Moving Up
Reading
1

Brady Fotheringham
Brady Fotheringham

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Reading Skill: Drawing Conclusions
The main idea is the most important element of a passage. It is the focus of the text. Try and figure out the main theme from the information and details in the passage. Focus on discovering the main idea or topic.

Q. What is the main point of the passage?

Getting a tattoo can be a painful experience. But many young people like to get tattoos. The tattoo artist uses needles to draw the tattoo. Since the tattoo needle is very sharp and painful, if the design is large, the customer can only have a small part of the design done each time.

a. Tattoos can be painful.
b. Only young people like tattoos.
c. Red is the best color for tattoos.
d. The tattoo artist draws the designs.

Strategy to Answer

In this passage, the first sentence refers to the main idea of the passage as stated in answer a. The latter sentences support the main idea (i.e. drawing the design, getting a tattoo is painful, using needles to draw the tattoo).
How Caves are Formed
Caves are underground passages that go deep inside the Earth. Caves are created through a combination of chemicals, water and pressure. The majority of caves are found in limestone areas. Limestone is a very soft rock, so water can easily shape or carve out a cave. When it rains, water enters the soil and mixes with it. When the water comes through the soil, the oxygen (or carbon dioxide) creates an acid called carbonic acid, helping to dissolve the limestone. But sometimes, water only drips a little bit, trickling bit by bit. This geologic process gradually eats away at the limestone and creates an underground hole. Over time, the hole becomes larger and larger. Over many thousands of years, the cave gradually gets bigger. Eventually it becomes big enough to walk inside and explore.

Water and Gas in Caves
Additionally, underground rivers find their way into caves through entrance holes. They make the cave bigger through erosion. When an underground river exits a cave, it is called a spring. Apart from the limestone caves, some caves are formed by a hydrogen gas. It comes from deep below the Earth and rises to the surface. The gas dissolves or eats away at the rock and creates a cave. Other caves are sea caves. They are found along coastlines. The waves pound the coastline, eroding weak areas in the rock.

Stalactites & Stalagmites
Whether in limestone, in hard granite rock or along coastlines, most caves share similarities in how they are formed. They are most commonly eroded by
acid, gas or water erosion. But in limestone caves, a unique feature is found: stalactites and stalagmites. These are limestone formations that grow in pairs. Stalactites are long pointy formations hanging from cave ceilings. Over time, the limestone acid drips onto the floor of the cave. The acidic water drips from the roof of the cave, making the stalactite thinner at one end. This creates a stalagmite—the exact opposite shape growing from the floor, not the ceiling. The tallest stalagmite can be found in a cave in Cuba. It is 67.2 meters tall.

**Glossary**
- *eroding* eating away of the soil
- *trickling* dripping slowly
- *acidic* containing acid

[Reading Skill Questions]

1. The passage is mainly about ________________.
   a. how natural caves are found along coastlines
   b. the features of stalactites and stalagmites in caves
   c. cave formation and its features
   d. the similarity of caves formed by acid, gas or water

2. What is the second paragraph about?
   a. How springs are formed in caves
   b. The role of water and gas in creating caves
   c. The effects of groundwater on stalagmites
   d. How underground rivers are formed by flowing gas
Comprehension Questions

1 Fill in the blanks with the right words.

Water mixes with __________ to create carbonic acid which helps to __________ the limestone.

2 What is the main similarity shared by most caves?
   a. You can walk inside most caves.
   b. You can find them only in limestone areas.
   c. Most are located beside the seashore.
   d. They are eroded by acid, gas or water.

3 How does a stalactite form in a cave?
   a. From limestone acid slowly dripping
   b. From acid eroding the cave entrance
   c. From hydrogen gas leaking into the cave
   d. From underground rivers flowing quickly

4 What is a unique feature of limestone caves?
   a. They are too large to explore.
   b. They are mostly long and round.
   c. Stalactites and stalagmites are found inside.
   d. They are only found near desert areas.

Summary Fill in the blanks with the right words to complete the summary.

( cave limestone eroding waves combination eats away )

Caves are underground passages and are created through a _________ of chemical, water and pressure. The majority of caves are found in _________ areas. Sometimes, water only drips very slowly and gradually _________ at the limestone. This creates an underground hole or _________. Some caves are formed by a hydrogen gas coming from deep below the Earth. Other caves are sea caves. The _________ pound the coastline, _________ weak areas in the rock. In limestone caves, unique features called stalactites and stalagmites can be found.
A graphic organizer is a visual display, usually a diagram or illustration. It can help you organize information or facilitate the visualization of concepts, relationships and facts of the passage.

Look at the graphic organizer below and fill in the blanks using information from the passage.

**Paragraph 1**
Caves are formed by various geologic pressures. When water mixes with the soil, an acid is created that eats the limestone away, creating a hole.

**Paragraph 2**

**Paragraph 3**

**Main Idea**
Exploring caves can be quite fascinating. Hiking, climbing or sometimes even swimming inside a cave is a great way to explore Mother Nature. Most people who explore inside caves do it for fun. But some scientists conduct studies on cave life. People who regularly explore caves are called spelunkers. The term comes from the Latin language and means “cave.” Spelunking (or cave exploring) is a popular recreational activity.

Because cave exploring can be quite dangerous, it is often done in groups. And especially, beginner spelunkers only explore very small caves at first. Spelunkers need a lot of equipment and good communication with each other. Some common tools and gear include headlamps, rope, extra batteries, a brightly colored life vest and work boots. You will probably also need knee pads because cave explorers do a lot of crawling. A cave helmet is also a necessity because there are many falling rocks. Sometimes pieces of stalactites fall onto the cave floor.

Often, many research scientists do experiments inside caves. A common activity for them is surveying. This means making a map of the cave. Most caves are very complicated with hidden holes and different levels. Climbing inside caves can be quite confusing due to the many side passages and caverns. Hence, it is important for surveyors to make accurate maps. A good map helps others who want to explore caves.

Sometimes, exploring caves leads to interesting or unusual discoveries. In 1965, in southern China, archaeologists discovered old remains buried in the
ground. These scientists found pieces of ancient stone and pottery in the Zengpiyan Cave. They even found 30 corpses—all of them over 5,000 years old. The warm sticky heat in the cave helped preserve the bodies. Other discoveries in caves have uncovered art. These are paintings or carvings on the rock walls from ancient civilizations. Perhaps the most famous cave art can be found in France. The Lascaux cave has paintings that date back 30,000 years. The cave was discovered by four boys walking their dog in 1940.

Glossary
- **cavern**: a large dark underground cave or chamber
- **archaeologist**: a scientist who studies ancient remains and bones
- **carving**: an artistic design made by cutting on wood or stone

**Reading Skill Questions**

1. The passage is mainly about  
   a. preparing for climbing outdoors  
   b. drawing good cave maps  
   c. how and why people explore caves  
   d. the history of finding remains inside caves

2. What is the third paragraph about?  
   a. Treasure hunting in caverns  
   b. The history of cave exploring  
   c. How to find hidden holes in caves  
   d. The importance of making a cave map
[Comprehension Questions]

1 Where does the term **spelunker** come from?

   ➞

2 What does the author recommend about going into caves?

   a. Explore big and famous caves first  
   b. Try to make a cave map yourself  
   c. Go with a group for safety  
   d. Look in hidden passages

3 What can be inferred about the need for knee pads?

   a. Archaeologists have weak knees.  
   b. Explorers would hurt their knees without them.  
   c. Cave floors are very precious and need protecting.  
   d. Some caves are very slippery and dirty.

4 Which of the following is true?

   a. The oldest paintings found in a cave are 5,000 years old.  
   b. Chinese archaeologists found 30 corpses in the Zengpiyan Cave.  
   c. The Lascaux cave was discovered by young cave explorers.  
   d. The carvings on the rock walls of a cave are made by some archaeologists.

**Summary**  
Fill in the blanks with the right words to complete the summary.

( spelunkers equipment exploring communication cave map for fun studies on )

__________ caves can be quite fascinating. People who regularly explore caves are called __________. Most people explore inside caves __________. But some scientists conduct __________ cave life and make maps. Cave explorers need a lot of __________ and good __________ with each others. Caves are very complex, so it’s quite important to make an accurate __________. Interesting pieces of pottery and art have been discovered in China and France.
Look at the graphic organizer below and fill in the blanks using information from the passage.

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<thead>
<tr>
<th>Main Idea</th>
</tr>
</thead>
</table>

<table>
<thead>
<tr>
<th>Paragraph 1</th>
<th>Why people explore caves</th>
</tr>
</thead>
<tbody>
<tr>
<td>People explore caves both for fun and to conduct research (i.e. scientists).</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Paragraph 2</th>
<th>What you need when exploring caves</th>
</tr>
</thead>
</table>

<table>
<thead>
<tr>
<th>Paragraph 3</th>
<th>The importance of a cave map</th>
</tr>
</thead>
</table>

<table>
<thead>
<tr>
<th>Paragraph 4</th>
<th>Interesting discoveries</th>
</tr>
</thead>
</table>

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**A graphic organizer** is a visual display, usually a diagram or illustration. It can help you organize information or facilitate the visualization of concepts, relationships and facts of the passage.
The highlighted words are from the unit articles. Guess the meanings of the highlighted words. Then match the words with their definitions.

The river is slowly **eroding** the canyon, making it deeper.

Scientists are working hard to **uncover** the secrets of our world.

It is important for us to **preserve** the environment for future generations.

If you don’t brush your teeth, the hard outer coating will begin to **dissolve**.

- a. to wear away through the process of weathering or chemicals
- b. to conserve or protect
- c. to find some hidden truth, to reveal; to remove the lid from
- d. to break down using acid; to melt

My father is an **archaeologist** who digs up dinosaur bones.

Jeju Island is famous for its volcanic caves and **caverns**.

It is difficult to find a safe **passage** over the Himalayan Mountains.

The **surveyor** carefully studied the newly-found cave in order to make a map.

- a. a large, high-ceilinged cave
- b. a path or a way
- c. someone who measures property or land
- d. someone who studies the past using fossils and artifacts

Caves are some of the rarest **geologic** formations.

Lemons are very **acidic**. That’s why they taste so sour.

The show was a fantastic **combination** of figure skating and Russian ballet.

When you ride a motorcycle you should wear protective **gear** such as a helmet.

The archaeologist found the **remains** of seven mummies in one pyramid.

- a. tools, equipment
- b. leftover pieces; evidence of a body
- c. containing acid; sour
- d. a mixture of two or more things
- e. relating to geology which studies the Earth’s structure, surface or origins
Facts and details are small pieces of information. You need to remember specific details and essential information within the story. Try to focus on the facts and details mentioned in the passage that can be proven true. Details are sentences that talk about the main idea.

Q. How high is the peak of K2?

K2 is one of the most difficult mountains to climb in the world. It stands 8,607 meters tall. It is the second highest mountain in the Karakoram Mountains in Pakistan. A high altitude climber descending the mountain travels at a rate of 137 meters per hour. Base camp is located at 4,000 meters.

a. It is about 4,000 meters tall.
b. It is 8,607 meters tall.
c. It is just under 137 km.
d. The peak is 6,000 meters tall.

Strategy to Answer

In this passage, the second sentence refers to how many meters tall the mountain is. When there is a question about height, the answer is usually in meters (or feet). This is done in answer b. So ignore the other options “meters per hour” and reference to “base camp.”
UNIT 02 | Deserts

Passage 1 Science

Types of Deserts

Deserts come in all shapes and forms. Technically, a desert is defined as a very dry piece of land. Deserts receive less than 250 mm of rainfall each year. Most people imagine deserts as full of sand, but in fact, many deserts are not full of massive sand dunes. Mountain ranges, gravel plains, salt flats, and rock beds characterize most deserts. Many deserts are formed because tall mountains block precipitation.

There are four major types of deserts: hot and dry, semiarid, coastal and cold. The Sahara Desert, the Gobi Desert in China, and the Mojave Desert in California are examples of hot and dry deserts. The soil is very rough with shallow or rocky sections. In these deserts, temperatures can reach 49 degrees Celsius, which is very hot. It is not unusual for these deserts to drop to minus 18 degrees Celsius at night.

Other deserts are called semiarid deserts. These are deserts with temperatures that are not as hot. They have more moderate temperatures. Some semiarid deserts can be found in Greenland and Utah. They usually have a greater variety of ground-hugging bushes or shrubs than deserts like the Sahara. Their highest temperature rarely goes above 38 degrees Celsius. The soil is sandy with small rocks scattered about the ground. Many plants in semiarid deserts have shiny leaves. Shiny leaves allow a plant to save energy during the cool evenings. This is called conserving heat. These plants also provide a good place for insects to seek shelter.
Coastal deserts, as the name implies, lie along the coast. The Atacama Desert in Chile is one of the largest coastal deserts. Winters are much cooler than other deserts and the summers are long and warm. It is uncommon for evening temperatures to be colder than minus 4 degrees Celsius.

Cold deserts have a lot of snowfall and are found in colder climates. The Antarctic and Arctic deserts are the two largest deserts in the world. Many of the animals living in these deserts burrow into the ground or snow for protection.

Glossary
- sand dune: a large body of sand formed by wind in a desert
- precipitation: the amount of rain that falls in a specific area
- semiarid: having very little annual rainfall

[Reading Skill Questions]

1. What is the temperature range for hot and dry deserts?
   a. 38 degrees Celsius to -11 degrees Celsius at night
   b. 38 degrees Celsius to -18 degrees Celsius at night
   c. 49 degrees Celsius to -4 degrees Celsius at night
   d. 49 degrees Celsius to -18 degrees Celsius at night

2. What type of desert is found in Greenland?
   a. Deserts along the coast
   b. Hot and dry deserts similar to the Gobi desert
   c. Semiarid deserts with moderate temperatures
   d. Deserts with rocks and chunks of ice
**Comprehension Questions**

1. What is the passage mainly about?
   - a. Plants and animals in deserts
   - b. The most famous deserts
   - c. How deserts are created
   - d. Four major desert types

2. What does the author suggest people believe about deserts?
   - a. They have only one season—summer.
   - b. They only have camels in them.
   - c. They are very hot at night.
   - d. They are just full of sand, without any plants.

3. What happens to plants in deserts?
   - a. The plants are dying in the scorching heat.
   - b. Energy is conserved in the plants’ shiny leaves.
   - c. Animals come out at night and drink the water from the plants.
   - d. The plants’ temperatures go down to -18 degrees Celsius.

4. Which of the following is NOT true?
   - a. The Mojave Desert has moderate temperatures.
   - b. The Sahara Desert is one example of a hot and dry desert.
   - c. Semiarid deserts have plants with shiny leaves.
   - d. The world’s two largest deserts are the Antarctic and Arctic deserts.

**Summary**

Fill in the blanks with the right words to complete the summary.

( cold   semiarid   coastal   deserts   moderate   hot and dry )

Most ___________ are very dry because they receive less than 250mm of rainfall each year. There are four major types of deserts: hot and dry, ___________, ___________ and cold. The Sahara Desert is an example of a ___________ desert. Semiarid deserts have more ___________ temperatures. Many plants in semiarid deserts have shiny leaves. Coastal deserts are much cooler than other deserts. ___________ deserts like the Antarctic and Arctic deserts have a lot of snowfall.
Look at the graphic organizer below and fill in facts and details about deserts from each paragraph using information from the passage.

**Topic Idea**
Deserts cover a wide area. But not all deserts are full of sand as many people think. There are lots of rock, gravel and salt flats in deserts.

**Fact**
Deserts can be categorized into four types:

- Type 1
- Type 2
- Type 3
- Type 4
In several desert regions in the world, deserts are moving closer to where humans live. Deserts in sub-Saharan Africa (the dry and sticky areas south of the Sahara) are encroaching on villages and towns. This means the sands are spreading closer to villages and cities. This process is called desertification. This causes deserts to spread into land that was previously farmland or dry plains. The Sahara is moving southwards at a rate of five to ten kilometers a year. The Gobi Desert that covers Mongolia and northwestern China is now only 1,000 kilometers from Beijing.

Normally, the spread of deserts is usually blocked by either mountains or abrupt changes in vegetation. The savanna plains of sub-Saharan Africa have tall grasses. These plains act as a barrier from the desert. But now the sands have covered much of these areas.

Mankind is more at fault than Mother Nature. A big cause of desertification is overgrazing by animals and the burning of grasslands and forests. Farmers often burn the savanna grasses to make room for their farm animals. Animal hooves pack the dry arid dirt. This makes it much harder for rainfall to trickle down and support vegetation. This increases erosion. Then the land that was previously used by animals to graze becomes useless. In Madagascar, 10 percent of land has been burned by local tribes trying to clear away more land.

Every time farmers move their cattle to a new grassland area or decide to grow crops, the environment is stressed. Farmers use a plot of land for a few years,
and then abandon the crop fields for more productive ground. As soon as they abandon their old farms, the plant roots no longer hold down the soil. Then the desert quickly moves in, making the land unusable. The problem is basically a land management issue. The only way to stop desertification is to help vegetation grow by giving land more water. Some scientists suggest planting large trees. But others maintain this just uses up valuable water for precious smaller pieces of land. There is no easy solution.

Glossary
- encroach: to slowly overtake something, usually land
- savanna: a type of flat grassland in a dry region
- overgraze: when having too many animals feeding on the land
- hooves: the feet of an animal, such as a horse

Reading Skill Questions

1. What makes deserts spread?
   a. Animal hooves push the sand near villages.
   b. Local tribes fight with each other over land.
   c. Farm animals do not eat enough plant material.
   d. Farmers often burn grass to make room for farming.

2. What is one method to stop desertification?
   a. Get farmers to raise smaller animals
   b. Grow more animals and burn down trees
   c. Move the farms into the mountain areas
   d. Grow more trees and increase water
What is the main idea of the first paragraph?

a. Towns are encroaching on small villages.
b. Beijing will soon be buried under sand.
c. Sands are spreading closer to villages.
d. Northern China has many problems.

What is meant by the term desertification?

Why do some farmers abandon their fields?

a. Because the land has little soil
b. Because others need the land
c. Because the land is not useful anymore
d. Because they have no money for crops

Why are some scientists against planting more trees?

a. Deserts will spread more easily into farmland.
b. Tall grass will not grow as easily.
c. The trees would block animals from leaving.
d. It would use up valuable water resources.

Summary

Fill in the blanks with the right words to complete the summary.

Deserts are moving ________ where humans live. This means ________ is spreading closer to villages and cities. This process is called _________. A big cause of desertification is _________ by animals and burning the grassland for farming. Animal hooves pack the dry arid dirt. This makes it much harder for rain to support _________. This increases _________. The only way to stop desertification is to help vegetation grow by giving land more _________. But some oppose this idea.
Look at the graphic organizer below and fill in facts and details about desertification using information from the passage.

**Main Idea**

The gradual spread of deserts (called desertification) has negatively impacted villages and even cities. But there's no immediate solution.

<table>
<thead>
<tr>
<th>Phenomenon</th>
<th>Supporting Details</th>
</tr>
</thead>
</table>
| Deserts are slowly moving towards villages and farmland. | * In the Sahara desert: ________________________________
* In China: ________________________________ |

<table>
<thead>
<tr>
<th>Reason</th>
<th>Supporting Details</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.</td>
<td>1.</td>
</tr>
<tr>
<td>2.</td>
<td>2.</td>
</tr>
</tbody>
</table>

| Solution | |
|----------| |
The highlighted words are from the unit articles. Guess the meanings of the highlighted words. Then match the words with their definitions.

1. The tigers and lions prowled through the **savanna** grass.
   - a. a type of flat grassland in a dry region

2. The car slammed into a concrete **barrier** on the roadway.
   - b. something that obstructs or blocks another thing

3. The amount of **precipitation** that fell yesterday was 6 cm.
   - c. the amount of rain that falls in a specific area

4. The beetle crawled over the tiny particles in the **sand dune**.
   - d. a large body of sand formed by wind in a desert

5. The landlord **abandoned** his house because of debt.
   - b. to give up completely

6. The water started to slowly **trickle** from the sink faucet.
   - c. to slowly flow in drops

7. The farmland began to **encroach** on the neighbor’s land.
   - d. to gradually take over another space, usually land

8. Farmers often have to deal with cows **overgrazing** on their land.
   - a. having too many animals feeding on the land

9. The weather outside today is quite **moderate**.
   - a. in the middle; intermediate

10. The summer weather in Hong Kong is quite **sticky**.
    - b. huge or immense in size

11. The Great Wall of China is a **massive** wall made of stone.
    - c. quite sudden or unexpected

12. The grave was very **shallow**; only about three feet deep.
    - d. very hot and humid weather

13. The supervisor made an **abrupt** decision and cancelled the meeting.
    - e. not deep or having very little space between
Identifying the sequence of something means that you organize the information in the correct order. Think about the order of each event. How did the author organize the information? What words or phrases did the author use to help readers track the sequence of events: first, then, finally, next, last, while, during, after, dates, times? Think about what happened before and after the event.

Q. What is the second obstacle that must be overcome?

The invention of solar and wind powered technology is becoming more likely now. But several obstacles need to be overcome. First, the price of solar panels must be lowered. Second, wind power generators must provide more efficient power. If both of these obstacles can be overcome, alternative energy will become a reality.

a. Make inexpensive generators.
b. Go back to using gasoline generators.
c. Invent stronger solar panels.
d. Make more efficient wind power generators.

Strategy to Answer

In this passage, making wind generators more efficient is the second main point that is mentioned in answer d. This is mentioned after the first main point (lowering the price of solar panels).
Recycling Paper  

Recycling paper is a big part of keeping our environment clean. When paper, cardboard or wood products are recycled, we don’t need to chop as many trees down. Recycling ensures the water is polluted 35 percent less and the air is polluted 74 percent less than they would be otherwise.

The recycling process can be highly complex. First, the customer throws out old magazines, juice cartons, and even telephone directories. Second, a recycling truck comes around to homes and office buildings. This truck picks up those and takes them to a recycling plant. Then various types of paper are sorted by grade. This is the third process. Getting the ink out of the paper fiber is the fourth and most important process. This is called the deinking process. All the ink on newspapers, scrap paper and even milk cartons needs to be removed. It involves a difficult chemical and mechanical process. The paper is washed with soapy water. This removes the ink and any plastic coating or glue. At this point, the paper is very wet and mushy. The fifth process is putting this wet paper into a vast holding tank. The staff at the recycling plant then adds different material to the wet paper. This is how different types of new paper are made. Of course, A4 paper for computer printers needs to be a different thickness than that of paper grocery bags. The sixth process is spreading the types of paper onto large flat sheets. The largest of these sheets will be used for newsprint to make newspapers. The final process is the drying stage. After that the paper is ready to be shipped.

By recycling paper, we can not only save trees, but also save energy. Making one roll of recycled newspaper uses 40~64 percent less energy than going to
the forest and cutting down another tree. But there are limits to recycling paper. After a piece of wood pulp paper is recycled 4~5 times, the individual fibers in the paper become too weak. The recycled paper cannot be made into new paper products.

Glossary
- **cardboard** a stiff form of paper used for packaging
- **fiber** a thin thread of a substance often found in cloth or paper

[Reading Skill Questions]

1. The fourth and most important step of recycling paper is _____________.
   a. cleaning out the recycling truck
   b. putting the wet paper into the holding tanks
   c. removing the ink from newspapers or cardboard
   d. choosing different thicknesses for the new paper

2. What happens after the fifth step?
   a. The ink is washed with soapy water.
   b. The recycling staff adds color to the paper.
   c. Wood pulp paper is recycled again.
   d. The types of paper are spread onto large sheets.
Comprehension Questions

1. What is the main idea of the passage?
   a. The process of recycling paper
   b. The pros and cons of recycling paper
   c. The importance of recycling things
   d. The chemical process of making wood products

2. What is the closest meaning to mushy as it’s used in the passage?
   a. rough and hard
   b. clean and pure
   c. soft and pulpy
   d. dirty and heavy

3. What’s the benefit of recycling paper?

4. Which of the following is NOT true?
   a. Different types of paper are sorted by grade.
   b. Wood pulp paper is only recycled once.
   c. Deinking means removing the ink from the paper fiber.
   d. Recycling paper includes a chemical and mechanical process.

Summary | Fill in the blanks with the right words to complete the summary.

spreading recycling by grade sorting paper fiber wet paper save energy

_________ paper is a big part of protecting the environment. The first three steps involve throwing out garbage, garbage pickup and _________ various types of paper _________ . Getting the ink out of the _________ is the fourth process. The fifth process is adding different material to the _________ . The sixth process is _________ the different types of paper onto large flat sheets. By recycling paper, we can not only save trees, but also _________.
A graphic organizer is a visual display, usually a diagram or illustration. It can help you organize information or facilitate the visualization of concepts, relationships and facts of the passage.

Look at the graphic organizer below and fill in the blanks. Complete the correct sequence of events using information from the passage.

The Chemical Process of Recycling Paper
Recycling paper is a good way to _____________. There are several steps that have to be completed in order to recycle paper.

1

2

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Dead Sea Scrolls

One of the most fascinating sets of documents ever discovered was found in Israel. Over 60 years ago, these religious documents were found in some caves near the Dead Sea. They’re known as the Dead Sea Scrolls and date back to 150 B.C. They contain valuable information about the Old Testament Bible and the Christian religion. These documents were not found on traditional paper. They were old pieces of paper, or scrolls, wrapped in cloth and placed in clay jars.

Finding the Scrolls

In 1947, a Bedouin shepherd climbing amongst some cliffs near the Dead Sea threw a rock into a cave. He thought he heard the rock hit some pottery pieces. He found an ancient form of writing. But he couldn’t read it because most of the scrolls were written in Aramaic. This was an old language spoken near the time of Jesus Christ. Besides, many of the scrolls were broken into tiny pieces. Some pieces had only a few words of text on each.

Selling the Scrolls

The shepherd thought the papers were worthless to him. So, in 1948, he sold the pieces of paper to an antiquities dealer. In 1949, the dealer sold them to Hebrew University. They were examined by a few academic scholars. By 1952, the scholars realized that these ancient writings were related to the Bible.

Studying the Scrolls

The scholars explored the 11 caves with scrolls and found over 15,000 pieces of manuscript (or scrolls). Sometimes they were no bigger than a postage
stamp. It was determined that they belonged to 800 documents. It was a great challenge to put together all these tiny scroll pieces into the correct original document. It was like a giant jigsaw puzzle. The Dead Sea Scrolls were a combination of hymns and poems. Some of the scrolls contained writings of King David and Joshua, who lived over 3,000 years ago. Finally, in 1991, the scrolls were made available to the public and are now displayed in the Israel Museum in Jerusalem. Since 2008, scholars have been digitally photographing the scrolls so that anyone can view the Dead Sea Scrolls online.

**Glossary**
- **scroll** a long roll of paper used for writing
- **antiquities** something very old or ancient
- **manuscript** a type of handwritten document or script
- **hymn** a religious song or chant, often from the Bible

### Reading Skill Questions

1. **What did the shepherd do after finding the scrolls?**
   a. He notified the university about the cave.
   b. He sold the scrolls to an antiquities dealer.
   c. He returned the scrolls to the cave.
   d. He gave the scrolls to a Christian scholar.

2. **What happened to the Dead Sea Scrolls in the end?**
   a. The scrolls were put on the Internet.
   b. The scrolls were reviewed again by the Pope.
   c. The scrolls were returned to Hebrew University.
   d. The scrolls were buried in the cave again for safety.
Comprehension Questions

1 What were the Dead Sea Scrolls mostly about?
   a. A buried treasure map
   b. King David’s love letters
   c. Poorly translated Bible writings
   d. Ancient poems and hymns

2 Which of the following is true?
   a. The hymns were carved on the walls in the caves.
   b. Over 15,000 pieces of scrolls were found in the caves.
   c. The Dead Sea Scrolls were written about 150 years ago.
   d. At first, Hebrew scholars thought the documents were worthless.

3 Why couldn’t the shepherd understand the scrolls?
   a. He couldn’t read Old English.
   b. They were written in ancient Aramaic.
   c. The scrolls were very faded.
   d. He couldn’t put the scroll pieces together.

4 When did scholars realize the importance of the scrolls?
   a. After they put together 800 documents
   b. In 1947 when the shepherd first discovered them
   c. In 1952 when they found the papers were related to the Bible
   d. When the scrolls went online in 2008

Summary | Fill in the blanks with the right words to complete the summary.

The ___________ Scrolls were discovered in ___________ over 60 years ago. They were old pieces of paper written in Aramaic. In 1947, a Bedouin shepherd found the ___________ but thought they were ___________. So, he sold them. By 1952, the scholars realized that these ___________ writings were related to the ___________. It was a great challenge to put together all the tiny scroll pieces into the original document. Now, anyone can see the scrolls __________.
Look at the graphic organizer below and fill in the blanks. Complete the correct sequence of events using information from the passage.

1. Many of the pieces were broken into tiny bits.
2. This led to exploring all 11 caves.
3. Putting together all the 15,000 jigsaw-like pieces took a long time.
Check Your Vocabulary

The highlighted words are from the unit articles. Guess the meanings of the highlighted words. Then match the words with their definitions.

The largest mazes in the world are extremely complex.
If I don’t eat my cereal quickly enough, it gets mushy.
After my dog chewed the corner off my best baseball card, it was worthless.
Your food may taste soapy if you don’t rinse the dishes well enough after you wash them.

a. complicated; intricate  
b. a soft wet feeling when material is saturated with water  
c. without any value  
d. having the quality of soap

The fibers in my wool sweater are making me itchy.
I submitted my manuscript and they accepted it for publishing.
Almost all decorations in the 1000-year-old palace are antiquities.
My mom will be proud of me because I got a really high grade on my test.

a. a mark used in evaluations  
b. a type of handwritten document or script  
c. extremely old or ancient items and materials  
d. a long thin thread of a substance often found in cloth or paper

The lion belongs to the cat family.
The city’s historic museum dates back to the 1840s.
She spread out the tablecloth and arranged tableware on it.
Recycling cans, bottles, and paper is one easy way that you can help the environment.

a. to reuse existing products  
b. to open something out or arrange it over a place; to stretch  
c. to be part of  
d. to belong to an earlier time
CAUSE & EFFECT

Cause and effect refers to two events that are related to each other. Cause is defined as “why something happened.” Effect is defined as “what happened.” The first event has an effect on the second. Look for keywords that show a connection between two related events. Transition words such as because, so, consequently, therefore, thus, and since refer to a related event.

Q. What was the result from Hurricane Katrina on residents?

The devastation from Hurricane Katrina almost turned New Orleans upside down. Houses were torn apart or flooded with water. But after several years of rebuilding homes, many people are still living in shelters, tents or mobile homes. Almost five years after the hurricane, tens of thousands of residents don’t have a home of their own.

a. New Orleans is building a new town.
b. Many residents still aren’t living in their own homes.
c. All the people in New Orleans died.
d. More people are moving into New Orleans.

Strategy to Answer

In this passage, the third sentence refers to residents who are not living in their own homes. Answer b supports a negative effect and refers to how Hurricane Katrina directly affected residents.
What are Comets?

Flying across space, a comet looks beautiful from Earth. But actually, a comet is just a ball of thick ice, rock and other mineral particles. The word comet comes from the Greek language and means “hair of the head.” On the surface, they are rocky. But inside, they are filled with ice and gases like hydrogen and ethanol.

Comets orbit around the Sun and make a giant circle pattern. This can sometimes take a few years (if they are traveling fast) or maybe hundreds of thousands of years (if the orbit is very big). Astrophysicists, who study the stars and planets, track the number of comets. Through their efforts, they estimate there are over 3,500 comets out in space. But there are only about one or two each year that we can see using the naked eye.

Comet Tails

Astrophysicists believe that comets are formed in the Outer Solar System. When comets pass from the Outer Solar System to the Inner Solar System, a big change occurs. (The Solar System is where the Earth, Sun and 7 planets are.) The warmth of the Sun burns off any unstable material like gases in the comet. Most importantly, it creates a comet tail. The comet tail or “coma” is caused by solar radiation. This solar heat evaporates any remaining water or gases. With the Sun’s rays shining on the comet tail, we can see the comet tail from Earth.
Asteroids & Meteors
When we look up at a clear night sky, we can see comets and their tails. But in space, there are also asteroids and meteors. But which is which? A comet in our Solar System has a tail behind it. An asteroid does not. The gases and dust particles from a comet’s tail are sometimes called a meteor shower. Small chunks of rock or ice break off from the main comet body. These pieces that fall to Earth are called meteors. So when you go out at night, look up into the sky. You never know what you will see.

Glossary
- orbit to move around another object, usually a planet in a circular pattern
- radiation energy that comes from a particular source
- evaporate when a liquid turns into a gas, usually through heat

[ Reading Skill Questions ]

1. What is solar radiation’s effect on the comet?
   a. Certain compounds like gases are burned off.
   b. The comet becomes harder and shinier.
   c. Gases like hydrogen and ethanol are created.
   d. It causes the comet to head to the Outer Solar System.

2. We can see comet tails from Earth because ________________.
   a. comets only pass by Earth on bright nights
   b. the Sun’s rays shine on the comet tail
   c. gases in the comet tail have shiny particles
   d. meteor particles collide with the comet tail
1 What is the passage mainly about?
   a. The features of comets
   b. The history of research about comets
   c. The role of the Outer Solar System
   d. The difference between comets and meteors

2 What's the big difference between comets and asteroids?
   ➡️

3 What are the pieces called that fall to Earth?
   a. Meteors
   b. Asteroid
   c. Crater chunks
   d. Comet tails

4 How are meteors formed in space?
   a. When comets hit other planets in space
   b. When hydrogen gas combines with ethanol
   c. When comets pass into the Outer Solar System
   d. When small pieces of rock or ice break off from comets

Summary | Fill in the blanks with the right words to complete the summary.

(orbit meteors asteroid burns off Solar System comet tail solar radiation)

A comet is just like a dirty snowball made from ice and rocks found in the _________.
Comets _________ around the Sun and make a giant circle pattern. When comets
enter the Inner Solar System, the warmth of the Sun _________ any unstable
material like gases. The _________ or “coma” is caused by _________.
A(n) _________ doesn’t have a tail behind it. Small chunks of rock or ice break off
from comets. These pieces that fall to Earth are called _________. 
A graphic organizer is a visual display, usually a diagram or illustration. It can help you organize information or facilitate the visualization of concepts, relationships and facts of the passage.

Look at the graphic organizer below and fill in the blanks about cause and effect using information from the passage.

### Comet Tails

**Cause**
Comets travel through space, passing from the Outer to Inner Solar System.

**Effect 1**

**Effect 2**

### Meteors

**Cause**
Small rock particles break off from the back of the comet.

**Effect 1**

**Effect 2**
Meteors

Colliding with Earth
What would happen if a meteor struck the Earth? Meteors, just like comets, fly across the sky and are amazing to watch. Many meteors, often called shooting stars, can be seen from Earth. Of course, many people ask what would happen if a large meteor hit the Earth. The destruction could be very small or it could affect the entire planet. Here are a few case studies of famous meteor crashes.

Mexico Crater
We are all familiar with the surface of the Earth’s moon. The craters on the moon were formed by meteors crashing into the moon. Imagine if a large meteor hit the Earth. In 1990, the crew of the Space Shuttle was looking at the Yucatan Peninsula in Mexico. They saw the outline of a giant crater 193 kilometers wide. By examining a specific metal inside the crater (usually found only in asteroids), scientists found that the crater was 65 million years old. They believe that this gigantic meteor (called the Chicxulub meteor) hit the Earth, substantially altering the Earth’s climate. Many scientists argue that the effect of this large meteor impact was necessary to kill off the dinosaurs. The crater in Mexico provides strong evidence of that theory. Without this impact, dinosaurs might not have become extinct.

Tunguska Event
The most famous meteor to crash into the Earth occurred in 1908. It hit a region in present-day northern Russia. Because the meteor strike happened in the last century, it could be closely examined by scientists. The Tunguska
Event was a gigantic explosion in northern Siberia on June 30, 1908. Either a comet or meteor, about 5~10 kilometers wide, approached the Earth. But for some reason, the comet or meteor exploded above the Earth’s surface. The explosion caused over 80 million trees to fall over. Some people heard the explosion over 65 kilometers away. The impact knocked many people from their chairs. Many mentioned a “strong wind” suddenly blowing.

As a result of these two events, the U.S. space agency NASA is trying to predict the path of each comet, meteor or asteroid. Then they could see if any are likely to hit the Earth.

Glossary
- shooting star: a meteor racing across the sky
- crater: a very huge hole in the ground caused by the impact of a meteor or an explosion
- extinct: when a living species is completely gone or has died out

[Reading Skill Questions]

1. **What is one effect of the Chicxulub meteor in Mexico?**
   a. It caused the dinosaurs to become extinct.
   b. It caused a tidal wave on the Yucatan Peninsula.
   c. It caused the Space Shuttle to be affected by special metals.
   d. Special metals caused radiation that killed millions of people.

2. **What caused the Tunguska Event?**
   a. An environmental experiment in Siberia
   b. Strong winds caused by an earthquake
   c. A meteor in northern Siberia that exploded
   d. Scientists do not know.
[Comprehension Questions]

1 What word does NOT have a similar meaning to crash?
   a. hit
   b. strike
   c. extinct
   d. collide

2 What was discovered inside the Chicxulub crater?
   ➞ ____________________________

3 What happened in Tunguska, Russia?
   a. Strong winds blew people’s homes over.
   b. A meteor exploded above ground.
   c. A meteor hit the ground, killing many animals.
   d. A lot of buildings were destroyed due to the explosion.

4 What does the author suggest that NASA is doing?
   a. They are trying to protect Mexico from future meteors.
   b. They are trying to predict the path of each comet, meteor and asteroid.
   c. They are trying to build a new space shuttle telescope.
   d. They want to examine the history of Mexican dinosaurs.

Summary | Fill in the blanks with the right words to complete the summary.
( hits affect crater meteor predict dinosaurs explosion NASA )
If a large meteor ________ the Earth the destruction could ________ an entire planet. In 1990, the crew of the Space Shuttle saw a giant ________ in Mexico. They believed the ________ that made the crater killed off the ________. The most famous meteor to crash into the Earth occurred in 1908 in northern Russia. The Tunguska Event was a gigantic ________ and caused over 80 million trees to fall over. ________ is trying to ________ the path of comets and meteors.
**Graphic Organizer**

A graphic organizer is a visual display, usually a diagram or illustration. It can help you organize information or facilitate the visualization of concepts, relationships and facts of the passage.

Look at the graphic organizer below and fill in the blanks about cause and effect using information from the passage.

<table>
<thead>
<tr>
<th>What happened in Mexico? (1)</th>
<th>What was the effect? (1)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
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</tr>
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</table>

<table>
<thead>
<tr>
<th>What happened in Mexico? (2)</th>
<th>What was the effect? (2)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
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</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>What happened in Russia?</th>
<th>What was the effect?</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Solution**

As a result of these events, the U.S. space agency NASA is trying to predict the path of comets, meteors or asteroids which are likely to hit the Earth.
The highlighted words are from the unit articles. Guess the meanings of the highlighted words. Then match the words with their definitions.

Korea is a **peninsula**.

A grain of sand is just a **particle** of a rock.

The moon is in **orbit** around the Earth.

**Minerals** such as gold, silver, iron, and copper are very precious.

- a. a solid chemical substance which is usually found by mining
- b. a very small piece of something
- c. a circular pattern around another object, usually a planet
- d. a long narrow piece of land that is almost surrounded by water but is connected with the mainland

A microwave uses **radiation** to cook your food.

He is an **astrophysicist** in the Space Science Division.

Every day, hundreds of meteorites **collide** with the Earth’s surface.

Some scientists are worried about the **destruction** of rainforests.

It is better not to **approach** strange dogs, because they might be dangerous.

- a. to come near or come closer
- b. to crash into something
- c. someone who studies stars and planets
- d. energy that can be converted into electrical power
- e. the act of destroying something

The canoe was very **unstable** in the rough river.

Tigers are in danger of going **extinct**. There are only a few left today.

After it rains, it’s fun to watch the puddles **evaporate** in the hot sun.

Did you know that the blue whale is the most **gigantic** animal that ever lived?

- a. when a liquid turns into a gas, usually through heat
- b. not stable, not in control; insecure, unsettled
- c. enormous, huge, big
- d. when a living species is completely gone or has died out
COMPARE & CONTRAST

When you compare two or more things in a passage, pay attention to comparing and contrasting people, events, places or things. It helps to make a list of the facts and ideas that are similar or different. Look for metaphors and analogies. A metaphor is an implied comparison between two unlike things. An analogy is also a comparison of two or more objects.

Q. What is the difference between the Japanese and U.S. Disneyland parks?

The number of regular visitors to Tokyo Disneyland Park is declining in Japan as the population decreases. However, in California and Florida, Disneyland and Disneyworld are very popular. Disneyland had over 17 million visitors in 2007. This was an increase of four percent from the previous year.

a. There are too many customers in Tokyo.
b. There are a few financial problems in Tokyo.
c. There is stronger growth in the U.S. parks.
d. There is not enough equipment in Disneyland.

Strategy to Answer

In this passage, the key is to look for comparative words like “However” that contrasts the two theme parks. The word “stronger” in answer c supports the idea that attendance in U.S. Disneyland parks is better than the Tokyo Disneyland Park.
Navigating Through the Air

Birds Navigate
Birds often migrate in the winter months. In order to get to their new destination, migrating birds have to navigate. Many birds fly thousands of kilometers in the winter. Smaller birds like hummingbirds don’t fly as far as larger geese and herons. But like many birds, hummingbirds regularly return to the same garden or park each year. Many migrate on the exact same day of the year, leaving their home for warmer regions. Biologists have long been puzzled by how these birds know where to go.

Hummingbirds
Hummingbirds navigate in a variety of ways. The first way involves sunlight. Biologists think that the number of sunlight hours releases hormones in their bodies. When the hummingbird senses a change, it knows that it is time to migrate and fly away. A second reason relates to gravity. When the hummingbird starts to fly south (or return north), it uses the Earth’s gravity to sense direction. In other words, the hummingbird’s body can feel the pull of gravity, just like a sailor’s compass. Hence it knows if it is flying north, south, east or west.

Honeybees
Honeybees navigate in a much different way from hummingbirds. Honeybees have eyes that are very sensitive to light. They have over 6,000 tiny lenses in each compound eye. These photoreceptors let a honeybee know how far it is from a given location. A honeybee relates every object to the Sun. In other words, a flower will reflect or shine differently than another flower that might
only be several centimeters away. This is much different from hummingbirds.

In the 1940s, two Swiss scientists were studying honeybees. They discovered that a bee can signal to another bee where food (or flower pollen) is located. The bee will perform a “wiggle dance” in the air near the food source. All these signals help the other bees know where to navigate and fly. Additionally, honeybees have a very powerful sense of smell. They use their smell to help navigate around different flowers and plants.

**Glossary**
- **navigate**: to find one’s way or plot a route; to control the course of a ship or aircraft
- **compound eye**: an eye made up of many separate parts
- **photoreceptor**: a sensor (often in the eye) that detects light

[Reading Skill Questions]

1. **How do hummingbirds navigate differently from honeybees?**
   - a. The hummingbird uses a special dance.
   - b. The hummingbird uses colorful flowers.
   - c. The hummingbird only flies when it is light out.
   - d. The hummingbird uses the Earth's gravity.

2. **What is one similarity between honeybees and hummingbirds?**
   - a. Hormones tell both when to return home.
   - b. Both honeybees and hummingbirds have 6,000 eyes.
   - c. Sunlight is a factor in how they both navigate.
   - d. They both use their smell to navigate their way home.
Comprehension Questions

1 What is the passage mainly about?
   a. The difference between navigation and migration
   b. The life cycle of hummingbirds and honeybees
   c. The effect of sunlight and gravity on navigating birds
   d. How honeybees and hummingbirds navigate

2 Which are the tools that hummingbirds use to navigate? Choose all.
   a. Sunlight
   b. Gravity
   c. Compound eye
   d. Photoreceptors

3 What does sense direction mean as used in the passage?
   a. To fly home in a southward direction
   b. To discover where their home is
   c. To go in the direction of a sailor
   d. To detect the correct direction to fly

4 How does a compound eye help a honeybee?
   a. It can see birds that might attack it.
   b. It knows how far away an object is.
   c. It can see the most delicious food source.
   d. It distinguishes different colors.

Summary | Fill in the blanks with the right words to complete the summary.

Birds _______ in a variety of ways. Hummingbirds use _______ as a signal. When the hummingbird _______ a change in light, it knows that it is time to _______. And it also uses the Earth’s gravity to sense _______. Honeybees have eyes that are very _______ light. They have over 6,000 tiny lenses in each compound eye. These photoreceptors let a honeybee know _______ it is from a given location. It also uses a dance and a sense of smell to help navigate.
A graphic organizer is a visual display, usually a diagram or illustration. It can help you organize information or facilitate the visualization of concepts, relationships, and facts of the passage.

Look at the graphic organizer below and fill in the blanks to compare and contrast the information.

Honeybees

Similarities

Hummingbirds

Honeybees
Killer African Bees and Locusts

Bees and Locusts
We have all seen bees buzzing around the garden flowers. We have even heard locusts chirping on summer nights. But have you ever seen hundreds of thousands of bees or millions of locusts swarming around? Both African honeybees, which are aggressive killer bees, and locusts often cause problems. Aggressive killer bees have harmed humans while locust swarms eat farmers’ crops.

Escape from Brazil
In 1957, a beekeeper in Brazil was trying to breed stronger bees. He wanted bees that would produce more honey. He mated two species of bees. One of the bee types was the Tanzanian African bee. This was a mistake. When the two bee species mated, they created a third very aggressive bee species. Regrettably, 26 of these new aggressive African queen bees escaped from their bee hives. They have since interbred with more common and non-aggressive European bees all around the world.

Killer Bees
These African bees have a tendency to swarm or attack other bees or even humans. The African bee is easily upset. This gave them the nickname “Killer Bees.” By the late 1990s, hundreds of thousands of African bees had flown to Central America and dominated other species of bees. They have even made their way to Texas and Louisiana. They have killed at least 14 people in the United States, and many people are afraid of them. When the African killer bees sting, they produce a smell similar to that of bananas. This attracts other killer bees. To make matters worse, Hollywood has made some horror movies
about killer bees. This has caused people to be more scared than they need to be.

**Locusts**

Locusts or grasshoppers are normally harmless insects. But in Africa, China and Australia, locusts have caused massive destruction of farm crops. Due to overcrowding, locusts can start to swarm a field, eating everything in it in a few hours. The amount of locusts in one swarm can be up to a billion. This causes economic hardship for farmers and communities. Just before they fly, locusts turn a darker color and the muscles get bigger in their legs. The locust swarms are so dense that light from the Sun is blocked out.

**Glossary**

- **chirping** a sound made by a bird
- **swarm** when a large group of insects moves about in an aggressive manner
- **interbreed** to mix species or mate two species

### [Reading Skill Questions]

1. **What is similar about locusts and European bees?**
   a. They usually prefer to attack humans and animals.
   b. They are normally quiet and non-aggressive.
   c. European bees and locusts cannot fly that far.
   d. They both have nicknames from Hollywood films.

2. **What is different between African bees and locusts?**
   a. Locusts fly in a circle pattern, but African bees fly straight.
   b. Locusts are very harmful, but African bees are not.
   c. Locusts eat farmer’s crops, and African bees attack humans.
   d. Locusts swarm only in South America, but African bees swarm around the world.
[Comprehension Questions]

1 What is the passage mainly about?
   a. The new species of killer bees and locusts
   b. The negative effect of killer bees and locusts
   c. The ecological adaptation of killer bees and locusts
   d. Interbreeding between killer bees and locusts

2 Why were the two bee species mated?
   a. To train bees to kill locusts in China
   b. To sell the stronger bee to African nations
   c. To create a bee that could produce more honey
   d. To make a bee that could fight effectively

3 Which of the following is NOT true about locusts?
   a. They have a good impact on the social economy.
   b. There can be up to a billion in a swarm.
   c. They can cause massive destruction of farm crops.
   d. They usually can be seen in Africa, China and Australia.

4 How is the word dominated used in paragraph 3?
   a. To prove that African bees are quite harmless
   b. To illustrate how African bees can fly a far distance
   c. To explain how African bees organize other bees
   d. To show how African bees take over other bees

Summary | Fill in the blanks with the right words to complete the summary.

( species attacked swarm interbred took over mated with )

Both African honeybees and locusts often cause problems. In 1957, a beekeeper in Brazil ________ European and African bees. This created a third very aggressive bee ________. Some queen bees escaped and have since ________ more common and non-aggressive European bees all around the world. Eventually, these African “Killer Bees” ________ other bee colonies and even ________ humans. On the other hand, locusts can ________ a field, eating everything in it in a few hours.
A graphic organizer is a visual display, usually a diagram or illustration. It can help you organize information or facilitate the visualization of concepts, relationships and facts of the passage.

Look at the graphic organizer below to compare and contrast the information. Which comments from the passage about differences and similarities belong in the two categories? Check the appropriate box.

A. They can be very harmful to humans.
B. Swarming is caused due an overcrowding of this insect.
C. Over the years, this species has gradually flown from S. America to N. America.
D. Two types of this species were mated, creating a very violent version.
E. This aggressive species even attack humans.
F. This species can suddenly swarm over a field destroying crops.
G. Up to one billion of these insects can gather at any one time.
## Check Your Vocabulary

The highlighted words are from the unit articles. Guess the meanings of the highlighted words. Then match the words with their definitions.

|  | Many species of birds **mate** for life. |
|  | It was difficult to **navigate** through the coral reef. |
|  | Most evenings, I can hear the crickets **chirping** outside my window. |
|  | Every summer, monarch butterflies **migrate** from Mexico to northern Canada. |
| **a.** &emsp; when a bird makes a sound | **b.** &emsp; to find one’s way or plot a route |
| **c.** &emsp; to couple in order to produce offspring | **d.** &emsp; to move over large areas of land according to the season, usually in reference to birds |

|  | He has the unusual **tendency** of sleeping with his eyes open. |
|  | A bumblebee’s most important job is to collect **pollen**. |
|  | The family has suffered financial **hardship** since Mr. Johnson lost his job. |
|  | At sunset, you often see a **swarm** of insects hovering around the treetops. |
| **a.** &emsp; suffering; a state of misfortune | **b.** &emsp; a natural urge or habit |
| **c.** &emsp; the sex cells of flowering plants | **d.** &emsp; when a large group of insects moves about in an aggressive manner |

|  | In a sport like ice hockey, play is often very **aggressive**. |
|  | The new manager tried to **dominate** the other people. |
|  | The blue whale is **massive**, weighing over 150 tons. |
|  | Farmers will **interbreed** fruit trees to produce the most delicious crops. |
|  | After it rains, the boy likes to go outside and find the worms that **wiggle** on the ground. |
| **a.** &emsp; to mix species or mate two species | **b.** &emsp; to move back and forth very quickly; to squirm about |
| **c.** &emsp; to be the most important thing; to govern or control someone or something | **d.** &emsp; large in size and heavy |
| **e.** &emsp; forceful or violent |
An inference is an opinion or decision that you assume could happen, but all the details are not provided. It means you need to make your own decisions about some of the information and details in the passage. It is similar to making your best guess. An inference might not always be supported by existing facts.

Q. What most likely happened to the people who invested in Internet companies?

Many financial experts agree that the stock market crash of 2001 was caused by too much speculation in Internet companies. These Internet companies rarely produced a profit. But investors were very hopeful that one day they would be profitable. Eventually, the stock prices fell very quickly.

a. They lost most of their money.
b. They bought stock in new companies.
c. They asked financial experts for help.
d. They became very profitable.

Strategy to Answer

In this passage, the stock market crashed and went down in value. Hence, investors in Internet companies very likely lost a lot of money as stated in answer a. The other answers are not likely given the information provided.
UNIT 06 | Viruses

Passage 1 Science

Ebola Virus

The Ebola virus is considered the deadliest virus on the planet. It causes its victims to have very high fevers, a rash and internal bleeding. Internal bleeding means the body and its organs are bleeding from within. There is no known cure. Ebola usually kills its victims within 10 days. Many victims often lie in great pain until they die. The first case of Ebola happened in 1976 in the Congo (then called Zaire) and is named after the Ebola River. While trying to help the patient, two nurses died.

But the worst thing about Ebola is that it is transmitted very easily. Anyone who touches the victim’s blood or body fluids can get the virus themselves. In remote villages in poor African communities, many doctors and nurses do not have protective clothing. Hence, they often die when they try to help Ebola victims. When doctors treat patients with Ebola, they must wear protective clothing, such as a mask, gloves, gowns and goggles.

Cause of Ebola

Internal bleeding is caused by a protein inside the Ebola virus. The protein attacks and destroys cells within the body. These cells then break down and the body starts to bleed. Nothing can be done to stop this. Early symptoms of the Ebola virus include being tired, a sore throat, nausea and vomiting.

Origins of Ebola

Scientists know that the Ebola virus does not naturally occur in humans. Humans help transmit the virus when they come in contact with another animal species. But scientists are not sure of the exact origins of the Ebola virus. Since
the virus almost always occurs in remote villages in Africa, scientists have a theory. In many of these villages, the villagers hunt monkeys in the jungle for much of their food. One recent case of Ebola was found in the Philippines. People were eating pigs and the meat was infected with the virus. They speculate that there might be a link. One case occurred in the United States in Reston, Virginia in 1989. But this did not involve hunting wild animals. To this day, the Ebola virus is one of the deadliest viruses on the planet. It is considered worse than cancer or HIV.

Glossary
- **rash**: red spots on your skin appearing when you’re ill
- **vomiting**: throwing up your food when you are sick
- **speculate**: to guess about the answer to something

[ Reading Skill Questions ]

1. **Where do scientists believe the Ebola virus comes from?**
   a. It occurs when people live with animals.
   b. Humans get the virus from eating infected meat.
   c. People get sick from eating high protein meat.
   d. People get the virus from living in remote villages.

2. **What would happen if an Ebola victim coughed on someone’s face?**
   a. They would need to clean their hands to be safe.
   b. They might get infected with the virus.
   c. They would have a rash on their face only.
   d. They would have to take off their protective clothing.
**Comprehension Questions**

1. Where did the first outbreak of Ebola occur?

2. What happens to a person who gets Ebola?
   a. Their body fluids start to thicken.
   b. They make other people sick.
   c. They start to wear protective clothing.
   d. They start to bleed and get a rash and fever.

3. What is the worst thing about caring for Ebola victims?
   a. Anyone who touches the victim bleeds.
   b. Doctors and nurses in the Congo are very careless.
   c. African communities cannot afford medicine.
   d. The virus is transmitted very easily.

4. Which of the following is true about the Ebola virus?
   a. The first outbreak of the virus happened in the early 1900s.
   b. There’s no known cure for the virus.
   c. Some symptoms of the virus are diarrhea and malnutrition.
   d. People who eat monkeys might become immune to it.

**Summary**

Fill in the blanks with the right words to complete the summary.

(cells cure victims deadliest transmitted infected internal bleeding)

The Ebola virus is thought to be the _________ virus on the planet. It causes its _________ to have very high fevers, a rash and internal bleeding. There is no known _________ . Ebola usually kills its victims within 10 days. _________ is caused by a protein inside the Ebola virus that destroys _________ in the body. The worst thing about Ebola is that it is _________ very easily. Scientists have a theory that the virus comes from villagers hunting monkeys for food or eating _________ meat.
Look at the graphic organizer below and fill in the blanks about inference using information from the passage.

<table>
<thead>
<tr>
<th></th>
<th>Facts</th>
<th>Passage Clues</th>
<th>Inference</th>
</tr>
</thead>
<tbody>
<tr>
<td>First Case of Ebola</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Cause of Ebola</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Origins of Ebola</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Resistance to Antibiotics

Antibiotics are medicines that help make our bodies resistant to diseases. For instance, penicillin (discovered in 1943) was viewed as a breakthrough discovery in medicine. Penicillin is one type of antibiotic. It was a significant improvement to the medicine available at the time and was used to cure many diseases from the flu to common bacterial infections. This had important implications during World War II when many soldiers were fighting on the battlefield. But just three years after the invention of penicillin, doctors found that some germs from bacteria could not be killed with penicillin. In other words, they had adapted to the penicillin antibiotics and become stronger.

These super strong bacteria are called superbugs. This means that traditional antibiotics like penicillin fail to kill superbug bacteria. Medical researchers believe that bacteria sometimes change if they are exposed to the same antibiotic many times. If a person has a cough or the flu every winter, they usually go to the doctor. The doctor then prescribes an antibiotic for that specific disease—the flu. But doctors have found that after maybe 8 or 10 years, the antibiotic no longer works effectively to stop the flu or cough.

In modern hospitals, patients might get sick from a superbug type of bacteria. This has become a major public health problem. Patients go to the hospital for a specific illness, but then often get another virus while staying there. Because there are many sick people in a hospital, viruses “jump around” from one patient to another. Many of these viruses are the superbug type, which is resistant to antibiotics.
Another place that bacteria become resistant to antibiotics is at home. One researcher named Merri Moken proved that frequent use of household cleaners can be bad. The bacteria on her kitchen counter changed to become resistant to the household cleaner. Even after cleaning the kitchen, there were still bacteria on the counter. All of this poses a big challenge to doctors and scientists. It makes it difficult for them to help people get better. If antibiotics only work some of the time, what will we do when we are sick?

**Glossary**

- **resistant**: not affected by something
- **breakthrough**: a sudden step forward, often a discovery
- **superbug**: a strong form of bacteria that is highly resistant to antibiotics

[**Reading Skill Questions**]

1. **What might happen to a person who is given antibiotics many times?**
   a. The person might no longer get sick.
   b. They will become sick if they take penicillin medication.
   c. The person’s body might become resistant to the antibiotics.
   d. The antibiotics will change and help the person fight the disease.

2. **You can guess that the best way to keep hospital patients safe is to**
   __________.
   a. invent a type of bacteria that is resistant to antibiotics
   b. spend as little time in the hospital as possible
   c. give them penicillin before they get the disease
   d. close the hospital to all people who are not critically ill
**Comprehension Questions**

1. What was the breakthrough discovery in 1943?
   - a. New ways to create bacteria
   - b. A new cleaning product for kitchens
   - c. Penicillin to help cure common bacterial infections
   - d. Some traditional superbugs

2. Which of the following is NOT true?
   - a. Patients who take antibiotics regularly will no longer get the flu.
   - b. Patients might get another virus while staying in the hospital.
   - c. The bacteria in your home can become resistant to household cleaners.
   - d. Some super strong bacteria germs are resistant to penicillin antibiotics.

3. How do viruses get transmitted in hospitals?

4. What is the writer trying to suggest in the passage?
   - a. It might not be helpful to make better cleaning products.
   - b. Many hospital staff now refuse to treat patients with bacterial infections.
   - c. There are many challenges ahead to make effective antibiotics.
   - d. It is a good idea to visit hospitals even if you have little wrong with you.

**Summary**

| cur | diseas | bacter | antibi | resist | to | infect | Penicillin is one type of _________. It was used to ________ many diseases from the flu to common bacterial __________. However, some bacteria are now ________ antibiotics. These super strong bacteria are called superbugs. Doctors have found that after maybe 8 or 10 years, antibiotics no longer work effectively to stop the ________. In hospitals, patients might get sick from a superbug type of ________. In homes, bacteria are becoming resistant to household cleaners as well. |
Penicillin, one type of antibiotic, was discovered in 1943. Penicillin had important implications when used during World War Two. Soldiers on the battlefield were given penicillin when they got sick or were wounded. Many of them might have recovered from illnesses by taking penicillin.
# Check Your Vocabulary

The highlighted words are from the unit articles. Guess the meanings of the highlighted words. Then match the words with their definitions.

<table>
<thead>
<tr>
<th>Definition</th>
<th>Sentence</th>
</tr>
</thead>
<tbody>
<tr>
<td>a. the thing which makes someone healthy; a medicine that cures an illness</td>
<td>As of yet, there is still no <strong>cure</strong> for cancer.</td>
</tr>
<tr>
<td>b. to make suitable for a specific situation; to become adapted</td>
<td>The girl is trying to <strong>adapt</strong> to a new environment.</td>
</tr>
<tr>
<td>c. to guess the answer to something</td>
<td>Most psychics like to <strong>speculate</strong> about when the world will end.</td>
</tr>
<tr>
<td>d. to throw up your food when you are sick</td>
<td>If you accidentally swallow a dangerous chemical, <strong>vomiting</strong> should not be tried before you call a poison hotline.</td>
</tr>
<tr>
<td>a. a substance used in the prevention and treatment of diseases</td>
<td>The doctor gave her an <strong>antibiotic</strong> shot.</td>
</tr>
<tr>
<td>b. when something spreads quickly like a disease</td>
<td>I have a fever and one other <strong>symptom</strong> of a bad cold.</td>
</tr>
<tr>
<td>c. a sudden step forward, often a discovery</td>
<td>In 2009, there was an <strong>outbreak</strong> of swine flu.</td>
</tr>
<tr>
<td>d. a strong form of bacteria that is highly resistant to antibiotics</td>
<td>Drug resistant tuberculosis is considered to be the most dangerous <strong>superbug</strong>.</td>
</tr>
<tr>
<td>e. a sign that a person is getting sick, usually through pain, swelling, itching</td>
<td>Most scientific <strong>breakthroughs</strong> in the 20th century were possible because of Einstein’s work.</td>
</tr>
<tr>
<td>a. connected with the inside of something</td>
<td>All Native Americans are naturally <strong>resistant to</strong> the effects of poison ivy.</td>
</tr>
<tr>
<td>b. having properties which protect something</td>
<td>Before you go outside, it is important to put on a <strong>protective</strong> sunscreen.</td>
</tr>
<tr>
<td>c. to have resistance or immunity to something, i.e. a disease</td>
<td>Your heart, lungs, and kidneys are just a few examples of <strong>internal</strong> organs.</td>
</tr>
<tr>
<td>d. to do in an effective way</td>
<td>In order to study <strong>effectively</strong>, you should try to concentrate on your work.</td>
</tr>
</tbody>
</table>
To analyze both language and vocabulary, look closely at how the words, phrases and sentence structures are used. Understand what context they are used in the passage and what the overall meaning is. Then you can understand the different ways ideas are expressed.

Q. What is meant by the word **overcame** in the passage?

A blind student, Ben Merrick, graduated from Oxford with a first class degree in Greek studies. He lost his sight when he was a little boy. Instead of feeling sorry for himself, he studied hard and **overcame** the skepticism of doctors who said he couldn’t handle the stress of university.

a. Ben was skeptical about his success.

b. Ben tried really hard at university.

c. The doctors helped Ben with studies.


Strategy to Answer

In this passage, "overcame" represents the blind student’s challenge to succeed at Oxford and ignore the "skepticism" of others. The correct answer is b because he had a positive attitude. The other options c and d are not correct because they focus on getting help.
Oceans and Currents

How Currents Work
Oceans and currents are constantly moving and flowing. The currents in the world’s major oceans have a great influence on our climate, temperature and marine life. They often determine the amount of marine life in oceans. Currents are affected by three factors: gravity forces from the moon, salt, and wind.

Gravity Forces, Salt, and Wind
During certain seasons, gravity forces from the moon and the Earth’s rotation create strong currents. The Moon pushes water away from the surface. This surface water is replaced with water that rises from deep down in the ocean. Water at the bottom of the ocean has a lot of nutrients. When these currents rise from the ocean bottom to the surface, the process is called upwelling. The main benefit of upwelling is that fish and other marine life can easily be found on the surface.

Ocean currents are also affected by the level of salt in the ocean. While sea water enters the Arctic or Antarctic, much of the fresh water on the surface evaporates, and the ocean becomes saltier. Water with a high salt content is heavier than water with less salt. Eventually, northern currents (from the Arctic) flow south and change waters that are less dense.

In the tropics, atmospheric winds affect the speed of surface water. Surface water in these regions flows very fast due to the strong atmospheric winds. Winds can easily blow the top 400 meters of water around.
Gulf Stream

The most well-known current is the Gulf Stream current. The Gulf Stream flows from the Gulf of Mexico, past Florida and Cuba and makes its way across the Atlantic Ocean to Europe. It is 100~200 kilometers wide. As the Gulf Stream flows into the North Atlantic Ocean, it cools and evaporates. Due to temperature changes between the water and air, cyclones or hurricanes form. Since the Gulf Stream flows more quickly than other currents, ships use it to sail from west to east. The advantage of using the Gulf Stream for sailing was discovered back in the 16th century. Spanish explorers sailing home to Europe followed the Gulf Stream because the currents were very fast.

1. **What is the meaning of upwelling as used in the passage?**
   a. Water that flows to the shore
   b. Water that circulates near Western coastlines
   c. Water that goes from the surface to deeper depths
   d. Water that rises from the deep to the surface

2. **What is the meaning of the word benefit as used in the passage?**
   a. Upwelling promotes less nutrition in the water.
   b. Gravity assists the increase of nutrients.
   c. Upwelling is advantageous for marine life.
   d. Fish are helpful for upwelling currents.
[Comprehension Questions]

1 What are three factors that influence oceans and currents?
   a. Gravity forces, salt levels and wind
   b. Marine life, salt levels and wind
   c. Climate, hurricanes and wind speed
   d. Cyclones, water temperature and fishing

2 What happens to surface water when upwelling occurs?
   a. The water temperature rises.
   b. The water becomes less dense.
   c. A lot of nutrients are brought to the surface.
   d. Salt levels increase a lot near the Arctic.

3 Which of the following is NOT true?
   a. The oceans and currents have a great influence on the climate.
   b. It’s called upwelling when the surface water is replaced with water deep in the ocean.
   c. Cyclones or hurricanes form due to the gravity forces from the moon.
   d. In the tropical region, atmospheric winds affect the speed of surface water.

4 What is the one advantage of the Gulf Stream?
   a. It has a lot of salt in it.
   b. It helps lower the hot temperature around the region.
   c. It helps ships sail faster from west to east.
   d. There is a lot of natural resources in the Gulf Stream region.

Summary | Fill in the blanks with the right words to complete the summary.

( winds surface currents saltier affected Gulf Stream is replaced )

__________ are affected by three factors. The moon pushes water away from the ___________. This surface water ____________ with water that rises from deep down. Ocean currents are also ____________ by salt levels. When sea water enters the Arctic or Antarctic, the water cools, evaporates and becomes ____________. In the tropics, the water is blown by atmospheric ____________. The most well-known current is the ____________ current. Since the Gulf Stream flows more quickly than other currents, ships use it to sail from west to east.
A graphic organizer is a visual display, usually a diagram or illustration. It can help you organize information or facilitate the visualization of concepts, relationships, and facts of the passage.

Look at the graphic organizer below and answer the questions or fill in the blanks using key words or phrases from the passage.

<table>
<thead>
<tr>
<th>Challenging Words from the Passage</th>
</tr>
</thead>
<tbody>
<tr>
<td>gravity</td>
</tr>
<tr>
<td>Definition</td>
</tr>
<tr>
<td>Synonym</td>
</tr>
<tr>
<td>Sentence containing word/phrase</td>
</tr>
</tbody>
</table>

Which advantage of the Gulf Stream is mentioned in the text?

1. The Gulf Stream allowed sailors to unload their cargo more quickly in the Atlantic Ocean.
2. The Gulf Stream allowed sailors to cross the ocean more quickly, getting home sooner.
3. The Gulf Stream allowed sailors to cross the ocean more slowly, giving them added time at sea.
Using Waves to Produce Energy

The world is quickly running out of petroleum resources. So environmentalists and scientists are searching for new ways to find energy. Hopefully, they can find reusable energy that does not pollute or run out. Energy from ocean waves is one idea. The biggest benefit of this type of energy is that it is clean energy. It does not harm the environment or marine life. Unlike coal, nuclear power or oil, there is no pollution released into the atmosphere.

Wave-Power Generation

The basic concept of wave-power generation involves a turbine. Turbines can be found inside dams in rivers. Both dam turbines and wave-power turbines use the same principle to generate power. A wave-generation machine has rotors (or blades). These wave-generator machines float on the ocean. When waves enter the machine, the rotors are turned, which creates power. The energy is then converted into electricity and sent through a cable to the shore.

Thermal Energy

A second use of ocean power is called Ocean Thermal Energy Conversion (OTEC). This is much more efficient and promising. It relies on changes in the ocean’s temperature. Giant power plants built along the shore would capture water. If the water drops by more than 38 degrees Celsius (daytime to nighttime), then energy can be saved and turned into electricity. OTEC is more reliable because it is not located far out to sea like wave-generator machines. These machines lose some of their power when they send the electricity hundreds of kilometers to the shore.
Challenges

There are many engineering challenges to making ocean energy more efficient. Ocean energy can produce 10~20% of the energy needs of smaller countries that border major oceans. The Netherlands is one good example. Presently, most wave-energy technologies are in their formative years. Critics argue that the amount of energy produced by even 100,000 wave machines is too small. It can barely provide enough power for a large city. The further inland the electricity has to go, the more power it uses. To send electricity from a wave-generator to the shore would be highly inefficient. It would have to go from the Atlantic Ocean to the shore, then over 1,000 km to cities like Chicago.

Glossary
- **petroleum**  a form of oil that produces oil and natural gas used for energy
- **conversion**  a change in the form of function of something
- **formative**  an influential time period

[Reading Skill Questions]

1. What does **The biggest benefit** refer to in the passage?
   a. The smallest turbine used in the ocean current
   b. The main advantage of wave power generation
   c. The main benefit of transmitting power
   d. The most inefficient part of petroleum resources

2. What is the meaning of **capture water** as used in the passage?
   a. To send ocean water further inland
   b. To reuse water in the most efficient way
   c. To receive water into the wave machine
   d. To filter out only the warm water over 38 degrees Celsius
[Comprehension Questions]

1 Why is there a need for alternative energy sources?
   a. Coal resources are harmful to the water.
   b. The ozone layer is being destroyed.
   c. The world is running out of petroleum resources.
   d. Reusable energy sources pollute too much.

2 What happens when waves enter a wave generator?
   a. The wave-power turbine stores the water.
   b. The rotor blades start to turn and produce power.
   c. Turbines inside the dam create waves.
   d. The water temperature drops to below zero.

3 What engineering challenge is mentioned in the passage?
   a. Spreading OTEC technology to the Netherlands
   b. Making wind-generator machines that don’t wear out
   c. Improving the efficiency of electricity in a large city
   d. Building a lot of wave machines at a profit

4 What is the author’s viewpoint about the future of wave-power energy?
   a. They destroy marine life.
   b. It is very unlikely that it will help large cities in the near future.
   c. It will only power remote villages far away from the ocean.
   d. The basic concept is perfectly designed.

Summary | Fill in the blanks with the right words to complete the summary.

( clean rotors argue changes produced electricity running out of )

The world is quickly ______ petroleum resources, so scientists are searching for new ways to find energy. Energy from ocean waves is one idea and it is ______ energy. A wave generation machine has ______ and floats on the ocean. When waves enter the machine, the rotors are turned, which creates ______. More reliably, OTEC power plants can make electricity using temperature ______ in the ocean. But critics ______ that the amount of energy ______ by a lot of wave machines is too small. It can barely provide enough power for a large city.
A graphic organizer is a visual display, usually a diagram or illustration. It can help you organize information or facilitate the visualization of concepts, relationships and facts of the passage.

Answer the questions using key words or phrases from the passage.

1 [P1] The world is quickly running out of petroleum resources. So environmentalists and scientists are searching for new ways to find energy. Hopefully, they can find reusable energy that does not pollute or run out. Energy from ocean waves is one idea. The biggest benefit of this type of energy is that it is clean energy. It does not harm the environment or marine life.

Which correctly describes the phrase “one idea” as used in the passage?

a. one way to benefit environmentalists
b. a new concept or plan to provide power
c. a method or process to use ocean power
d. petroleum resources are one idea for energy

2 [P2] Ocean energy can produce 10-20% of the energy needs of smaller countries that border major oceans. Presently, most wave-energy technologies are in their formative years. Critics argue that the amount of energy produced by even 100,000 wave machines is too small. It can barely provide enough power for a large metropolitan city. The further inland the electricity has to go, the more power it uses. To send electricity from a wave generator to the shore would be highly inefficient.

If “energy needs” are decreasing in a country, then which of the following is true?

a. Less power will be needed.
b. Electricity will not have to travel that far.
c. Small countries will need more power.
d. Wave power will advance more quickly.

Another way to say that wave energy is in its “formative years” is to say

______________________ .

a. it is declining    b. it is shaping up
c. it is just emerging d. it is improving
The highlighted words are from the unit articles. Guess the meanings of the highlighted words. Then match the words with their definitions.

The great white shark is the largest marine predator.
I heard it from a reliable source of information.
The president of our company, arrested on fraud charges, was released on bail.
Jupiter has a much higher atmospheric pressure than we have here on Earth.

I'd like to convert the file into a PDF format.
In the near future, computers will be replaced by our mobile handsets.
Often who we become is due to our formative early years of development.
The mayor decided to build a local power station to generate electricity.

Our team captain is a very promising young athlete.
A lot of content on the Internet is not suitable for children.
In life, small decisions often affect the outcome in big ways.
The school bully tried to force me to do his homework, but I wouldn’t do it for him.
There can be many reasons why an author writes a passage. You have to ask yourself why you think the author wrote the article. Was it to persuade, to entertain, or to inform? If readers enjoyed what they read, one of the author's purposes may have been to entertain. An author's purpose can be stated explicitly or readers may have to infer the intent.

Q. What is the author's purpose in mentioning Shanghai architecture?

If you’re looking for classic architecture, there is no better city to witness it than Shanghai, China. The city has colonial French, British, neo-classic Japanese and post-modern Chinese buildings, all grouped together. Long at the forefront of China’s economic rise, Shanghai will be building many monuments to progress for a long time to come.

a. To bring more tourists to China
b. To educate about French architecture
c. To show how modern China is
d. To show how diverse Shanghai’s buildings are

Strategy to Answer
In this passage, the author talks about many different architectural styles (French, British, Japanese). The correct answer is d because it focuses on “diversity of buildings.” The other options are not correct because they focus on education and tourism.
UNIT 08 | Sound Waves

Passage 1 | Science

How Do We Hear?  

Hear a pin drop. Hear some car keys jingle. Hear a bird chirping outside. Humans have the ability to hear sound waves between 20 Hz and 20,000 Hz. We use sound waves to communicate, to sense danger (i.e. a tree falling) or even to drive a car. Our ears help us detect sounds coming from many directions. Humans can tell if a pin dropping is in front, behind or on either side of them. This is all due to air pressure and our ability to sense changes around us. If a pin drops to our left, the sound wave from the pin will take longer to reach our right ear than our left ear. That is how we know the pin fell on the left side. Then how do our ears actually work?

Of course, sound waves change depending on the material that sound travels through. Most people hear sounds when they travel through the air. But sound waves can travel through any medium. Sound waves can travel through solids, through liquids and through gases. But sound cannot travel through a vacuum like outer space. In space, there is no sound. When sound waves travel through air, the sound waves are actually vibrating. The waves travel in the direction of where the waves are going. This vibration pushes the air, which is “the sound” we eventually hear. The vibration can be caused by many things. Maybe a loud speaker in a stereo system causes the sound to vibrate. It could be the sound of a car engine starting up or a person speaking. When a person speaks, their vocal chords in their throat vibrate. All these sources emit sound waves.

Sound waves are like a “disturbance” traveling through the air. Each disturbance sends energy from one location to another location (i.e. from one
speaker to another person). When a sound wave enters the human ear, it is called a compression wave. In a recording studio, the walls of the room are often covered with very thick foam. This means that no sounds from outside the recording studio will come in and disturb the singers. All of these examples show how sound waves reach the human ear.

Glossary
- vocal chord: the part of your throat that produces sound
- compression wave: a shock wave compressing the medium through which it is transmitted

[Reading Skill Questions]

1. What is the writer's purpose of this passage?
   a. To tell us about types of sound
   b. To explain more about three types of medium
   c. To tell us about vibrating vocal chords
   d. To inform about how sound waves work

2. Why does the author use Hear a pin drop as an example?
   a. To demonstrate that loud speakers can cause pins to move
   b. To state that people should be more careful when listening
   c. To show the effect of air pressure on small metal objects
   d. To show how sensitive the human ear is to sound waves
[ Comprehension Questions ]

1. What factors determine how sound waves travel?
   a. The material surrounding a person’s ear
   b. Other vibrating objects that sound waves hit
   c. The density of the moisture in the air
   d. The density of material that sound waves pass through

2. What is the meaning of *vacuum* as used in the passage?
   a. The vibrations coming from the human ear
   b. A place where there is no sound
   c. Where sound is received in the inner ear
   d. A place where a person speaks

3. How do humans detect the location of a dropped pin?
   ➔

4. What happens to a person’s vocal chords when they speak?
   a. Sound disturbs the person listening.
   b. Compression waves come out of the throat.
   c. The throat gets dry and rough.
   d. Sound from the vocal chords vibrates.

Summary  | Fill in the blanks with the right words to complete the summary.

( sending  air  sound  medium  material  vibration  sound waves )

Humans have the ability to hear __________ between 20 Hz and 20,000 Hz. Sound waves change depending on the __________ that they travel through. Most people hear sounds when they travel through the __________. But sound waves can travel through any __________ except a vacuum like outer space. __________ are vibrating through the air, and we hear the sound waves by sensing the __________. Sound waves are like a “disturbance” __________ energy from one location to another location.
1 How does the author describe the uses of sound to sense danger? Write any words or sentences from the 1st paragraph to support your answer.

The author informs us that:
- *Humans can detect a variety of sounds coming from many directions. Some of these protect us from danger.*

2 Why did the author write the 2nd paragraph? Write any words or sentences from the 2nd paragraph to support your answers.

3 If the statement is a fact, write F. If the statement is a metaphor used by the writer, write M.

1. Humans can tell if a pin dropping is in front, behind or on either side of them. _____
2. A stereo’s loud speaker causes sound to vibrate. _____
3. Sound waves are like a “disturbance” traveling through the air. _____
4. When a person speaks, their vocal chords in their throat vibrate. _____
5. The walls of the room are often covered with very thick foam. _____
Radar is used in many everyday items. Flying on a plane and watching the evening weather forecast all involve one thing—radar. Radar is a technology that detects the presence of another object further away. The basic principle of radar is based on radio waves. Radar bounces radio waves off a distant object. Sound waves do not travel that far. But radio waves travel much further. A control tower at an airport uses radar to see how far away planes are. This is the same concept as when a person yells in a canyon. Their voice goes across the canyon, hits the other side, and then bounces back. This is called an echo. Radar is just like an echoing voice.

Long ago, radar technology was very crude. A German inventor, Heinrich Hertz, discovered the concept of radar at the end of the 19th century, but it was never fully developed. Radar was later credited to a British inventor, Robert Watson-Watt. In the 1930s, Watson-Watt proved sound waves could be bounced off another object over 200 miles away. Unfortunately, Heinrich Hertz never became famous for his innovative technology, a situation that happens to many inventors.

A working radar system was only developed during World War II in Britain. Each night during the war, German fighter planes flew over the English Channel and dropped bombs on London. The British didn’t know when the planes were coming. The British military realized they needed an advantage to beat the Germans. They asked Watson-Watt to help. By 1940, they had a set of
51 radar stations along the coastline of England. The radar stations bounced radio waves into the air. The waves would hit the approaching German plane and bounce back to the station. This let the British calculate the distance. Once the British knew that German planes were coming, they would send their own planes into the air to fight them. The Germans did not have radar nor know about the British invention until the end of the war. Being able to spot enemy planes before they were within sight was a huge advantage. Without radar, many historians argue that Britain could have easily lost the war.

Glossary
- control tower: a tower at an airport from which instructions are given to planes
- channel: a passage along which water flows

[Reading Skill Questions]

1. What is the writer’s purpose of explaining radar?
   a. To show how fewer battles there were due to radar
   b. To indicate how hard the British pilots fought
   c. To show how an invention can have many benefits
   d. To tell how Germans should keep their scientific secrets

2. What suggestion did the writer make about radar?
   a. He implies that Britain didn’t build enough radar stations.
   b. He suggests that Watson-Watt did not deserve all the credit.
   c. He insists that police officers use radar too much on motorists.
   d. He argues that the British should have shared the credit with Germany.
[Comprehension Questions]

1 What is the concept of echoing?
   a. When you hear your own voice on the radio
   b. Watson-Watt’s invention in the 1930s
   c. When a signal or sound wave bounces back
   d. The theory of sound bouncing off two planes

2 What is the main idea of the third paragraph?
   a. Heinrich Hertz never became wealthy.
   b. The Germans almost lost World War II.
   c. Britain built a defense line of radar stations.
   d. Britain built more airports for its planes.

3 Which of the following is true?
   a. The Germans tried to kidnap Watson-Watt but failed.
   b. The Germans won the war thanks to the radar system.
   c. Watson-Watt helped the British military to use the radar system.
   d. The radar system was improved during World War I in Germany.

4 What is suggested about the Battle of Britain?
   a. The British helped Watson-Watt become rich.
   b. Many more German planes were shot down.
   c. German fighter planes were bombed by Watson-Watt every night.
   d. Sound waves confused the German pilots.

Summary | Fill in the blanks with the right words to complete the summary.

( radar detects perfected bounced Britain radio waves radar stations )

Radar is a technology that _________ the presence of another object further away. Radar is based on _________ . A German man discovered the concept of radar but a British inventor Watson-Watt _________ it. A working radar system was only developed during World War II in _________ . By 1940, the British built 51 _________ along the coastline of England. The radar stations _________ radio waves into the air, which hit the approaching German plane. Without _________ , many historians argue that Britain could have easily lost the war.
Looking at the graphic organizer below and fill in the blanks about the writer's purpose using information from the passage.

<table>
<thead>
<tr>
<th>Writer's Purpose</th>
<th>How</th>
<th>Sentences or words that indicate the writer's purpose</th>
</tr>
</thead>
</table>
| To inform about how radar works and functions | Uses facts or ideas | - The basic principle of radar is based on radio waves.  
- Radar bounces radio waves off a distant object. |
### Check Your Vocabulary

The highlighted words are from the unit articles. Guess the meanings of the highlighted words. Then match the words with their definitions.

<table>
<thead>
<tr>
<th>Term</th>
<th>Definition</th>
</tr>
</thead>
<tbody>
<tr>
<td>historians</td>
<td>someone who studies history</td>
</tr>
<tr>
<td>crude</td>
<td>rough, basic, clumsy</td>
</tr>
<tr>
<td>vibrating</td>
<td>moving rapidly back and forth, from side to side</td>
</tr>
<tr>
<td>innovative</td>
<td>new, original or creative</td>
</tr>
<tr>
<td>jingle</td>
<td>to lightly rattle small bells</td>
</tr>
<tr>
<td>emit</td>
<td>to send or release something</td>
</tr>
<tr>
<td>calculate</td>
<td>to analyze and figure out something</td>
</tr>
<tr>
<td>presence</td>
<td>being in a physical location</td>
</tr>
<tr>
<td>advantage</td>
<td>gain or benefit from something</td>
</tr>
<tr>
<td>vacuum</td>
<td>a space with no air or gas in it</td>
</tr>
<tr>
<td>vocal chords</td>
<td>the part of your throat that produces sound or speech</td>
</tr>
<tr>
<td>liquid</td>
<td>the state of matter between gas and solid</td>
</tr>
</tbody>
</table>

I'd rather jingle the tambourine than sing at a Karaoke.

Televisions and cell phones emit some amounts of radiation.

It is important to calculate the total price of your food as you shop for groceries.

A psychic told me that she could feel the presence of the ghost who lives with me.

I have an advantage in basketball because I'm so tall.

Sound waves do not travel in a vacuum like space.

People who use their voice a great deal are prone to have nodules on their vocal chords.

There was a disturbance in our neighborhood that kept us from sleeping.

I forgot to put the ice back in the freezer and it quickly melted into liquid water.
In this type of question, you will see four black squares. You are given a new sentence and are asked where in the passage it would best fit. You need to understand the logic of the passage, as well as the grammatical connections between sentences.

Q. Look at the four squares [ ] that indicate where the following sentence could be added to the passage.

On January 24, 1848, gold was discovered at a little place called Sutter’s Mill in California.

Where would the sentence best fit?

(A) The population of the United States began to grow as immigrants sailed to the New World in the early 19th century. (B) Some were attracted by the gold in Western states like California. (C) In 1849, Gold Rush fever hit the new American frontier. (D)

a. (A)  b. (B)  c. (C)  d. (D)

Strategy to Answer

In this passage, the first two sentences introduce “immigrants” and “gold.” The last sentence mentions the date “1849” which comes after the highlighted sentence based on a logical timeline of the passage. Hence the answer is c.
Dinosaur Fossils

In the past century, one of the most amazing findings by scientists has been dinosaur bones. Dinosaur bones—also called fossils—are the remains of old dinosaur skeletons. Sometimes scientists who discover dinosaur fossils just find footprints in the dirt. Other times, they find enough fossils to make a complete dinosaur. But how do dinosaur bones that are millions of years old get turned into fossils? How can something buried beneath dirt and sand last for so long?

Fossil Formation

When dinosaurs or other ancient animal or plant life dies, a gradual process begins. (A) Then the dead dinosaur is eventually covered by dirt and mud. (B) This leaves the hardest parts of the dinosaur—bones and teeth. (C) After thousands of years, the chemicals in the buried dinosaur’s body go through a series of changes. (D) As the bone slowly decays, groundwater gets inside the bone. The minerals in the groundwater are replaced with the chemicals in the bone. These minerals are the same as the surrounding rock. As the dinosaur bone turns into a fossil, it becomes a heavy, rock-like version of the original dinosaur. It is now officially called a fossil. When scientists look for dinosaur fossils, they look for specific rock types. Fossils are usually found in either shale, siltstone, mudstone, or sandstone.

Preservation

(E) Preservation is an important word when studying fossils. (F) It means to keep something in the same condition for a long time. (G) One of the best examples of dinosaur fossils is in the Field Museum in Chicago. (H) The Tyrannosaurus Rex (or T-Rex) was the fiercest and largest dinosaur on the planet. It was a carnivore, or meat eater. T-Rex liked to eat smaller...
dinosaurs for dinner, using its powerful jaws to crush its victims. The skeleton of Sue was discovered in the dry plains of South Dakota in 1990 by Sue Henderson, a scientist. By studying prehistoric fossils, we can learn about life millions of years ago.

Glossary
- **fossil**: any remains or impressions of a living thing from a former geologic age
- **siltstone**: a type of fine-grained sandstone found in riverbeds
- **carnivore**: an animal that eats other animals
- **prehistoric**: relating to a period before history was recorded

[ Reading Skill Questions ]

1. Look at the four squares [ ] that indicate where the following sentence could be added in the second paragraph:

   **First, the flesh, muscles and internal organs rot or are eaten by other animals.**

   Where would the sentence best fit?
   a. (A) b. (B) c. (C) d. (D)

2. Look at the four squares [ ] that indicate where the following sentence could be added in the third paragraph:

   **The fossil is a complete Tyrannosaurus Rex, nicknamed Sue.**

   Where would the sentence best fit?
   a. (E) b. (F) c. (G) d. (H)
**Comprehension Questions**

1. We can predict that the dirt and mud protect a skeleton from
   a. being eaten by other animals
   b. being stolen by thieves
   c. becoming very hard and falling apart
   d. being blown or washed away by wind or water

2. We can say that bones and teeth do not decay because
   a. they need a warmer climate to start to decay
   b. too many chemicals are inside bones and teeth
   c. they are usually buried deep in the dirt
   d. they are not made of soft tissue and blood

3. What is the correct sequence for creating a fossil? Number the process in order.
   1. Animal or plant life dies and rots.
   2. Chemicals in the bones start to change.
   3. The bone becomes hard and turns into a fossil.
   4. The minerals in the groundwater get into the bone.
   5. The animal or plant gets buried in dirt.

4. Which of the following is NOT true about T-rex?
   a. It is a vegetarian dinosaur.
   b. It lived in prehistoric times.
   c. Its fossil is exhibited in the Field Museum.
   d. It is one of the fiercest and largest dinosaurs on the planet.

**Summary**

Fill in the blanks with the right words to complete the summary.

( rot remains fossils chemicals rock-like turns into )

Dinosaur bones are the ___________ of old dinosaur skeletons. How do dinosaur bones get turned into ___________? First, the flesh, muscles and internal organs ___________ or are eaten by other animals. Then the ___________ in the buried dinosaur’s body go through a series of changes. As the dinosaur bone ___________ a fossil, it becomes a heavy, ___________ version of the original dinosaur. One of the best dinosaur fossils, a full-sized T-Rex, can be found in a Chicago museum.
1 Which of the following sentences could be removed from paragraph 1 without losing coherence?

a. In the past century, one of the most amazing findings by scientists has been dinosaur bones.

b. Dinosaur bones—also called fossils—are the remains of old dinosaur skeletons.

c. Sometimes scientists who discover dinosaur fossils just find footprints in the dirt. Other times, they find many fossils making a complete dinosaur.

Why?

2 Which of the following sentences would best end the reading?

a. After thousands of years, the Field Museum in Chicago is undergoing new studies into fossils.

b. Dinosaur bones end up in museums and that explains what happened millions of years ago.

c. Life millions of years ago was very mysterious, but now we know more about that ancient time.

Why?
UNIT 09 | Fossils
Passage 2  Social Studies

Stealing Dinosaur Bones

Searching for Dinosaur Fossils
Scientists who study dinosaur bones, or fossils, are called paleontologists. By studying fossils, they can learn about the dinosaurs’ lifestyle. Examining dinosaur fossils can lead to discovering many interesting facts about these enormous reptiles. This could be looking at the size of their teeth. Or it could be learning if a dinosaur was a meat eater or vegetarian. (A) Normally, the most difficult thing scientists have to do is determine the age of a fossil. (B) But recently, a bigger problem has emerged. (C) Using black market dealers, fossils are often sold on the international market to private collectors. (D) These collectors like to keep the fossils as trophies. A large bone from a Tyrannosaurus Rex can sell for up to $8.5 million.

Dinosaur Thieves
In October 2009, paleontologists in India found hundreds of dinosaur eggs. Inside each egg were the dinosaur embryos (developing babies). But the eggs were later stolen. Scientists assume that the valuable eggs were sold to collectors for a high price. In the limestone cliffs in England, the footprint of an iguanodon was carved out of the rock. The footprint of the iguanodon—a relative of the iguana lizard—was at least 135 million years old. Since limestone is very soft, thieves can easily dig out fossils. In nearby Wales, more than 30 imprints from a three-toed dinosaur were stolen. They were later found to be on sale on eBay, a popular buy-and-sell website.

No Scientific Record
When paleontologists find dinosaur fossils, they close off the site to outsiders.
The site (often called a “dig”) is protected. Fossil collecting on private land, if you have the landowner’s permission, is legal. These fossils are legally taken, but never reported to scientists or museums. The biggest worry is the lost scientific research. If a dinosaur fossil is stolen, there is no proper recording of the fossil. This means that scientists cannot study the specimens. Maybe the fossil is a new species of dinosaur. Or maybe the fossil could give scientists clues to how dinosaurs died. Unfortunately, the problem of fossil theft is only getting worse.

Glossary
- **iguana** a type of plant-eating reptile that lives in Latin America
- **specimen** a specific type of living thing with unique characteristics

[Reading Skill Questions]

1. Look at the four squares [ ] that indicate where the following sentence could be added in the first paragraph:

   Thieves are stealing dinosaur fossils.

   Where would the sentence best fit?
   a. (A)  
   b. (B)  
   c. (C)  
   d. (D)

2. Look at the four squares [ ] that indicate where the following sentence could be added in the third paragraph:

   But not all fossils are stolen from scientists.

   Where would the sentence best fit?
   a. (E)  
   b. (F)  
   c. (G)  
   d. (H)
Comprehension Questions

1 What is the main idea expressed in the first paragraph?
   a. Some scientists have problems digging up fossils.
   b. Only fossils from vegetarian dinosaurs are stolen.
   c. Some scientists have had their fossils stolen.
   d. Scientists are studying the habits of black market dealers.

2 What does the term “black market” in the first paragraph mean?
   a. A place for researching ancient items
   b. A place for thieves to sell legally obtained goods
   c. A place for people to buy or sell stolen or illegal goods
   d. A place where the government officially records items

3 What can you conclude from the passage?
   a. The collectors buy dinosaur fossils to sell at a higher price.
   b. Once a stolen fossil has been sold, it’s difficult to examine it.
   c. The paleontologists recently designed a plan to prevent stealing.
   d. Fossil collecting on private land is illegal even with the landowner’s permission.

4 Why is it difficult for scientists to learn about stolen fossils?
   a. Few people are interested in dinosaurs.
   b. It is hard for scientists to sell fossils.
   c. Fossils are too expensive to purchase.
   d. Fossils are not reported in scientific journals.

Summary | Fill in the blanks with the right words to complete the summary.

Scientists who study dinosaur bones or fossils are called ___________. Recently, a big problem has emerged as ___________ are stealing dinosaur fossils. Some fossils, like a large bone from a Tyrannosaurus Rex, can ___________ up to $8.5 million. In India in 2009, thieves stole hundreds of ___________. Other fossils were sold on the Internet. Since limestone is very soft, thieves can easily ___________ the fossils. Scientists are worried that stolen dinosaur fossils will prevent the proper ___________ of fossils.
A graphic organizer is a visual display, usually a diagram or illustration. It can help you organize information or facilitate the visualization of concepts, relationships and facts of the passage.

1 Which of the following sentences could be removed from paragraph 1 without losing coherence?
   a. Examining dinosaur fossils can lead to discovering many interesting facts about these enormous reptiles.
   b. This could be looking at the size of their teeth.
   c. A large bone from a Tyrannosaurus Rex can sell for up to $8.5 million.

   Why?

2 Which of the following sentences could best end the reading?
   a. Authorities are working hard with paleontologists to undercover the network of fossil thieves.
   b. In nearby Wales, the recording of stolen fossils has improved a bit.
   c. Scientists have stopped all fossil digging around the world until they find the 135 million year old iguanodon.

   Why?
**The highlighted words are from the unit articles. Guess the meanings of the highlighted words. Then match the words with their definitions.**

1. Lions and tigers are the two largest **carnivores** in Africa.
2. The zebras and gazelles ran through the **plains** of Kenya.
3. Visitors can see the ancient dinosaur **fossil** on display in the museum.
4. In Egypt, scientists were working on a new **dig**, where they hoped to find old bones.
   - a. a special place where scientists dig up and find ancient fossils
   - b. the remains of an animal preserved inside an ancient rock
   - c. a meat or flesh-eating animal, bird or fish
   - d. a flat expanse of dry land with little vegetation

5. The biologist classified the **specimen** as a new type of bacteria.
6. Keeping an **iguana** at home as a pet is not a good idea.
7. The art **dealer** helped the young couple find a nice painting for their home.
8. The stolen painting was sold on the **black market** where no transaction was recorded.
9. In China, **paleontologists** are digging up some old dinosaur bones buried in the mud.
   - a. a specific type of living thing with unique characteristics
   - b. a system of buying and selling goods illegally
   - c. a scientist who studies life in prehistoric times
   - d. a person who sells goods or products, often for a small fee
   - e. a large plant-eating lizard with a serrated crest on its back

10. The wrestler’s grip on his opponent was **rock-like** and solid.
11. The three-day-old apple had started to **rot** after lying on the kitchen counter.
12. Some of the earliest **prehistoric** dinosaurs were fish that learned to walk on land.
13. Going to a **buy and sell** website is a great way to find old items at good prices.
   - a. the act of purchasing and selling goods
   - b. to decay or break down by the action of bacteria
   - c. relating to the period before history was recorded
   - d. having the consistency or similar features of a rock
To draw a conclusion, the reader must understand what the author is saying. They must think about what they have read and draw a conclusion supported by the facts. Drawing a conclusion means arriving at a decision justified by the evidence. A person’s ability to draw an accurate conclusion depends upon his ability to read critically.

Q. You can probably conclude that _________________.

On a quiet farm in Montana, an American family raised honeybees. Each year, they took care of the bees and gathered delicious honey. But one spring, six of the bee hives were destroyed. Earlier that week, a bear was sighted walking around the neighborhood. He was seen sticking his nose into garbage cans and eating rotten food.

a. the bees flew away, knocking over the hive
b. children accidentally destroyed the bees
c. a strong wind destroyed the bee hives
d. the bee hives were destroyed by the bear

Strategy to Answer
In this passage, the last two sentences refer to the bear in the neighborhood. The bear is eating and looking through the garbage. You can use your own judgment that a bear would be interested in eating honey. Hence the answer is d.
How Sharks Attack Their Prey

The King of Predators
Sharks are the kings of predators in the oceans. They have been known to eat everything from juice containers, license plates, fishing hooks, people and even dolphins. Since the movie *Jaws* in 1975 by director Steven Spielberg, people have been nervous of sharks. But exactly how and why do sharks attack their victims?

Sensory System
Sharks have a powerful sensory system in their nose and excellent vision to locate prey. Unlike humans, sharks use their noses to smell their prey and find dinner. The main thing that attracts sharks is the smell of blood. Sharks have a highly tuned sense of smell. A shark can sense one part of blood for every million parts of water. Water flows into the shark’s nostrils, past very sensitive receptors. These receptors are full of cells that send signals to the shark’s brain. This is how a shark can tell if a fish or blood is nearby.

Electrical Signals
All animal life gives off a weak electrical field. This allows fish to sense nearby objects without actually touching them. When a fish or seal is struggling, the movement of the fish sends a vibrating electrical signal through the water. Sharks can detect these electrical impulses underwater. These tiny signals are received by sensory organs in the shark’s skin. These are called the Ampullae of Lorenzini. The ampullae are similar to pores in a person’s skin. But they are larger and more sensitive. The hammerhead shark frequently uses this electroreception technique to hunt other fish in the ocean—often several kilometers away.
Shark Attacks

Each year, there are approximately 70~100 shark attacks around the world. Divers, surfers and swimmers are usually the targets of these attacks. When a surfer kicks while paddling their surfboard, a shark senses that there is a “struggle.” In fact, most shark attacks are the result of mistaken identity. Sharks often mistakenly attack humans, thinking they are seals. They are disappointed when they realize that the fat content in a human’s leg is not as high as that of a seal. Sharks are amazing predators that should be respected but also feared when you go in the water.

**Glossary**
- **receptor**: a nerve ending that is sensitive to external sounds or smells and connects to nerves
- **ampullae**: a special sensing organ in the skin of a shark
- **electroreception**: a sensory system used by some animals to detect movement
- **hammerhead**: a shark with a head shaped like the end of a hammer

**Reading Skill Questions**

1. From the passage, we can conclude that ________________.
   a. sharks always go after surfers because they are noisy
   b. the Ampullae of Lorenzini help sharks sense their food’s location
   c. there are sensors in the shark’s fins that detect blood
   d. sharks only go near the shore when they are hungry

2. We can conclude that a shark thinks a surfer is a seal because ________________.
   a. only seals swim in shallow water
   b. he sends a vibrating electrical signal by paddling his surfboard
   c. seal meat is the same thickness as a surfboard
   d. the surfboard smells just like seal meat
[Comprehension Questions]

1. What was the likely effect of the movie *Jaws* on the American public?
   a. It made people nervous to watch more movies.
   b. It caused a panic on many beaches.
   c. It made people nervous to go swimming in the ocean.
   d. It created a fascination for shark hunting.

2. What is the main idea of the second paragraph?
   a. How to avoid being eaten by a shark
   b. A shark’s powerful sense of smell
   c. The size of a shark’s nostrils
   d. How swimmers sense sharks

3. When a fish or seal is struggling, the next step is usually for a shark to ________
   a. attack the fish with its teeth
   b. swim away from its prey
   c. sense the electrical signals
   d. drag the fish toward it

4. How do sharks benefit from the Ampullae of Lorenzini?
   a. Their eyesight is improved above water.
   b. They are more sensitive to underwater signals.
   c. They find it easier to locate a mate far away.
   d. They can send out powerful electrical signals to surfers.

**Summary**

Fill in the blanks with the right words to complete the summary.

(locate receptors predators signal struggling attacked)

Sharks are the kings of ________ in the oceans. Sharks use a powerful sensory system in their nose to ________ prey. Water flows into the shark’s nostrils and flows past very sensitive _________. When a fish is _________, the movement of the fish sends a vibrating electrical _________ through the water. These tiny signals are received by sensory organs called the Ampullae of Lorenzini. Often when a human is _________, a shark mistakes it for a seal.
Look at the graphic organizer below and fill in the blanks about drawing conclusions. Use information from the passage to support the conclusion.

Evidence 1

Evidence 2

Evidence 3

Conclusion

We can conclude that sharks are highly skilled predators that can kill with ease.
The Debate over Shark Fin Soup

An Asian Tradition

One of the most recent environmental concerns involves eating shark fin soup. Until the 1980s, eating shark fin soup was only popular in southern China. It was a regional delicacy. Shark fin soup was found in expensive restaurants. Today, Hong Kong, Taipei and Singapore are the main places where fishermen bring in the fins of sharks to trade. Twenty years ago, eating shark fin soup in many Asian countries was viewed as an exotic treat. But today, shark fin soup can be found in restaurants everywhere including New York, Singapore, London, Seoul and Los Angeles. Additionally, it is perceived as being good for one’s health.

Finning

Despite the popularity of shark fin soup, scientists and conservationists are worried that too many sharks are being killed. Actually, the fishermen who sell shark fins do not kill the sharks. They cut off the fins and leave the shark to swim away. Cutting off a shark fin is called “finning.” Shark meat is not that valuable, so fisherman do not want to waste precious space on their boats. It is easier to fill up with thousands of fins rather than a few hundred sharks. Fishermen argue that it is not worth it to catch the entire shark.

Valuable Fins, Worthless Meat

However, the shark cannot swim because its fins are now gone. This is like chopping off the wings of an airplane. The airplane nosedives into the ground and crashes. Most sharks breathe by swimming forward. Without fins to swim
or steer, sharks cannot move forward, nor breathe, so they die. They need to have oxygen in the water flowing through their gills. Unfortunately, undersea divers have found hundreds of sharks (without their fins) lying dead on the bottom of the ocean.

High Prices
The most hunted sharks are hammerhead sharks, silky sharks and blue sharks. In Hong Kong, a shark fin can sell for $135 per kilogram. That is approximately $40 per fin depending on the shark. In India, shark fins only sell for $12 per kilogram. But a restaurant in Hong Kong will sell a bowl of shark fin soup for $100 or more. The future of sharks is up in the air as this ongoing problem continues.

Glossary
finning: the act of fishermen cutting off the fins of fish, usually sharks

[Reading Skill Questions]

1. You can conclude conservationists are worried that ________________.
   a. shark hunting is polluting the ocean
   b. shark fin soup might not be good for one's health
   c. shark hunting is depleting an important species
   d. shark fin soup is too popular in Western countries

2. What can be concluded if people continue to eat shark fin soup?
   a. Shark meat prices will start to rise a lot.
   b. Only the hammerhead shark will become extinct.
   c. The balance of the ocean’s ecosystem will change.
   d. Hong Kong restaurants will pay less money for shark meat.
[Comprehension Questions]

1. According to the passage, what does the recent disaster refer to?
   a. Shark hunting off the coast of India
   b. The popularity of shark fin soup since the 1980s
   c. The fishermen in Singapore that overhunt sharks
   d. Shark meat being eaten in Asian nations

2. Why do fishermen cut off a shark’s fin instead of taking the entire fish?
   a. Because it takes too long to kill an entire shark
   b. Because there is much demand for shark bodies
   c. Because shark tail prices are declining
   d. Because a shark’s body is worthless to fishermen

3. Which of the following is true about shark fin soup?
   a. Western people despise eating shark fin soup.
   b. Hong Kong is a popular place for shark fin trade.
   c. A recent project to farm sharks has been very successful.
   d. Shark fin soup used to be popular among Chinese fishermen.

4. If shark hunting was made illegal, what might happen?
   a. People would become less healthy.
   b. It would increase the value of shark fin soup.
   c. It would lead to other fish species being chosen over hammerheads.
   d. The hammerhead shark population would start to grow again.

Summary | Fill in the blanks with the right words to complete the summary.

( fins kill delicacy steer hunting conservationists )

One of the most recent environmental concerns involves eating shark fin soup. Shark fin soup was a regional ____________. But today, it can be found everywhere. Scientists and ____________ are worried that too many sharks are being killed. The fishermen do not actually ____________ the sharks. They cut off their ____________, in an act called “finning.” The shark cannot swim because its fins are gone. Without fins to swim or ____________, it dies. The future of sharks is up in the air as this ____________ practice continues.
**Graphic Organizer**

A graphic organizer is a visual display, usually a diagram or illustration. It can help you organize information or facilitate the visualization of concepts, relationships, and facts of the passage.

Look at the graphic organizer below and fill in the blanks about drawing conclusions. Use information from the passage to support the conclusion.

<table>
<thead>
<tr>
<th>Eating Shark Fin Soup</th>
<th>Selling Shark Fins</th>
</tr>
</thead>
<tbody>
<tr>
<td>Supporting Information A1</td>
<td>Supporting Information B1</td>
</tr>
<tr>
<td>Supporting Information A2</td>
<td>Supporting Information B2</td>
</tr>
<tr>
<td>Conclusion A</td>
<td>Conclusion B</td>
</tr>
</tbody>
</table>
**Check Your Vocabulary**

The highlighted words are from the unit articles. Guess the meanings of the highlighted words. Then match the words with their definitions.

1. Oil prices **nosedived** to around $80.
2. Out of the corner of her eye, she **perceived** that another person was approaching her.
3. Inside the engine, a small part came loose and was **vibrating**, shaking against the side.
   - a. to go down suddenly or rapidly fall in value
   - b. to make small movements back and forth
   - c. to notice or understand something

4. The girls had an **impulse** to go shopping at the mall.
5. Lying on his surfboard, the **surfer** swam out to the big waves.
6. The **conservationists** were trying to protect the gray whales by criticizing whale hunting.
7. The rare Beluga caviar is a **delicacy** and prized food in Russia.
   - a. a person who rides a surfboard on the ocean waves
   - b. someone who is dedicated to saving the environment
   - c. a very special and often delicious food that is usually rare
   - d. making a quick decision based on an urge or desire

8. It had been a long **struggle**, but the pop singer had finally released a successful CD.
9. Cutting off a shark’s fin, or **finning**, is an unfortunate side effect of shark hunting.
10. Most fish have **gills** that are parallel openings in the side of a fish’s head that allow in water and oxygen.
   - a. the breathing organ of a fish
   - b. the act of fishermen cutting off the fins of fish, usually sharks
   - c. to try very hard to do something; having difficulty with something