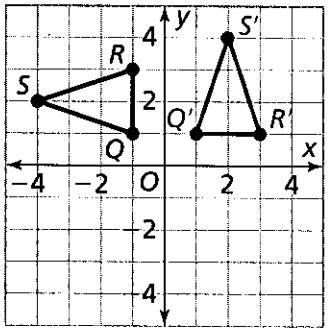
$B(-2, 3) \rightarrow B'(2, -3)$

$C(-4, 2) \rightarrow C'(4, -2)$

Counterclockwise Rotations About the Origin	
Angle of Rotation	**Transformation**
90°	$(x, y) \rightarrow (-y, x)$
180°	$(x, y) \rightarrow (-x, -y)$
270°	$(x, y) \rightarrow (y, -x)$



Describe the rotation that maps $\triangle QRS$ to $\triangle Q'R'S'$.



1. Write the coordinates of the vertices.

$Q(\square, \square) \rightarrow Q'(\square, \square)$

$R(\square, \square) \rightarrow R'(\square, \square)$

$S(\square, \square) \rightarrow S'(\square, \square)$

2. Circle the transformation of (x, y) that follows the same pattern as the change in coordinates from Q to Q', R to R', and S to S'.

$(x, y) \rightarrow (-y, x)$

$(x, y) \rightarrow (-x, -y)$

$(x, y) \rightarrow (y, -x)$

3. Refer to the table at the top of the page. Describe the rotation that maps $\triangle QRS$ to $\triangle Q'R'S'$.

On the Back!

4. $\triangle FGH$ has vertices $F(2, 1)$, $G(5, 1)$, and $H(5, 4)$. $\triangle F'G'H'$ has vertices $F'(-1, 2)$, $G'(-1, 5)$, and $H'(-4, 5)$. Describe the rotation that maps $\triangle FGH$ to $\triangle F'G'H'$.

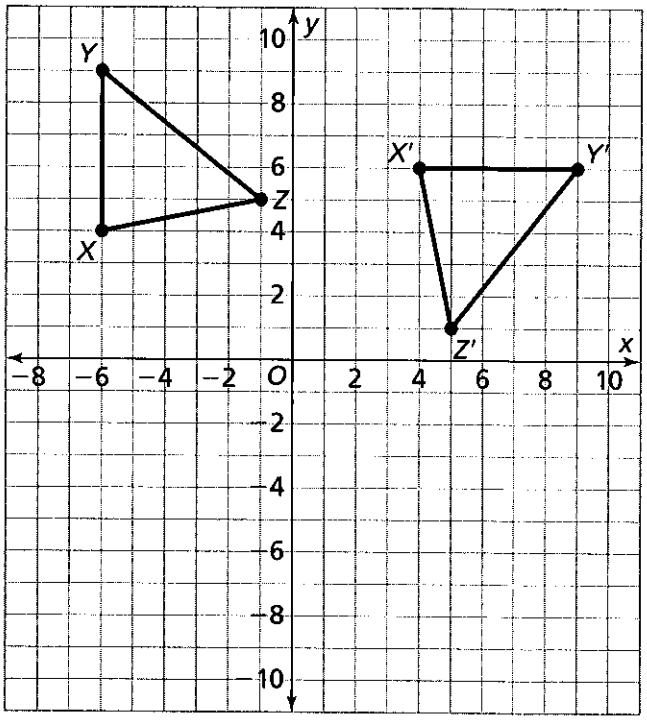
Name _____

Build Mathematical Literacy
6-3

Read the problem below. Then answer the questions to identify the steps for solving the problem.

Describe the rotation that maps $\triangle XYZ$ to $\triangle X'Y'Z'$.

1. What is the problem asking you to find?



2. When describing a rotation, what information must you include?

3. On the graph, draw curved arrows between corresponding points on the triangles to show the rotation about the origin.

4. Write the coordinates of each point.

$X(\_\_, \_\_)$ $X'(\_\_, \_\_)$
$Y(\_\_, \_\_)$ $Y'(\_\_, \_\_)$
$Z(\_\_, \_\_)$ $Z'(\_\_, \_\_)$

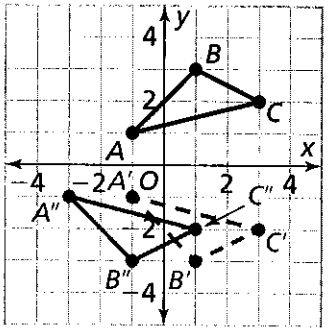
5. How can you use the coordinates you identified in Exercise 4 to describe the rotation?

Name _____

Reteach to Build Understanding

6-4

Reflect $\triangle ABC$ across the x-axis and then translate it 2 units left.



Step 1 Reflect $\triangle ABC$ across the x-axis.

$A(-1, 1) \rightarrow A'(-1, -1)$

$B(1, 3) \rightarrow B'(1, -3)$

$C(3, 2) \rightarrow C'(3, -2)$

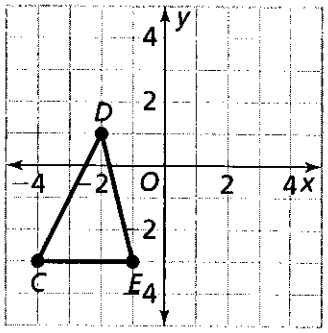
Step 2 Translate $\triangle A'B'C'$ 2 units left.

$A'(-1, -1) \rightarrow A''(-3, -1)$

$B'(1, -3) \rightarrow B''(-1, 3)$

$C'(3, -2) \rightarrow C''(1, -2)$

Reflect $\triangle CDE$ across the y-axis and then translate it 3 units up.



1. Reflect points C, D, and E across the y-axis. Label the resulting points C', D', and E'.

2. Draw $\triangle C'D'E'$.

3. Translate points C', D', and E' 3 units up. Label the resulting points C'', D'', and E''.

4. Draw $\triangle C''D''E''$.

On the Back!

5. $\triangle FGH$ has vertices $F(-2, 1)$, $G(-2, 4)$, and $H(0, 2)$. Graph $\triangle FGH$. Then reflect it across the x-axis and translate it 3 units down.

Name _____

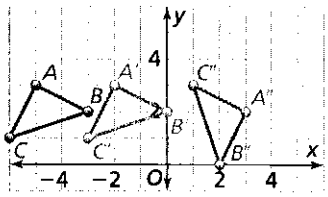
Build Mathematical Literacy
6-4

Review the Key Concept from the lesson. Then answer the questions to help you understand how to read a Key Concept.

KEY CONCEPT

You can use a sequence of two or more transformations to map a preimage to its image.

You can map $\triangle ABC$ onto $\triangle A''B''C''$ by a translation 3 units right followed by a 90° clockwise rotation about the origin.



1. How does the diagram in the Key Concept box show a sequence of two transformations?

2. Which triangle in the diagram is the preimage? Which is the final image? Explain.

3. Circle the text that describes the transformation from $\triangle ABC$ to $\triangle A'B'C'$. Then draw and label arrows on the diagram to show this transformation.

4. Underline the text that describes the transformation from $\triangle A'B'C'$ to $\triangle A''B''C''$. Then draw and label arrows on the diagram to show this transformation.

Name _____

Reteach to Build Understanding

6-5

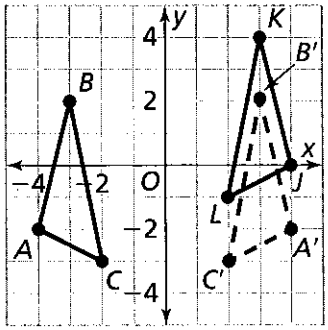
Is $\triangle ABC$ congruent to $\triangle JKL$? Explain.

Look for a sequence of transformations that maps $\triangle ABC$ onto $\triangle JKL$.

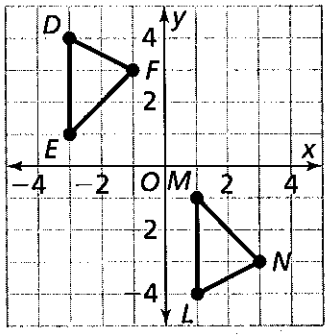
Step 1 Reflect $\triangle ABC$ across the y-axis.

Step 2 Translate $\triangle A'B'C'$ 2 units up.

This sequence of transformations maps $\triangle ABC$ onto $\triangle JKL$, so the triangles are congruent.



Is $\triangle DEF$ congruent to $\triangle LMN$? Explain.



1. Reflect $\triangle DEF$ across the x-axis. Label the resulting triangle $\triangle D'E'F'$.

2. Is there a transformation that maps $\triangle D'E'F'$ onto $\triangle LMN$? If so, describe the transformation. If not, explain why not.

3. Is $\triangle DEF$ congruent to $\triangle LMN$? Explain.

On the Back!

4. $\triangle FGH$ has vertices $F(1, 5)$, $G(1, 2)$, and $H(5, 2)$. $\triangle QRS$ has vertices $Q(-1, 0)$, $R(-1, -3)$, and $S(-5, -3)$. Graph the two triangles on the same coordinate plane. Is $\triangle FGH$ congruent to $\triangle QRS$? Explain.

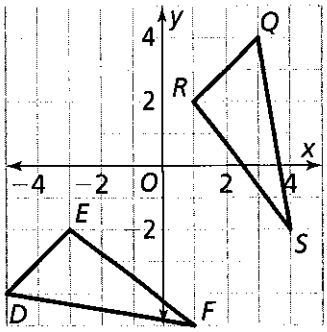
Name _____

Build Mathematical Literacy

6-5

Read the problem below. Then answer the questions to understand the problem.

Is $\triangle DEF \cong \triangle QRS$? Explain.



1. What does the symbol $\cong$ mean? What does it mean for two figures to have this relationship?

2. How can you determine whether $\triangle DEF \cong \triangle QRS$?

3. What information is contained in the graph?

4. Which point in $\triangle QRS$ corresponds to point D? To point F? To point E? Explain.

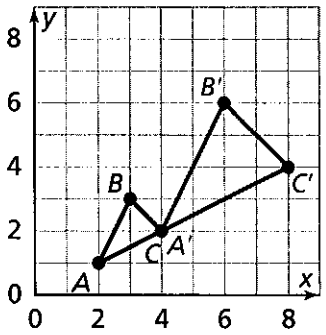
5. Do the triangles have the same orientation? How can you use this observation to help solve the problem?

Name _____

Reteach to Build Understanding

6-6

Draw the image of $\triangle ABC$ after a dilation with center (0, 0) and a scale factor of 2.



Step 1 Find the coordinates of the vertices of $\triangle ABC$.

$A(2, 1)$ $B(3, 3)$ $C(4, 2)$

Step 2 Multiply the coordinates of A, B, and C by the scale factor, 2. Record the coordinates of the vertices of $\triangle A'B'C'$.

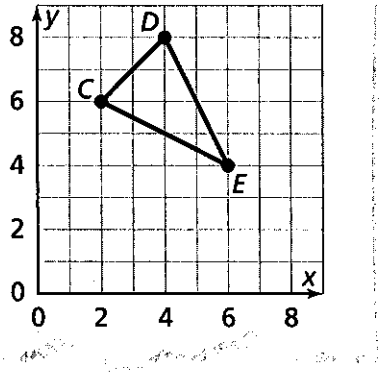
$A(2, 1) \rightarrow A'(2 \cdot 2, 1 \cdot 2) = A'(4, 2)$

$B(3, 3) \rightarrow B'(3 \cdot 2, 3 \cdot 2) = B'(6, 6)$

$C(4, 2) \rightarrow C'(4 \cdot 2, 2 \cdot 2) = C'(8, 4)$

Step 3 Graph A', B', and C'. Connect the points to form $\triangle A'B'C'$.

Draw the image of $\triangle CDE$ after a dilation with center (0, 0) and a scale factor of $\frac{1}{2}$.



1. Write the coordinates of the vertices of $\triangle CDE$.

$C(\quad,\quad)$

$D(\quad,\quad)$

$E(\quad,\quad)$

2. Multiply the coordinates of C, D, and E by the scale factor to find the coordinates of C', D', and E'.

$C'(\quad \cdot \frac{1}{2}, \quad \cdot \frac{1}{2}) = C'(\quad,\quad)$

$D'(\quad \cdot \frac{1}{2}, \quad \cdot \frac{1}{2}) = D'(\quad,\quad)$

$E'(\quad \cdot \frac{1}{2}, \quad \cdot \frac{1}{2}) = E'(\quad,\quad)$

3. Graph C', D', and E'. Connect the points to form $\triangle C'D'E'$.

On the Back!

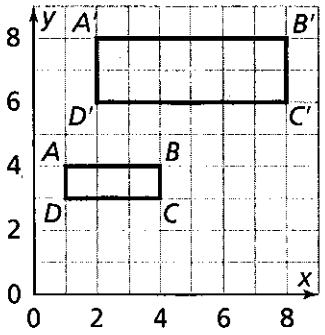
4. $\triangle QRS$ has vertices $Q(1, 3)$, $R(2, 1)$, and $S(3, 3)$. Graph $\triangle QRS$ and its image after a dilation with center (0, 0) and a scale factor of 3.

Name _____

Literacy
6-6

Read the problem below. Then answer the questions to identify the steps for solving the problem.

Rectangle *A'B'C'D'* is the image of rectangle *ABCD* after a dilation with center (0, 0). What is the scale factor of the dilation?



1. What does it mean that rectangle *A'B'C'D'* is the image of rectangle *ABCD* after a dilation?

2. What is the scale factor of a dilation?

3. Is this dilation an enlargement or a reduction? Explain.

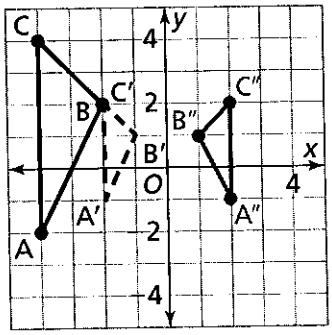
4. What does your answer to Exercise 3 tell you about the scale factor?

5. How can you use the coordinates of a point in the preimage and the coordinates of the corresponding point in the image to find the scale factor?

Name _____

Understanding
6-7

Graph $\triangle A''B''C''$, the image of $\triangle ABC$ by a dilation with center (0, 0) and scale factor 0.5 and a reflection across the *y*-axis.



Step 1 Graph the dilation.

Multiply the coordinates of *A*, *B*, and *C* by the scale factor, 0.5, to find the coordinates of *A′*, *B′*, and *C′*.

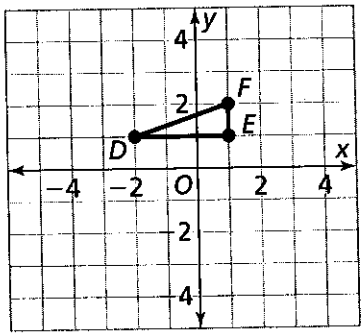
$A(-4, -2) \rightarrow A'(-2, -1)$

$B(-2, 2) \rightarrow B'(-1, 1)$

$C(-4, 4) \rightarrow C'(-2, 2)$

Step 2 Reflect $\triangle A'B'C'$ across the *y*-axis. Label the resulting image $\triangle A''B''C''$.

Graph $\triangle D''E''F''$, the image of $\triangle DEF$ by a dilation with center (0, 0) and scale factor 2 and a translation 3 units down.



1. Multiply the coordinates of *D*, *E*, and *F* by the scale factor, 2, to find the coordinates of *D′*, *E′*, and *F′*.

   $D(\quad, \quad) \rightarrow D'(\quad, \quad)$

   $E(\quad, \quad) \rightarrow E'(\quad, \quad)$

   $F(\quad, \quad) \rightarrow F'(\quad, \quad)$

2. Graph $\triangle D'E'F'$.

3. Translate points *D′*, *E′*, and *F′* 3 units down. Label the resulting points *D″*, *E″*, and *F″*.

4. Graph $\triangle D''E''F''$.

On the Back!

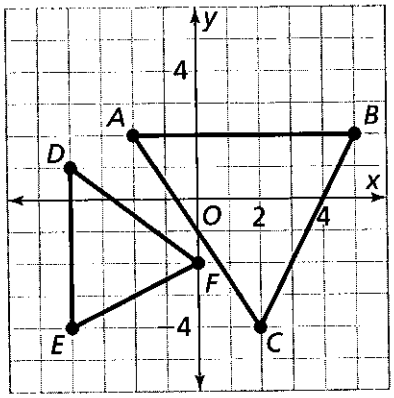
5. $\triangle FGH$ has vertices *F*(1, 1), *G*(3, 1), and *H*(3, 2). Graph $\triangle F''G''H''$, the image of $\triangle FGH$ by a dilation with center (0, 0) and scale factor 3 and a reflection across the *x*-axis.

Name _____

Literacy
6-7

Read the problem below. Then answer the questions to understand the problem.

Is $\triangle ABC \sim \triangle DEF$? Explain.



1. Rewrite the question using words instead of mathematical symbols.

2. How can you determine whether $\triangle ABC \sim \triangle DEF$?

3. Are the triangles the same size? How does this help you solve the problem?

4. Do the triangles have the same orientation? How does this help you solve the problem?

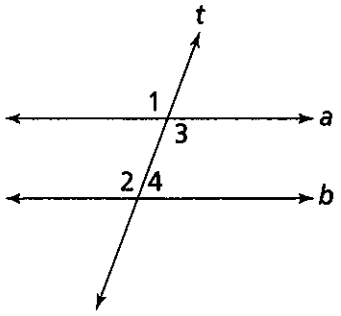
5. On the graph, circle point A and the point that corresponds to point A. How do you know that these two points are corresponding? Why is it important to identify corresponding points?

Name _____

Reteach to Build Understanding

6-8

In the figure, $a \parallel b$ and $m\angle 1 = 110°$. What are the measures of $\angle 2$, $\angle 3$, and $\angle 4$?



Vertical angles are congruent.
$\angle 1$ and $\angle 3$ are vertical angles.
$m\angle 1 = 110°$, so $m\angle 3 = 110°$.

Alternate interior angles are congruent. $\angle 2$ and $\angle 3$ are alternate interior angles.
$m\angle 2 = m\angle 3$, so $m\angle 2 = 110°$.

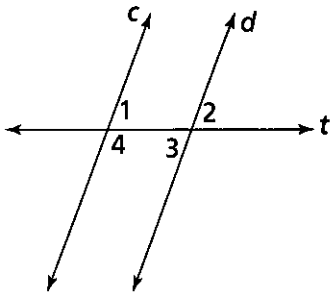
Same-side interior angles are supplementary.
$\angle 3$ and $\angle 4$ are same-side interior angles.

$m\angle 3 + m\angle 4 = 180°$

$110° + m\angle 4 = 180°$

$m\angle 4 = 70°$

In the figure, $c \parallel d$ and $m\angle 1 = 60°$. What are the measures of $\angle 2$, $\angle 3$, and $\angle 4$?



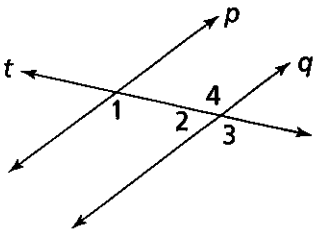
1. $\angle 1$ and which angle are corresponding angles? What is the measure of this angle?

2. $\angle 1$ and which angle are alternate interior angles? What is the measure of this angle?

3. Which two angles are same-side interior angles? What are the measures of these angles?

On the Back!

4. In the figure, $p \parallel q$ and $m\angle 1 = 125°$. What are the measures of $\angle 2$, $\angle 3$, and $\angle 4$?

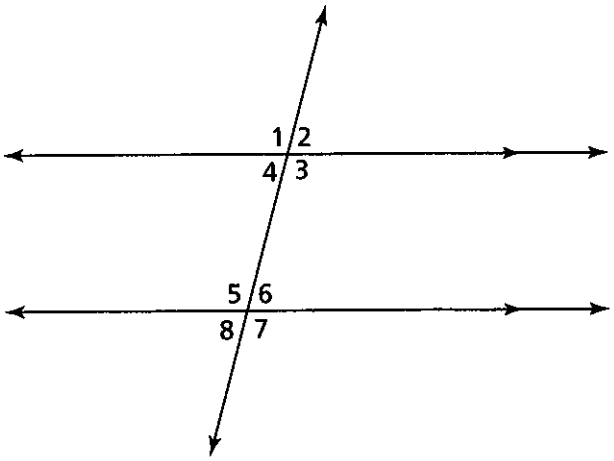


Name _____

Literacy
6-8

Read the problem below. Then answer the questions to connect the problem to the diagram.

The measure of $\angle 4$ is 75°. What is the measure of $\angle 7$?



1. The problem text gives the measure of one angle in the diagram. Label the diagram with this information.

2. In the diagram, circle the angle whose measure you must find.

3. What information is given in the diagram that is not stated in the problem text?

4. Highlight the part or parts of the diagram that give the information you identified in Exercise 3.

5. What is the relationship between the measures of each type of angle listed below? Identify one pair of such angles from the diagram.

Adjacent angles
Relationship of angle measures: _____

Example: _____

Vertical angles
Relationship of angle measures: _____

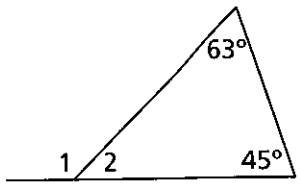
Example: _____

Name _____

Understanding
6-9

What are $m\angle 1$ and $m\angle 2$?

$\angle 1$ is an exterior angle of the triangle. The measure of an exterior angle of a triangle is equal to the sum of the measures of its remote interior angles.



$m\angle 1 = 63° + 45°$

$= 108°$

The sum of the measures of the interior angles of a triangle is 180°.

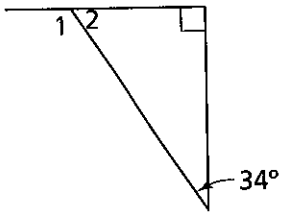
$m\angle 2 + 63° + 45° = 180°$

$m\angle 2 + 108° = 180°$

$m\angle 2 = 72°$

What are $m\angle 1$ and $m\angle 2$?

1. $\angle 1$ is an exterior angle of the triangle. What are the measures of its remote interior angles?



2. Add the measures of the remote interior angles you identified in Exercise 1 to find $m\angle 1$.

3. Complete the equation.

$m\angle 1 + m\angle 2 =$ ____

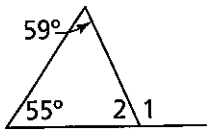
4. Use your answer to Exercise 2 and the equation in Exercise 3 to find $m\angle 2$.

____ $+ m\angle 2 =$ ____

$m\angle 2 =$ ____

On the Back!

5. What are $m\angle 1$ and $m\angle 2$?

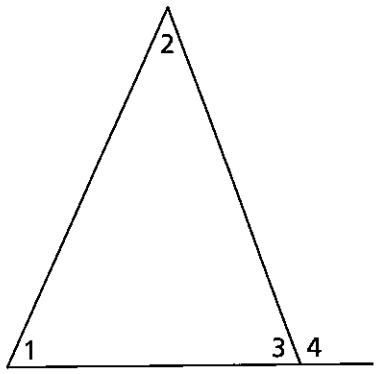


Name _____

Literacy
6-9

Read the problem below. Then answer the questions to identify the steps for solving the problem.

In the diagram, $m\angle 1 = 65°$ and $m\angle 2 = 45°$. What are $m\angle 3$ and $m\angle 4$?



1. Label the diagram with the information that is given in the problem.

2. Circle the part or parts of the diagram that correspond to what you must find to solve the problem.

3. $\angle 4$ is an exterior angle of the triangle. What are the two remote interior angles of $\angle 4$? Explain.

4. Explain why $m\angle 1 + m\angle 2 = m\angle 4$.

5. Explain why $m\angle 3 + m\angle 4 = 180°$.

6. Do you have enough information to solve the problem? Explain.

Name _____

Understanding
6-10

Are the triangles similar? Explain.

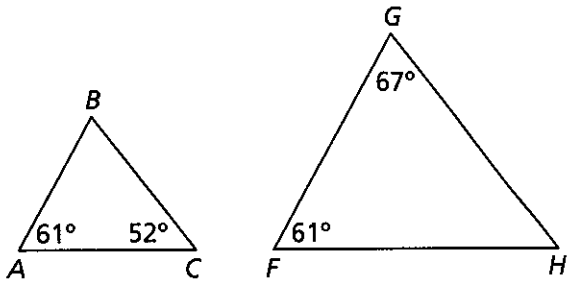
The diagram shows that $\angle A \cong \angle F$.

Find $m\angle B$.

$$m\angle A + m\angle B + m\angle C = 180°$$
$$61° + m\angle B + 52° = 180°$$
$$113° + m\angle B = 180°$$
$$m\angle B = 67°$$

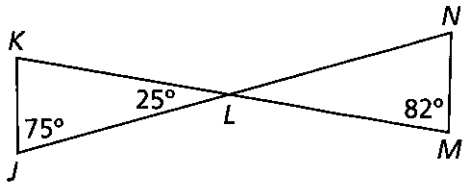
Therefore, $\angle B \cong \angle G$.

Because $\angle A \cong \angle F$ and $\angle B \cong \angle G$, $\triangle ABC \sim \triangle FGH$.



Are the triangles similar? Explain.

1. Explain why $\angle KLJ \cong \angle MLN$.



2. $\angle K$ and two other angles are the interior angles of a triangle. Complete the equation.

$$m\angle K + [\quad] + [\quad] = [\quad]$$

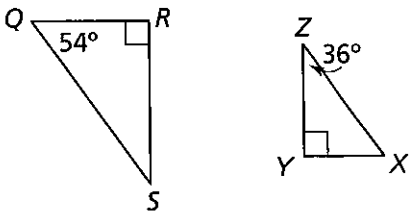
3. Solve the equation in Exercise 2 to find $m\angle K$.

4. What equation can you use to find $m\angle N$? What is $m\angle N$?

5. Are the triangles similar? Explain.

On the Back!

6. Are the triangles similar? Explain.

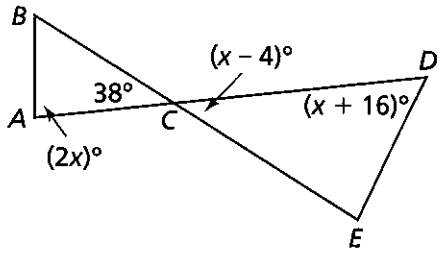


Name _____

Build Mathematical Literacy
6-10

Read the problem and connect it to the diagram.

Is $\triangle ABC \sim \triangle DEC$? Explain.



1. Underline the text in the problem that asks a question. Rewrite this question using words instead of mathematical symbols.

2. What can you check in order to determine whether $\triangle ABC \sim \triangle DEC$?

3. In the diagram, circle the expression $x - 4$. Then complete the equation below.

$$x - 4 = \square$$

4. Explain why the angle that measures 38° has the same measure as the angle that measures $(x - 4)°$.

5. If you solve the equation in Exercise 3 to find the value of x, will you have shown that $\triangle ABC$ is similar to $\triangle EDC$? Explain.

