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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 idea of the passage?

I am calling to complain about my New York Times subscription. For the past few months, delivery of the newspaper has been sporadic. Thursday is the worst day for delivery. Since Friday, I haven’t received a paper at all. Can you please tell me when I will be getting my paper again?

a. The New York Times is offering a discount on new subscriptions.
b. The customer is planning on cancelling subscription.
c. Newspapers are not published from Friday to Sunday.
d. The customer has had many problems with their newspaper subscription.

Strategy to Answer

In this passage, the main idea centers on the problems receiving the New York Times. Several words such as “sporadic” and “worst” indicate that the delivery is not consistent. Answer d best summarizes the delivery problems.
Various Fats

Good Fats & Bad Fats
We are bombarded by the media with articles about losing weight and eating good and bad fats. There are many kinds of fats: trans fats found in fast food, essential fatty acids, unhealthy saturated fats and healthy unsaturated fats like omega-3 fats (found in fish). Fats are an important part of a healthy diet, providing us with energy and the necessary fuel to get through the day. Fats also speed up the rate that nutrients become absorbed into our bodies. However, excessive amounts of fat can cause weight gain or lead to heart diseases, such as strokes or heart attacks.

Breaking Down Fat
When a person eats a hamburger, food is swallowed and makes its way to the stomach and intestines where it is digested. Enzymes, which are proteins that cause chemical changes in the body, attack the swallowed hamburger breaking down the fatty parts. Most of the food is broken down into fatty acids. The fatty acids are then absorbed into the intestine and inner linings of the body. Depending on the type of food you eat, the fatty acids can be good or bad for your health.

Glucose and Glycogen
How fatty acids affect your body is related to energy sources in the human body. Two complicated but important ‘G’ words help explain how the human body gets its fuel and their relationship with fat. Glucose is a simple form of sugar and comes from the carbohydrates a person eats. Our body is just like an engine. It needs fuel to keep running. Normally, our bodies burn a combination of carbohydrates and fat for fuel. When we eat, glucose energy gets stored in the liver and is released into the bloodstream as glycogen. This differs depending on how strenuously a person exercises and what they recently ate. If a person uses more glucose energy (and the released glycogen) than they can take in from eating.
and drinking, the body starts to burn any excess fat that is stored. This is how people lose weight.

**Saturated & Unsaturated Fats**

Saturated fats are the unhealthiest fats for humans. The term comes from the fact that these fats are full of (or saturated) with hydrogen atoms. All fats have the same amount of calories, but some fats like essential fatty acids are healthier than trans fatty acids or saturated fats. Often found in food cooked with vegetable oil (fried chicken, potato chips, French fries, hamburgers, etc.), saturated fats cannot be easily broken down by the enzymes in your body. Hence, the fat stays in your body and increases your cholesterol level. Unsaturated fats found in oily fish like salmon, tuna and herring are healthy. For example, omega-3 is one unsaturated fat that helps improve memory and reduce the risk of heart disease.

**Glossary**

- **omega-3 fat** a type of unsaturated fat good for lowering cholesterol levels
- **enzyme** complex proteins that are produced by living cells
- **carbohydrate** an important source of food and energy containing carbon
- **bloodstream** the flow of blood that circulates through blood vessels

**Reading Skill Questions**

1. **What is the passage mainly about?**
   - a. How fat causes heart disease
   - b. How fats are processed in the body
   - c. How important a healthy diet is
   - d. The importance of essential fatty acids

2. **What is the second paragraph mostly talking about?**
   - a. The intestine and inner linings of the body are fatty.
   - b. Glucose helps digest the fats in hamburgers.
   - c. Fatty acids are bad, especially those in hamburgers.
   - d. Foods are digested and broken up by enzymes.
Comprehension Questions

1. What is true about the information in the first paragraph?
   a. Essential fatty acids are saturated fats.
   b. Fats are not an important part of a healthy diet.
   c. There are many types of fats: some good, some bad.
   d. The media makes society think that fat is bad for all people.

2. Which effect is caused by enzymes working in the body?
   →

3. What is the role of glucose in the body?
   a. It provides essential energy to the body.
   b. It helps digest complex fats in the body.
   c. It causes diseases such as strokes and heart attacks.
   d. It is a fat-based form of energy harmful to the body.

4. What can you infer from the passage?
   a. Fatty acids give a burning sensation.
   b. Some fats are used as energy when exercising.
   c. Exercising at a fast pace will increase glucose levels.
   d. Carbohydrates are stored when exercising.

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

( enzymes stored digested glucose glycogen trans fats saturated heart diseases )

There are many kinds of fats: ________ found in fast food, essential fatty acids, unhealthy saturated fats and healthy unsaturated fats. Excessive amounts of fat can cause weight gain or lead to ________. When a person eats food, it is ________ in the stomach. ________ attack the swallowed food, breaking down the fatty parts. One important energy source in the body is ________, which is a simple form of sugar and comes from carbohydrates. Glucose energy is ________ in the liver and released into the bloodstream as _________. ________ fats are the unhealthiest fats because they cannot be easily broken down by the enzymes in your body.
Look at the graphic organizer below and fill in the blanks. Only use information from the passage that explains the role of fat in the human body.

**Main Idea**

**Paragraph 1**
There are many types of fats, some are good and some are bad for the human body.
Good fats help ____________________________
Bad fats lead to ____________________________

**Paragraph 2**

**Paragraph 3**
Fatty acids are related to the amount of energy you have.
Glucose is ____________________________
Glycogen is ____________________________

**Paragraph 4**
Saturated fats ____________________________
Unsaturated fats ____________________________
Banning Junk Food in Schools

Junk Food in Schools
Junk food has traditionally been a big part of the daily diet of schoolchildren. In many elementary, middle and high schools, vending machines are a common sight, even in cafeterias. These machines disperse chocolate bars, carbonated soda drinks, salty chips and even chewing gum. But several decades of eating junk food has had a negative effect on school children’s health. A recent study showed that 75 percent of drinks and 85 percent of snacks sold in schools have very little nutritional value. Kids are more obese and sedentary than in the past, spending more time inside. All of this contributes to an emerging health problem. Some schools have vowed to get rid of all junk food in their schools.

School Budgets
Children have long been addicted to foods that are high in fat, salt, and sugar. In Britain, this became such a big health problem that in 2007, the British government introduced a ban on all vending machines that sell such food. Efforts were made to improve the lunchtime meals, not just abolish the junk food vending machines. A decade ago, school districts in Britain, Canada and the U.S. tried to save money by reducing the amount of funds they allocate to school meals. This led to an increase in junk food vending machines to help feed students in schools that stopped providing cooked meals. Other schools just offered pre-prepared food in packages. Over time, students have come to rely on junk foods from vending machines to make up for the lack of choices in the cafeteria.

Junk Food Profits
Schoolchildren have been a big source of profits for junk food companies. Of course, advertisers and manufacturers of soft drinks, chocolate bars, and other junk food depend on schools for a large proportion of their sales. They argue that the government should not interfere with a person’s right to choose what they want to eat. If a student wants to eat high-calorie snacks, that is their choice. In
Britain, junk food manufacturers were not happy with the removal of vending machines since it cut into their sales. They lobbied the government, but to no avail.

**Healthy Choices**

School districts argue that they have limited choices as to what food to give their students. But parents argue that it is the government’s responsibility to provide students with healthy and affordable meal choices. Meal programs, usually provided by food service companies, should offer low-calorie meals that are nutritious and enjoyable for the students, parents argue. Fortunately, in the past several years, there has been a greater awareness of the amount of junk food being consumed. This has led to a reduction in the amount of trans-fat in fast food restaurants. So maybe there is a healthier future for school cafeterias.

**Glossary**

- **carbonated drinks** a beverage filled with carbon dioxide to make it bubbly
- **sedentary** when something is very stationary and remains in one place

### Reading Skill Questions

1. **What is the passage mainly talking about?**
   a. Many junk food manufacturers have gone into bankruptcy.
   b. Students in Britain, Canada and the U.S. love eating junk food.
   c. Junk food companies have sold a lot of food to schoolchildren.
   d. Schools and parents try to improve the food served to schoolchildren by banning junk food.

2. **What is the main idea of the fourth paragraph?**
   a. A ban on all food, soft drinks, and alcohol is planned.
   b. Junk food has only recently been discovered to be unhealthy.
   c. Parents want their children to eat healthy and affordable meals at school.
   d. The government is trying to improve schoolchildren’s diets.
1 What is true about the recent studies?
   a. Most junk foods have very high nutritional value.
   b. Most snacks sold in schools have very little nutritional value.
   c. More than 75 percent of schoolchildren enjoy eating junk food.
   d. Over 85 percent of food consumed in school is quite expensive.

2 What can be inferred about the situation in British schools?
   a. Advertisers are pressuring schoolchildren to eat too much.
   b. They consider the profit margins of food companies to be important.
   c. Students eat many foods that were high in fat, salt, and sugar.
   d. Billions are spent on junk food, which is a lot less than a decade ago.

3 What can you conclude from the third paragraph?
   a. Junk food manufacturers did win the argument over freedom to eat.
   b. Junk food manufacturers have been producing significant profits.
   c. Schools did not succeed in stopping the removal of vending machines.
   d. Manufacturers did not succeed in stopping the removal of vending machines.

4 What is the writer's viewpoint about junk food in schools?
   a. School cafeterias should only make vegetarian meals.
   b. It's difficult for junk food companies to make delicious food.
   c. It's good that people have a greater choice of junk food.
   d. It's fortunate that people have a greater awareness of junk food.

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

In schools, ________ are common, dispersing chocolate bars, carbonated soda drinks, salty chips and even chewing gum. But several decades of eating ________ has had a negative effect on schoolchildren's health. In 2007, the British government introduced a(n) ________ on all vending machines that sell junk food to ________ lunchtime meals. Advertisers and manufacturers for junk food depend on schools for a large proportion of their sales. So many of them ________ the government but to no avail. Recently, there has been a greater ________ of the need for low-calorie foods and less ________.
Look at the graphic organizer below and fill in the blanks using information from the passage.

**Main Idea**

**Junk Food**
- has very little nutritional value
- leads to obesity and low energy

**Detail 1: The Spread of Junk Food**
- In order to save money, many schools in Britain, Canada and the U.S. introduced junk food in their schools.

**Detail 2: Addiction**

**Detail 3: Ban**

**Detail 4: Lobby**

**Detail 5: Awareness**
The highlighted words are from the unit articles. Guess the meanings of the highlighted words. Then match the words with their definitions.

<p>| | | | |</p>
<table>
<thead>
<tr>
<th></th>
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<tbody>
<tr>
<td></td>
<td>My grandfather had to learn how to talk again after his <strong>stroke</strong>.</td>
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<tr>
<td></td>
<td>The district imposed a <strong>ban</strong> on smoking in all enclosed public places.</td>
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<td></td>
<td>An IV is used to get medicine directly into the <strong>bloodstream</strong> of a patient.</td>
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<tr>
<td></td>
<td>People have both large and small <strong>intestines</strong> which we use to digest both vegetables and meat.</td>
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</table>

- a. a blood clot that travels to the brain and blocks blood flow and oxygen
- b. part of the digestive system
- c. the blood flow in one’s veins and arteries
- d. an official ruling that something must not be done

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<tbody>
<tr>
<td></td>
<td>Since the car accident, she has been <strong>addicted</strong> to painkillers.</td>
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<tr>
<td></td>
<td>More Americans are <strong>obese</strong> than in any other country on earth.</td>
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<tr>
<td></td>
<td>If you only watch TV and don’t exercise, it can be said that you lead a <strong>sedentary</strong> life.</td>
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<tr>
<td></td>
<td>If you are planning on exercising <strong>strenuously</strong>, it is a good idea to stretch first to avoid injury.</td>
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</table>

- a. do something with a great deal of intensity
- b. dangerously overweight
- c. idle; accustomed to sitting
- d. to cause someone or oneself to become dependent on something such as drug or alcohol

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<tbody>
<tr>
<td></td>
<td>Slavery was <strong>abolished</strong> in the U.S.</td>
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<td></td>
<td>The gas was <strong>released</strong> from the cylinders.</td>
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<tr>
<td></td>
<td>Use the sponge to <strong>absorb</strong> the water you spilled.</td>
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<tr>
<td></td>
<td>There are several steps to complete before we can <strong>allocate</strong> funds for your research work.</td>
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<tr>
<td></td>
<td>The planes steadily <strong>bombed</strong> the town for three days before the ground troops invaded.</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

- a. to soak up
- b. to attack with bombs or artillery
- c. to destroy completely, to eliminate, to get rid of
- d. to assign, to distribute
- e. to set free from something, to dismiss
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 many people died in 1984 from the chemical spill in Bhopal?

When a chemical spill in Bhopal, India killed two to three thousand people in 1984, the world was shocked. The American company that owned the chemical factory avoided responsibility for the accident. Over 25 years later, the Indian government has still not cleaned up the site, despite the 25,000 deaths that have been attributed to the toxic gases.

a. Approximately 2,000-3,000 people died.
b. Many millions of people died in India.
c. Over 25,000 people are estimated to have died.
d. The chemical factory avoided releasing the death toll figures.

Strategy to Answer

In this passage, the key to answering the question lies in comparing two numbers (the number of deaths in 1984 and the total deaths 25 years later). The question is asking about the year 1984. Hence the answer is a.
Bringing Down a Building

Many old buildings become abandoned or decrepit. They outlive their usefulness or need to be torn down to make way for new building developments. When a building or factory is slated for demolition, it is pulled down with heavy machinery, tools and explosives. This process is known as building demolition work. Building demolition requires a great deal of preparation. The quickest and most efficient way to demolish a large building is to use explosives on support columns.

Preparing a Building
Prior to demolishing a building, the building design is studied in advance. And the building should be carefully studied and analyzed. Using jackhammers, construction crews start by systematically removing and taking down any non-load-bearing walls. These are walls that are not essential to supporting the ceiling and building structure. After the walls are weakened, it is easier to implode the building. Next they remove electrical wiring and plumbing fixtures to reduce the weight. Any valuable materials are sold. Finally, architectural plans are poured over, and engineers are consulted about where to lay the explosives.

Blasting Cables and Caps
Then demolition crews start to drill holes in the building’s concrete walls and floors. Through these holes they lay thousands of meters of blasting cable throughout the building in a complex maze. Blasting cable is a thin yellow wire coated in plastic that is connected to blasting detonator caps. These detonator caps are small explosives that are connected via blasting cable to more explosive material like dynamite. If the explosive compound is exposed to an electrical charge, heat or shock, it will go off. The blasting cables and caps are only connected on the last day before the demolition takes place. This is the most dangerous time for workers to be in the building.

Imploding a Building
The most difficult procedure is imploding a building, causing it to fall inwards. The goal is to bring down a building without pieces of debris crashing into surrounding buildings. When a building is imploded, none of the debris falls outside the “footprint” of the building. The physics and engineering techniques
used to demolish buildings are very complex. This technique is achieved by collapsing the inner support columns and lower floors first. Only a few dozen companies in the world have perfected the procedure to demolish large buildings.

**Tumbling Down**
When everything is ready and the site is cleared, the big moment comes. With crowds watching at a safe distance several blocks away, a worker presses an electronic detonator button. In a split second, this sends a signal through the blasting cables to the explosives. The supporting beams that hold up the lower floors are the first to explode, causing the building to fall inwards. Seconds later, the upper floors start to break apart and collapse. In a large plume of smoke, debris and dust, the entire building collapses.

**Glossary**
- **support columns** the main steel beams in a building that support most of the load
- **load-bearing walls** walls that contain support columns in a building capable of bearing substantial weight
- **implode** when something collapses inward due to great external pressure

**Reading Skill Questions**

1. **What method is taken so that buildings do not collapse into others?**
   a. An implosion technique is used to make the building fall inward.
   b. A large nylon net is erected around the building.
   c. Water is sprayed on the building to remove dust particles.
   d. The main load-bearing walls are reinforced so the building will collapse in large pieces.

2. **What is the most efficient way to bring down an old building?**
   a. Use many construction crews
   b. Detonate the supporting columns
   c. Break down each floor downwards
   d. Remove the heavy plumbing fixtures last
Comprehension Questions

1. Which phrase is closest in meaning to decrepit as used in the passage?
   a. well-used but getting old
   b. well-designed, new but worn out
   c. really old, crumbling and worn out
   d. really new, latest and original

2. Why is preparing a building for demolition so dangerous?
   a. Support columns might not be that strong in an older building.
   b. A worker could get crushed by the concrete.
   c. People could get tangled up in the blasting cable.
   d. The blasting caps and detonators could accidentally go off.

3. Which of the following is true?
   a. Architectural plans are very difficult to comprehend.
   b. Crowds watching sometimes interfere with the demolition crews.
   c. Removing all the electrical wiring can sometimes electrocute workers.
   d. There are many engineering challenges to safely bring down a building.

4. Number the events in the right order.
   ___ Analyze the building design.
   ___ Place explosives in the building.
   ___ Press an electronic detonator button.
   ___ Remove electrical wiring and plumbing fixtures.
   ___ Remove and take down non-load-bearing walls.

Summary | Fill in the blanks with the right words to complete the summary.
( remove explosives demolition imploding drill holes support columns electronic detonator )

When an old building is slated for ________ , it needs to be pulled down with heavy machinery, tools and ________. Prior to demolishing a building, construction crews _________ any non-load-bearing walls, electrical wiring and plumbing fixtures. Then demolition crews ________ in the building’s concrete walls. They lay thousands of meters of blasting cable. The most difficult procedure is ________ a building. This technique is achieved by collapsing the inner ________ and lower floors first. From a safe distance, a(n) ________ button is pressed. This sends a signal through the blasting cables to the explosives.
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. Only use information from the passage that explains how to demolish buildings.

**Detail 1**
To make way for new developments, old abandoned buildings eventually must be torn down.

**Detail 2**
A lot of preparation work has to be done before a building can be demolished.

**Detail 3**
Once the building has been taken apart, hundreds of holes are drilled into the walls.

**Detail 4**
A building implosion is the goal of a demolition.
Earthquake Proofing Skyscrapers

Preventing Tragedy
In January 1995 an earthquake of 7.2 magnitude on the Richter magnitude scale shook the city of Kobe, Japan. Buildings buckled, floors crumpled, and cracks formed along walls of homes and office buildings. More than 6,000 people died and 50,000 buildings were severely damaged. The aftermath of the Kobe earthquake forced authorities in Japan to enact new building code requirements. Even though Japan, situated on a major fault line, already had some of the strongest building code requirements in the world, they knew that buildings could be constructed safer. Out of this disaster have come new technologies designed to improve the safety of people living and working in buildings.

Smart Building Technology
In major metropolitan cities like Tokyo, New York City, Shanghai, San Francisco, and Mexico City, skyscrapers are the focus of cutting edge technology. Scientists and engineers are researching better ways to design these towering buildings, many of which are over 100 stories tall. These new skyscrapers have been nicknamed smart buildings because many of them are designed to stay standing even during a major earthquake. Since the Kobe earthquake, structural engineers and architects have incorporated super-strong materials that can bend, stretch and compress without breaking.

Weights and Dampers
During an earthquake, the people inside a skyscraper built using smart technology will hardly feel any shaking. Some buildings have huge weights or damper systems controlled by computers. During an earthquake, the weights glide back and forth in the opposite direction that the building is moving. This helps stabilize the building and balance it. A lot of smart technology is adapted from military technology used for hardening missile silos, ship decks and submarines against bombs and missiles.
**Torre Mayor & Kansai Airport**

In Mexico City, the 55-story Torre Mayor building is reputed to be the strongest building on Earth. Built by a Canadian firm, it uses round roller bearings and dampers to absorb earthquake forces. The dampers move in the opposite direction of the shaking, minimizing swaying. Since Mexico City has a high propensity for earthquakes, this building will actually move back and forth a little bit during earthquakes. Engineers involved in the project say the Torre Mayor building can withstand an 8.5 earthquake on the Richter scale.

The Kansai airport in Osaka, Japan was the world’s first airport built on a landfill island in the ocean. It posed engineering challenges for architects. During the Kobe earthquake, when the airport was under construction, the airport gently moved back and forth several inches without significantly damaging the structure. Structural engineers feared it might sink into the water. Fortunately, the airport was designed with seismic isolation technology that minimizes earthquake forces through absorption. In the future, smart buildings are going to be more commonplace, helping save lives.

---

**Glossary**

- **Richter scale** a method of measuring the strength of earthquakes
- **fault line** a division between two tectonic plates where earthquakes often occur
- **seismic** related to an earthquake or caused by an earthquake

---

**Reading Skill Questions**

1. **What technological improvements have been designed to make buildings safer?**
   - a. Flexible concrete used in airport runways
   - b. Roller bearings that stretch until they touch sensors
   - c. Weights that swing up and down in a building
   - d. Super-strong materials that can bend, stretch, and compress

2. **In what direction do smart buildings move when there is an earthquake?**
   - a. They move in a circular motion.
   - b. They move in an up-and-down motion.
   - c. They move in the same direction of the shaking.
   - d. They move in the opposite direction of the shaking.
1. What is the passage mainly about?
   a. New technologies to prevent earthquakes
   b. The importance of building code requirements
   c. Skyscrapers constructed to withstand earthquake damage
   d. The strength and the weakness of smart building technology

2. What was the effect of the Kobe earthquake on building technology?
   a. Japan began to design more towering buildings.
   b. Japan made building codes stricter.
   c. Construction companies used more expensive materials.
   d. Advisors in Mexico City were consulted about building codes.

3. Which is NOT mentioned in the passage on earthquake technology?
   a. Which are the strongest buildings in Mexico.
   b. Where smart building technology came from.
   c. Why and how Torre Mayor building was designed in Mexico City.
   d. Whether or not roller bearings are used in the Torre Mayor building.

4. Which of the following is true?
   a. Over 50,000 people died in the Kobe earthquake.
   b. Some smart technology is adapted from space engineering.
   c. The Kansai airport was built on a landfill island in the ocean.
   d. Torre Mayor building was severely damaged by an earthquake of 7.2 magnitude.

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

In January 1995 a 7.2 magnitude earthquake shook the city of Kobe, Japan. The ________ of the Kobe earthquake forced authorities in Japan to __________ new building code requirements. Scientists and engineers are researching better ways to design tall buildings. These new skyscrapers have been nicknamed __________ buildings because many of them ________ stay standing even during a major earthquake. Some buildings like the Torre Mayor have huge __________ that glide back and forth in the ________ direction that the building is moving during an earthquake. The Kansai airport in Osaka, Japan is one building that uses seismic technology to make it safer during ________.
Look at the graphic organizer below and fill in the blanks. Use information from the passage that relates to engineering problems and solutions.

### Before Smart Buildings

**Tragedy**
In 1995, a 7.2 earthquake hit Kobe, Japan, killing 6,000. Building codes in Japan were changed after that disaster.

### Why Smart Buildings

**Torre Mayor**

### What’s Special of Smart Buildings

**Weights**

**Dampers**

### Examples of Smart Buildings

**Kansai Airport**
### 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>Sentence</th>
<th>Definition</th>
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</thead>
<tbody>
<tr>
<td>The camel's legs buckled under the heavy load.</td>
<td>a. to live longer than someone or something else</td>
</tr>
<tr>
<td>My grandmother outlived her husband by more than seven years.</td>
<td>b. to collapse inwards</td>
</tr>
<tr>
<td>South Korea is famous for a large number of dinosaur footprints.</td>
<td>c. to be crushed or bent under a weight or force</td>
</tr>
<tr>
<td>The scientists are very excited about the newly imploding star they've discovered.</td>
<td>d. the mark left in soft soil or sand when one walks through</td>
</tr>
<tr>
<td>The structural integrity of the old suspension bridge was damaged by the flood.</td>
<td>a. having to do with supporting and building design</td>
</tr>
<tr>
<td>This is a cutting edge product that reflects the views of young consumers.</td>
<td>b. scheduled or planned</td>
</tr>
<tr>
<td>The test was slated for this Tuesday, but they changed it to Monday instead.</td>
<td>c. the newest or most advanced state of something, usually technical</td>
</tr>
<tr>
<td>Our neighborhood has a very strict building code. Sometimes it takes years to get the permits to add on any additions.</td>
<td>d. the standard by which a building must be maintained or constructed</td>
</tr>
<tr>
<td>He is a fixture in the organization. He has worked there forever.</td>
<td>a. remnants of anything that has been destroyed</td>
</tr>
<tr>
<td>They will use plastic explosives in the demolition of the building.</td>
<td>b. the act of destroying; destruction, explosion, wrecking</td>
</tr>
<tr>
<td>Following the explosion a large plume of debris and dust floated upward.</td>
<td>c. a regular or permanent part of something</td>
</tr>
<tr>
<td>The tornado completely destroyed the town leaving only debris in its wake.</td>
<td>d. a cloud of smoke</td>
</tr>
<tr>
<td>Good students have the propensity to study for hours at a time without getting bored.</td>
<td>e. tendency to do something</td>
</tr>
</tbody>
</table>
SEQUENCE OF EVENTS

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 in this selection? 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. What happened before and after the event.

Q. Which sequence occurs after the red coffee cherries have been eaten?

The civet, a weasel-like animal, helps make the most expensive coffee in the world. The civet, found in Indonesia and Vietnam, eats red coffee cherries, picking only the ripest. Then the coffee passes through the civet’s stomach undigested. When the animal defecates, farmers pick up the coffee beans in the forest, wash them and sell them for over $100 per kg.

a. The civet digests them.
b. The farmers process them at the local market.
c. They pass through the civet and are buried in the ground.
d. They pass through the civet to be found by farmers in the forest.

Strategy to Answer

In this passage, look for reference words like “then” and “when.” The third sentence refers to what happens after the civet eats the coffee cherries. This is the answer to what occurs after the eating process. So the answer is d.
How Canals Work

Canal History
A canal is an artificial waterway or narrow channel dug in the ground and filled with water. Canals have been around since ancient Mesopotamia in 4,000 BC when they were used for irrigation and transporting cargo. Traditionally, canals were lined with clay (and later concrete) to prevent the water from seeping into the earth. Early canals were built for the purpose of carrying water from areas with plenty of water to more arid regions. The Chinese were the first to build canals used to carry supplies and cargo. To this day, the Grand Canal of China is still the longest in the world at 1,794 km.

Today, smaller canals connecting lakes and rivers have been supplanted with cargo planes, container ships and trains as the preferred method of transportation. But some large-scale canals are still vital to global trading. Important canals include the Suez Canal, the Lake Erie Canal and the Panama Canal.

Digging Canals
The most difficult part in designing a canal is overcoming any variations in height. Since land undulates (rises and falls), some canal sections will be higher than others. This makes it impossible for water and ships to flow through. This necessitates connecting canal sections at different levels.

Locks & Staircases
For canals to work properly, the use of locks is necessary. When a canal is built through land that varies in height, a lock system is used to raise or lower boats. Locks are basically large boxlike chambers enclosed by concrete gates weighing many tons. Each lock is large enough to hold the biggest boat or ship that travels on the canal. The first step in getting a ship through a lock involves its initial approach. The lock
gate facing the lower section of the canal opens using large gears or hydraulics. The second step is for the ship to move through the lock with the gate closing behind it. Since the water level in the lower canal section is the same height as the water in the lock, ships easily float through. The third step takes the longest. While the ship is waiting inside the gates, the entire lock begins to fill up with water. Gradually the lock fills with water, lifting the ship up to the next canal level. Some canals are situated near the ocean, so they can draw water from nearby. Other canals need to pump water from underground or faraway reservoirs. The fourth and final step is the gate facing the upper section of the canal opens. Then the ship travels to the next section of the canal. The design of canals and connecting locks is just like a staircase, allowing boats to pass through each section of the canal.

**Glossary**
- **undulate** to move up and down, rising and falling in a wavy form
- **reservoir** an artificial body of water, usually next to a dam

**Reading Skill Questions**

1. What is the third step that a ship passes through a canal and lock system goes through?
   - a. Ships approach the lock.
   - b. Ships travel through the upper section of the canal.
   - c. The lock opens slowly over several hours.
   - d. Water fills up until it reaches the height of the next level lock.

2. What happens after a lock fills up with water?
   - a. Water drains out of the upper lock.
   - b. The sides of the lock start to move inwards.
   - c. The ship travels through the previous section of the canal.
   - d. The ship is lifted to the next level and passes through the upper gate.
1. What were the first canals used for during ancient times?

2. Why are smaller canals not as important nowadays for cargo shipments?
   a. The Suez Canal and Panama Canal charge cheaper rates.
   b. Many small canals in China have fallen into misuse.
   c. People don’t trade goods between small towns anymore.
   d. Using planes, trains and container ships is more efficient.

3. The phrase like a staircase means ____________.
   a. allowing ships to slide sideways in stages
   b. moving ships up the canal in various stages
   c. joining all the locks together by concrete steps
   d. permitting ships to pass through the river or the ocean

4. What could be the purpose of the author writing the passage?
   a. To show how canal systems work and help world trade
   b. To explain why China developed the first locks
   c. To argue for greater usage of the Panama and Suez Canals
   d. To illustrate how locks have led to a decrease in world trade

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

A ____________ is an artificial waterway or narrow channel dug in the ground and filled with water. Today, smaller canals connecting lakes and rivers have been ____________ by cargo planes, container ships and trains. But some canals are still important for _____________. The most difficult part in designing a canal is overcoming ____________. Locks help raise or lower boats across land that varies in height. They are large boxlike chambers ____________ concrete gates. First, a ship approaches the _____________. Then the lower gates open, allowing the ship in. Next, the lock ____________, lifting the ship up to the next canal level.
Look at the graphic organizer below and fill in the blanks. Complete the correct sequence of events using information from the passage.

<table>
<thead>
<tr>
<th>Canal History</th>
<th>How a Canal Lock Works</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Sequence 1</strong></td>
<td><strong>Sequence 1</strong></td>
</tr>
<tr>
<td>Canals have been around since ancient Mesopotamia in 4,000 B.C. They were used for irrigation and transporting cargo.</td>
<td>The gate of the lock opens and the ship approaches it.</td>
</tr>
<tr>
<td><strong>Sequence 2</strong></td>
<td><strong>Sequence 2</strong></td>
</tr>
<tr>
<td><strong>Sequence 3</strong></td>
<td><strong>Sequence 3</strong></td>
</tr>
<tr>
<td><strong>Sequence 4</strong></td>
<td><strong>Sequence 4</strong></td>
</tr>
</tbody>
</table>
Connecting Oceans
Building the Panama Canal was perhaps the greatest engineering challenge of the 20th century. Over 26,000 men died while building the canal from 1880 to 1914. It took a monumental effort, both from an engineering and political perspective to get the project finished. The canal was instrumental in improving global shipping and trade routes by linking the Caribbean Sea with the Pacific Ocean, bisecting the Isthmus of Panama. Before the canal was constructed, a ship sailing from San Francisco to New York City would have to sail 22,500 km going around the tip of South America. However, with a canal cutting through Panama, an oil tanker or container ship would save weeks traveling the shorter 9,500 km route.

Engineering Challenges
In the 1700s and 1800s, Panama was a province of Colombia. Several European nations drew up plans to build a canal to replace an existing railway. This was the first stage to build a waterway across Panama, but canal plans were often abandoned. When the French started to construct the canal in 1880, their goal was to build a sea-level canal with no locks. This second stage to build the canal was poorly designed and carried out. Study of the geology and hydrology of the region was insufficient. At the time, no vaccine for malaria and other infectious diseases was available. The jungle of Panama brought a host of unseen problems including yellow fever and malaria. Scientists did not know how mosquitoes transmitted the malaria virus. Over 21,000 workers died during this second phase of the project. Eventually, the French abandoned the project.

Treaties
The third stage in the canal project involved treaty negotiations. Two weeks after Panama achieved independence from Colombia in November 1903, the Hay-Bunau-Varilla Treaty was signed. This treaty, signed by the U.S. Secretary of State and a Frenchman who had the rights to develop the canal, allowed the U.S. to administer the Panama Canal. The treaty agreement was a contentious issue
between the U.S. and Panama since no representative from Panama signed the treaty and there was no Spanish translation copy of the treaty. Only in 1997 would the canal’s operation be officially returned to Panama with a new treaty.

**The Americans**

In 1904, the Americans picked up where the French left off. This fourth stage of the canal project used larger more efficient digging machines and railcars to dispose of all the excavation material. Artificial lakes, waterways, dams and multiple-stage locks were built. But the most important thing the Americans accomplished was to tackle the mosquitoes and improve sanitation conditions for workers. The U.S. Army had come up with a vaccine to eliminate malaria and yellow fever during the recent Spanish-American War. Since its opening in 1914, the 80 km long Panama Canal forever changed international shipping.

**Glossary**

- **Isthmus** a narrow strip of land that joins two large landmasses
- **Hydrology** the study of the distribution of water, rivers and oceans on Earth
- **Malaria** an infectious disease caused by a parasite transmitted by mosquitoes

**Reading Skill Questions**

1. **Number the statements in the right order of the Panama Canal Project.**
   
   — The Hay-Bunau-Varilla Treaty was signed.
   — Several European nations planned to build a canal across Panama.
   — Over 21,000 workers died during the construction.
   — The U.S. took over the right to administer the Panama Canal.

2. **What happened last during the building of the Panama Canal?**
   
   a. The Panama government came up with a vaccine.
   b. Sanitation conditions were improved for French workers.
   c. The two nations signed the Hay-Bunau-Varilla Treaty.
   d. The canal was completed by the U.S. with more efficient machines.
Comprehension Questions

1. What is the passage mainly about?
   a. Improving global shipping trading routes in Panama
   b. Fighting malaria and other infectious diseases
   c. Successful ways to build canals crossing the isthmus of Panama
   d. The process of building the Panama Canal and overcoming obstacles

2. What was unique about the original French design to build the canal?
   a. They had sufficient vaccines for local Panama workers.
   b. They planned to build a sea-level canal with no locks.
   c. They carried out a geology study early in the season.
   d. They dug more kilometers of canal than the Americans.

3. Which of the following is true?
   a. More efficient digging machines only helped a little.
   b. The discovery of a malaria vaccine was very important.
   c. The Spanish-American War slowed down construction of the canal.
   d. The plans to use multiple-stage locks were abandoned several times.

4. What does the author suggest about the Panama Canal?
   a. The 1997 treaty with Panama was unjust.
   b. Building the canal was not worth the 26,000 deaths.
   c. Improved global shipping routes helped the Panama economy.
   d. The canal saved weeks sailing around the tip of South America.

Summary | Fill in the blanks with the right words to complete the summary.
( save signing vaccine Panama Canal digging machines carried out )

Using the ____________, an oil tanker or container ship would ____________ weeks traveling the shorter 9,500 km route. In the 1700s and 1800s, several European nations drew up plans to build a canal. The second stage to build the canal, designed by the French, was poorly ____________. Besides, the jungle of Panama brought many problems including yellow fever and malaria. The third stage in the canal project involved ____________ the Hay-Bunau-Varilla Treaty in 1903 from newly independent Panama. In 1904, the Americans began building a canal. They used more efficient ____________, built multiple-stage locks and invented a ____________ to combat malaria.
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.

Complete the correct sequence of events using information from the passage.

<table>
<thead>
<tr>
<th></th>
<th>Building the Panama Canal</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>1700-1800</strong></td>
<td>Several European nations designed some plans for a canal in Panama, but those were often abandoned.</td>
</tr>
<tr>
<td><strong>1880s</strong></td>
<td></td>
</tr>
<tr>
<td><strong>1903</strong></td>
<td></td>
</tr>
<tr>
<td><strong>1904</strong></td>
<td></td>
</tr>
<tr>
<td><strong>1914</strong></td>
<td></td>
</tr>
<tr>
<td><strong>1997</strong></td>
<td></td>
</tr>
</tbody>
</table>
The highlighted words are from the unit articles. Guess the meanings of the highlighted words. Then match the words with their definitions.

_____ Some of these diseases are transmitted by mosquitoes.
_____ Many companies pay huge sums to safely dispose of their waste products.
_____ Our small fishing boat undulated violently as the giant cruise ship passed.
_____ Our seats at the concert were fantastic. We were situated just to the left of the stage.

a. to place
b. to move in waves
c. to rid, to throw out
d. to pass on, to spread; to broadcast, to relay

_____ They are raising funds to be used to construct sanitation facilities.
_____ Irrigation canals are a major source of groundwater contamination.
_____ In one excavation, they uncovered over 250 artifacts from the ancient Choson Dynasty.
_____ The Erie Canal has been central to the shipping industry of the north-eastern United States since its construction in the early 19th century.

a. a man-made waterway
b. the process of watering agricultural land
c. the act of digging; a site of archeological digging
d. the process of keeping places clean and healthy

_____ Most urban roads have a painted yellow line bisecting them down the middle.
_____ You should eat more natural food, rather than junk that contains artificial flavors and colors.
_____ Students who wish to know more about earthquakes and volcanoes choose to study geology at university.
_____ The art critic praised his new collection of paintings as a monumental achievement.

a. to divide into two parts
b. man-made; fake
c. exceptionally great, high quality
d. the study of the earth’s crust
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 key words that will 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 caused the automobile industry to install seatbelts in their cars?

Ralph Nader, a consumer protection advocate, came to notoriety in the 1960s when he exposed flaws in American automobiles. Never before had a citizen been so vocal in helping the consumer. His studies on auto safety forced the government, which had been reluctant to enact safety standards, to make seatbelts mandatory in every car.

a. Nader forced the industry to pass new seat belt rules.

b. More people cared about driving safely in the 1960s.

c. The manufacturers pressured the government to install seat belts.

d. Nader forced the government to pass new seat belt rules.

Strategy to Answer

In this passage, the third sentence refers to pressure from Nader on the industry and government. The government is the only body that can pass safety rules, not the automobile industry. Hence, d is the answer.
The Internet: How it was Invented

Sputnik & ARPA
Surfing the web is a daily habit for over a billion inhabitants on planet Earth. Click on a link and you are taken to a shopping site, news site, personal blog or a friend’s homepage. The modern technology that makes the World Wide Web possible dates back more than 50 years. Back in 1957, when the Soviet Union launched Sputnik, the first satellite into space, the roots of today’s Internet emerged. The Cold War and military tensions of the time would usher in an entire new technological field. In response to Sputnik, the United States government set up the Advanced Research Projects Agency (ARPA) in 1958. The goal was to prevent the Soviet Union from surprising the U.S. in a nuclear attack. The U.S. wanted a technological edge in case war broke out. The repercussions of this decision would lead to developing the high-speed Internet used today.

Primitive Computers
Throughout the 1960s, ARPA scientists and engineers developed a rudimentary network whereby computers communicated with each other. There was no Windows or even a DOS operating system. At the time, computers were enormous primitive machines using vacuum tubes—not semiconductor chips used today. These massive computers filled entire rooms and had only a small fraction of the power and processing ability of today’s computers.

Packet Switching
One of the biggest breakthroughs occurred in 1969 when an engineer perfected packet switches, thereby speeding up the sending of data. The idea of ‘packet switching’ allowed information or data to be split up and sent along different routes via the telephone system. This information was then ‘reassembled’ on the end user’s computer. As personal computers came into being in the 1980s, people didn’t use online network systems since memory chips inside computers were so slow.
Linking Pages Together

Only when the first web browser called Mosaic was created in 1992 could people easily search information using key words online. However, individual websites were stand-alone sites. This meant that it wasn’t possible for users to effortlessly search for specific information within other individual websites or connect to related sites. Today, we are used to typing in search terms (i.e. endangered animals) and the Internet will search all articles and websites containing the phrase “endangered animals.” In the early 1990s, this was not possible until a British researcher Tim Berners-Lee developed a system called HTML (hypertext markup language). HTML was designed to let users navigate the Internet by linking pages. If you clicked on the underlined blue text on a webpage, it would ‘jump’ to a new website. Eventually, this system would be given the name the World Wide Web. Today, the Internet has forever changed how humans communicate. The constantly evolving Internet started a half century ago with a small silver satellite orbiting in space.

Glossary
- memory chip: a computer device used for memory and retrieving information
- hypertext: a computer system used for storing images and text on web pages

[ Reading Skill Questions ]

1. What was the effect of setting up the Advanced Research Projects Agency in 1958?
   a. It helped engineers make an American rocket system.
   b. It helped scientists develop a basic computer network.
   c. It gave the U.S. a technological edge in memory chips.
   d. It allowed millions of people to create their own websites.

2. How has the creation of HTML technology helped computer users?
   a. It has allowed users to conduct more business offline.
   b. It has given people more options on their punch cards.
   c. It has permitted people to surf the World Wide Web.
   d. It has changed the technology used by the Soviet Union in their new satellites.
Comprehension Questions

1. What is the passage mainly about?
   a. The history of primitive computers
   b. The process of how the Internet works
   c. The importance of developing packet switching
   d. The coming of the Internet and its development

2. Why was packet switching important?
   a. It saved ISPs a lot of research funds.
   b. It offered users a lot of community sites.
   c. It allowed data to travel quickly over networks.
   d. It made things easier for online users to post content.

3. What did the researcher Tim Berners-Lee invent?
   a. The HTML language that links pages
   b. The Internet protocols for ISP firms
   c. The rocket technology behind Sputnik
   d. The packet switches that link countries

4. What does ‘one of the biggest breakthroughs’ refer to in the 3rd paragraph?

Summary

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

In 1957, when the Soviet Union launched the first satellite into space, the roots of today’s ________ emerged. The U.S. government set up the ARPA agency in 1958 to prevent the Soviet Union from launching a(n) _________. ARPA scientists and engineers developed a network whereby computers ________ with each other. The idea of ‘__________’ allowed data to be split up and sent via the telephone system. Only when the first ________ called Mosaic was created in 1992 could people easily search information online. Finally, a system called ________ allowed users to navigate the Internet by ________ pages.
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. Use information from the passage that connects each effect with a cause.

The Soviet Union launched the first satellite, Sputnik, into space.

The Cold War and competition with Soviet Union in the 1960s led to the ARPA organization being created.
How Social Networking Sites Changed an Election

Social Networking Sites
Keeping in touch with one another is part of human nature. The Internet has allowed people to communicate with each other across cities and around the world. During the early years of the Internet, online content was very undeveloped and computer processing speeds were slow. Today, with high-speed Internet access and user-friendly websites, a new form of Internet site has emerged called social networking sites. These new sites like MySpace, Facebook, Flickr, YouTube and Twitter have fundamentally changed the way people communicate.

Viral Marketing
Nowadays, it is commonplace for young people to have their own personal homepage, updating it regularly. However, these social networking sites are much more than just a new way to stay in touch. These sites can help launch a new musician’s career, promote a specific product or provide a venue for a previously little known viewpoint. Occasionally, a popular product is talked about, commented on and shared with other friends on social networking sites. If a member posts an article from another website about a trendy new running shoe, all the member’s online friends can read that article too. Maybe the member films a short video of himself using the running shoe and posts it. This rapid spreading of online information at a self-replicating pace is referred to as viral marketing.

Changing an Election — Twitter Revolution
The most important impact of social networking sites is that they have made the world smaller and even influenced political elections. In June 2009, there was tremendous anticipation in Iran as presidential elections neared. Over 60 percent of the Iranian population is under the age of 28 and many were hoping for change. Social networking sites allowed young people to post comments and photos on sites and use text messaging on their cell phones encouraging support for their
candidate. When the former president of Iran won re-election and the reform candidate (supported by many young people) lost the election, the country erupted in chaos. Many people in Iran were suspicious of the election. They thought that their votes were not counted or that the election was rigged. Soon, they began to demonstrate on the streets of Tehran, the capital city. Organizing these demonstrations was done through the social networking site Twitter. By blogging and posting comments online, the messages on Twitter encouraged more people to demonstrate and demand a new election. The Iranian government, fearful that the demonstrations were gathering steam, ordered telecommunications companies to suppress Internet access to all social networking sites. They even blocked all text messaging services so that people could not organize more protests. These events are a powerful demonstration of how the Internet can influence politics.

Glossary

- **user-friendly** something that is very easy to use or operate by consumers
- **text messaging** the exchange of briefly written notes between cell phones
- **rig** to affect the outcome of something by intervening dishonestly

[Reading Skill Questions]

1. Which of the following is NOT a contributing cause that allows people to easily share information online?
   a. High-speed Internet access
   b. Various uploading tools
   c. A mature sense of citizenship
   d. More user-friendly websites

2. What was the effect of the social networking site Twitter on the Iranian election?
   a. It gave demonstrators an easy way to organize and protest.
   b. It allowed the Iranian government some time to beat up the protesters.
   c. It made it easy to post videos of the illegal demonstrations.
   d. It gave demonstrators the power to suppress Internet access.
Comprehension Questions

1. Why were the early days of the Internet not conducive to social networking sites?
   a. High-speed Internet access wasn’t that common.
   b. Users didn’t know how to upload files.
   c. People didn’t want to keep in touch.
   d. Internet used to have a lot of wrong information.

2. In the passage, self-replicating means _________________.
   a. posting many comments on friends’ websites
   b. copying viruses from one computer to another
   c. cloning marketing material and emailing it to others
   d. copying content over and over and spreading it quickly

3. Why were many young Iranians distrustful of the election?
   a. They thought comments on Twitter were controlled by Americans.
   b. Iranian social network sites reported that a new election would be held.
   c. The new Iranian president banned to use Internet.
   d. They thought that their votes were not counted accurately.

4. The phrase gathering steam in the passage probably means _________________.
   a. protests gaining more funds
   b. online comments becoming more common
   c. demonstrations gaining momentum
   d. the number of demonstrations slowing down

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

( slow organize post influence communicate access to social networking sites )

During the early years of the Internet, online content was undeveloped and computer processing speeds were ____________. Today, new forms of Internet sites called ____________ have fundamentally changed the way people ____________. The most important impact of social networking sites is they have made the world smaller and even ____________ political elections. In June 2009, many people protested against the elections in Iran. They used social networking sites to ____________ comments and photos and to ____________ demonstrations. The Iranian government, fearful of the demonstrations, blocked ____________ all social networking sites including text messaging services.
People have their own personal homepages, updating them regularly. Twitter is a website allowing people to post short messages from their cell phones.

Look at the graphic organizer below and fill in the blanks. Use information from the passage that connects each effect with a cause.
## 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>Highlighted Word</th>
<th>Definition</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sputnik</td>
<td>something that orbits a larger body</td>
</tr>
<tr>
<td>The processing of crude oil into gasoline</td>
<td>an important discovery or achievement</td>
</tr>
<tr>
<td>All these changes will have repercussions on the prolonged economic slump</td>
<td>influence, indirect effect, or result</td>
</tr>
<tr>
<td>General Electric announced that it has achieved a breakthrough in digital storage technology</td>
<td>when a series of actions is performed to gain a result</td>
</tr>
<tr>
<td>One of the staff ushered me to the door and opened it wide.</td>
<td>to bring or escort something or someone to a place</td>
</tr>
<tr>
<td>She said that she has only rudimentary knowledge of word-processing.</td>
<td>the early or partially developed stage of something</td>
</tr>
<tr>
<td>We are orbiting around the sun at the speed of one revolution per year.</td>
<td>to move around a central, fixed point in a circular motion</td>
</tr>
<tr>
<td>Every day, thousands of people upload videos to the Internet onto websites like YouTube and Facebook.</td>
<td>to put media on the Internet</td>
</tr>
<tr>
<td>Before a cell divides, its DNA is replicated.</td>
<td>to copy or make an identical version of something</td>
</tr>
<tr>
<td>This website gives useful information on how to launch a business.</td>
<td>to give a start, to set going</td>
</tr>
<tr>
<td>The Russian government used military force to suppress a rebellion.</td>
<td>to manipulate</td>
</tr>
<tr>
<td>The United Nations often sends delegates to a country which is having an election to make sure it isn’t rigged.</td>
<td>to put an end to, to stop the activities of</td>
</tr>
</tbody>
</table>
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. Which comparative sentence is true about the different automobile manufacturers?

For decades, American automobiles dominated world markets. However, by the late 1980s, Honda, Toyota and Nissan had gained a reputation for quality and reliability. In the 1970s, Japanese auto imports were laughed at as the cars were small, cheap and flimsy. Now Korean auto manufacturers are pursuing the same path based on quality and price competitiveness.

a. Cars made by American automobile manufacturers were too expensive in the 1980s.
b. Honda, Toyota and Nissan pursued a reputation of reliability, but failed in the 1980s.
c. Korean manufacturers are now copying the Japanese strategy of affordable pricing.
d. The quality of the Japanese manufacturers was below that of the Koreans in the 1970s.

Strategy to Answer

In this passage, focus on the comparative words “however, now, the same.” Answer c is correct because it mentions Korean manufacturer’s attempts in the present. The time reference is correct, whereas in other options they are not.
How Flus Infect Humans

Mutating Virus
Over the past century, there have been three major Influenza A outbreaks. The first was the Spanish flu in 1918, then the Asian flu in 1957 and a third in Hong Kong in 1968–69. Each of these involved the flu virus slowly changing or mutating. The flu is a respiratory illness caused by the influenza virus and is different from the common cold. The virus attaches itself to cells within a person’s respiratory tract, killing those healthy cells. Most importantly, the flu virus replicates itself, and spreads far and wide throughout the body. With each of three new forms of influenza, it became harder for scientists and health authorities to adequately combat the virus. Existing vaccines would not work.

Swine Flu
In early 2009, a new type of virus appeared. The H1N1 virus originated in a strain of flu that lived in pigs, hence its nickname ‘swine flu.’ Compared to the other viruses before, this was a unique combination of several known viruses. Health authorities became alarmed when a four-year old boy in Mexico showed fever symptoms and became sick with the H1N1 flu virus as it is officially known. However, the Mexican government did not advise the World Health Organization (WHO) for eight days. By that time, people had traveled across the Mexico–United States border and people had soon contracted the swine flu in California and Texas. Within several weeks, 159 people had died in Mexico alone.

Transmission
This pandemic outbreak was much different than the avian flu that hit Asia in 2003. Unlike the avian flu, the main transmitter of this new virus was humans, not animals or birds. The contagious strain that originated in Mexico is a human-to-human strain. In other words, people can transmit the virus to each other without being near an infected pig. The proteins within the H1N1 virus are quite similar to...
those in the regular flu that occurs each winter. Six genes found in the H1N1/swine flu were similar to genes found in bird flu, human flu and older strains of the swine flu virus. Spreading occurred through human-to-human contact like coughing and sneezing. By August 2009, 816 deaths had been reported worldwide in 76 countries.

A Bad Name
The Centers for Disease Control in Atlanta, Georgia has some of the best epidemiologists in the world who work with some of the most infectious diseases on the planet. The CDC shortened the name of the H1N1 flu to 'swine flu.' But many experts argued that it was inappropriate to call it the swine flu since people cannot contract the H1N1 virus by eating pork. Despite news reports to the contrary, commodity prices for pork nosedived and farmers’ incomes were hurt as people stopped eating pork as a safety measure.

Glossary
- epidemiologist a scientist who studies the cause of diseases
- nosedive to experience a sudden fall in price, amount or quality

Reading Skill Questions

1. In what ways did the avian flu and H1N1 swine flu differ?
   a. The H1N1 virus was transmitted by humans, not animals or birds.
   b. Each virus killed bugs that ate their valuable crops.
   c. More humans died from the H1N1 virus than birds died of the avian flu.
   d. Both types of flu virus had poorly thought-out nicknames.

2. According to the passage, which of the following is a similarity between the H1N1 flu and regular flu?
   a. Both viruses are caused by an influenza virus.
   b. Both viruses cause severe symptoms in humans.
   c. Both viruses share similar proteins.
   d. Both viruses are being researched by South Korean scientists.
[Comprehension Questions]

1. What was similar about the three flu viruses in the 20th century?
   a. Each strain of virus infected people from Mexico.
   b. More people transmitted the virus without knowing it.
   c. Each strain of virus was a new mutated version.
   d. It took shorter to develop a workable vaccine.

2. What happened when each new disease outbreak occurred?
   a. Commodity prices declined more and more with each new outbreak.
   b. Anti-viral drugs became more expensive with each new virus.
   c. New viruses were more resistant and immune to old vaccines.
   d. More face masks were needed to protect the public.

3. Which of the following is mentioned in the passage?
   a. The effects of eating contaminated meat
   b. The transmitter of the viruses
   c. Previous mistakes made by the WHO
   d. An appropriate cure for the H1N1 virus

4. Which of the following is NOT true?
   a. The origin of H1N1 virus was a strain of flu living in pigs.
   b. H1N1 virus spreads through human-to-human contact.
   c. The H1N1 virus is also called swine flu.
   d. The first outbreak of the H1N1 virus was reported in the southern Africa.

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

( flu influenza replicates respiratory transmitter mutating )

During the 20th century, there have been three major flu outbreaks. Each of these involved the influenza virus slowly changing or mutating. The flu is a respiratory illness caused by the influenza virus. Most importantly, the flu virus itself. In early 2009, a new type of virus, the swine virus, appeared. This was a unique combination of several known viruses. The main transmitter of the virus was humans, not animals or birds. A four-year old boy in Mexico became sick with the H1N1 flu virus. By August 2009, hundreds of people died.
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.
Pandemics

A pandemic is when a virus or strain of flu spreads worldwide, infecting people from many continents. Normally, a large outbreak of a virus is called an epidemic. The term pandemic originates from the Greek words pan (all) and demos (people). When diseases spread from person to person, it is almost impossible to stop a disease from spreading without the work of medical experts. Unlike other pandemics such as the Black Death plague in the 1300s (which killed tens of millions) or cholera epidemics in the 1800s, today’s pandemics are relatively more contained, resulting in fewer deaths. This is largely due to improved sanitary conditions and medical advancements like penicillin and vaccines.

Spanish Flu

One of the worst pandemics ever was the Great Influenza (also called the Spanish flu) in 1918. It swept through Europe, Asia, the Americas, and Africa, becoming a true global epidemic. The virus killed an estimated 50 to 100 million people. This particular influenza strain was easily transported to other countries when troops returned to their home countries after World War One. Scientists think that the first strain of the Spanish flu was actually a form of avian flu. Although the Spanish flu had its origins in Kansas, not Spain, it got its name from the 8 million people who died in Spain.

Avian Flu

Compared to the Spanish flu, more recent pandemic outbreaks have been milder. The avian or bird flu pandemic is one good example. Its medical name is the H5N1 virus and it caused an economic shockwave throughout Asia in 1997 and again from 2003~2007. Over 200 people died from avian flu and over 100 million infected birds had to be killed. When the avian or H5N1 virus first appeared in Hong Kong in 1997, the government reacted swiftly. In three days, the Hong Kong government destroyed over 1.5 million poultry birds. What was unique
about the avian flu in Hong Kong was that this strain jumped from birds to humans. Due to agricultural practices, many rural families in countries such as China, Indonesia, Vietnam and Cambodia raise birds in their backyards, increasing contact between the two species.

Recurrence in Vietnam
In 2003, the H5N1 virus reappeared in Vietnam, resulting in 42 deaths, mostly those who came into contact with infected birds. Since it is common practice to use infected poultry manure as fertilizer or feed, other birds soon became infected with the avian H5N1 flu virus. Governments had to destroy millions of birds since the virus spread through poultry and poultry products. The economic impact of the chicken industry sent commodity prices for poultry tumbling. Since this latest outbreak, governments have spent billions of dollars researching a vaccine and trying to educate the public about safe farming practices. The fear is that viruses keep mutating into new forms that humans don’t have protection against.

Glossary
- strain a specific type of organism that has certain characteristics
- cholera a deadly infectious disease that attacks the intestine
- manure excrement from animals that is often used as fertilizer

[Reading Skill Questions]

1. What is one major difference between pandemics today and those in previous centuries?
   a. The Spanish flu hasn’t occurred anywhere else since 1900.
   b. Pandemics no longer kill 50 to 100 million people worldwide.
   c. Farmers now take anti-viral medicine when handling poultry.
   d. Large amounts of people didn’t live in cities before 1900.

2. What was unique about the avian flu in Hong Kong?
   a. Its strain jumped from birds to humans.
   b. The stock market was hardly affected in Hong Kong.
   c. Governments didn’t know how to react.
   d. It spread more slowly than any other animal related viruses.
Comprehension Questions

1. What does the term pandemic mean?

2. How do you think the Spanish flu got from Kansas to Spain?
   a. By shipping infected chickens on troop ships.
   b. By troops going to Europe to fight in World War One.
   c. During a war between the U.S. and Spain.
   d. Through contact with the enemy during the Industrial Revolution.

3. Which phrase is closest in meaning to common practice mentioned in the passage?
   a. Poultry prices tumbled very frequently.
   b. Manure and fertilizer use occurred regularly.
   c. There was universal agreement on poultry issues.
   d. Government procedures to research vaccines were common.

4. Why did the virus spread so quickly in Vietnam?
   a. There are very few hospitals in Vietnam.
   b. The government didn’t order chickens to be killed quickly enough.
   c. Humans infected chickens with the virus.
   d. Farmers used infected poultry manure to feed chickens.

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

( milder humans vaccine infecting pandemic avian flu poultry birds )

A(n) ___________ is when a disease spreads worldwide, ___________ people from many continents. The Spanish flu in 1918 killed an estimated 50 to 100 million people. Compared to the Spanish flu, more recent pandemic outbreaks have been ___________. When the H5N1 virus first appeared in Hong Kong in 1997, the government destroyed over 1.5 million ___________. What was unique about the strain of ___________ in Hong Kong was that this strain jumped from birds to ___________. In 2003, the H5N1 virus reappeared in Vietnam. Since this latest outbreak, governments have spent billions of dollars researching a(n) ___________.

Property of The ChoiceMaker Korea Co.
Look at the graphic organizer below and fill in the blanks to compare and contrast the information.

<table>
<thead>
<tr>
<th></th>
<th>Black Plague</th>
<th>Spanish Flu</th>
<th>Avian Flu (=H5N1)</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>How the Virus Spread</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td><strong>Effect of Virus</strong></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

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.
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>Word</th>
<th>Definition</th>
</tr>
</thead>
<tbody>
<tr>
<td>contracted</td>
<td>to catch some disease</td>
</tr>
<tr>
<td>combat</td>
<td>to fight against something</td>
</tr>
<tr>
<td>mutate</td>
<td>to change in genes that change the characteristics of something</td>
</tr>
<tr>
<td>inappropriate</td>
<td>not suitable, not proper</td>
</tr>
<tr>
<td>authorities</td>
<td>persons of power</td>
</tr>
<tr>
<td>commodities</td>
<td>an item that is traded, bought and sold</td>
</tr>
<tr>
<td>infectious</td>
<td>a form of a disease or virus</td>
</tr>
<tr>
<td>vaccine</td>
<td>medicine used to prevent a disease or virus</td>
</tr>
<tr>
<td>dung</td>
<td>animal dung used to fertilize</td>
</tr>
<tr>
<td>safety measure</td>
<td>something done to ensure safety</td>
</tr>
<tr>
<td>outbreak</td>
<td>a sudden increase; outburst</td>
</tr>
</tbody>
</table>

Last week the boy contracted the flu from a classmate at school.

My grandfather had to combat several serious illnesses in his old age.

Some researchers fear that the virus could mutate into something more deadly.

This movie is very inappropriate for young children. It has many bad words and a lot of violence.

If you break the law, you will be in trouble with the authorities.

This is a good place to buy household commodities and utensils.

Pandemic influenza is a worldwide outbreak of a new influenza virus.

The radio station has a very powerful transmitter. You can listen to their programs for hundreds of kilometers in every direction.

Cattle manure is a major contributor to greenhouse gases.

Not all strains of the influenza virus are considered severe.

The twentieth century can also be called the age of the vaccine.

They began putting seatbelts in all school buses as a safety measure.

There has not been a major outbreak of the Ebola virus since the 1990s.
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 can be inferred from the passage about the future of the environment?

Many scientific experts are skeptical that the environment can be saved given current rates of industrial and vehicle pollution. They believe that new alternative energy sources and techniques to clean up our environment will not be developed soon enough. Fundamental changes have to be implemented on a large enough scale to clean up the environment.

a. The future of alternative energy needs more funding.
b. New techniques to clean up our environment already exist.
c. The environment will suffer disastrous consequences.
d. Scientific experts have not supported their beliefs with enough evidence.

Strategy to Answer

In this passage, the third sentence refers to “consequences” relating to the environment. This relates to what could happen if the experts’ predictions come true about not cleaning up the environment. Hence, the answer is c.
How Camouflage Works

Camouflage Basics
Adapting to one’s environment is an essential feature for an animal’s survival. Camouflage is commonly used by plants and animals to blend into their surroundings. Most animals use camouflage to hide from others. Larger animals like tigers, lions, and cheetahs use camouflage to conceal themselves while sneaking up on their prey. Zebras, rabbits and many reptile species like lizards and snakes use camouflage to avoid detection by animals preying on them. For example, when running together in a herd, the pattern of stripes on a zebra makes it hard for a lion to discern an individual zebra. In the following sections several camouflage adaptations are discussed.

Pigments and Changing Colors
Mammals and birds cannot change the color of their skin, feathers or fur. However, some reptiles and fish are able to change their pigmentation (skin cell color). Some animal species like the chameleon can change their color at will to match their surroundings. This is referred to as background adaptation. If approached by a potential attacker, the chameleon will change its skin color to match whatever it is standing on. This color can match a tree branch, leaf, rock or even soil sample. These changes are part of the chameleon’s physiology. Although most animals have only one color, some like the Arctic fox actually change color according to the season. It grows a new fur coat of a lighter color in the winter. This hormone change in the fox is actually a chemical reaction to the amount of daylight or changes in temperature.

Hues and Hiding
A second type of camouflage involves hiding amongst similar color backgrounds. This could be a green grasshopper perching on a green leaf. It also could be a rabbit or a sand beetle lying on the sand in the Sahara desert. In this case, the animal does not change color—it merely hides amongst the similar hues of the ground or vegetation. This type of camouflage is called cryptic coloration. In the
aquatic world, the tartan hawkfish, with its brightly colored pink and purple stripes, blends into the surrounding starfish and sea anenomoes.

**Countershading**
Countershading is a third type of camouflage technique where an animal has two opposite shades or colors on its body. The most common example of countershading occurs in the shark family. On the top of many sharks, called the dorsal area, the skin color is a dark blue. If you are underneath the shark, looking upwards at its underbelly, you will see a lighter whitish color. Other animals that employ countershading include the white-tailed deer, pronghorn antelope and a variety of squirrels. All these camouflage techniques are key to blending into one’s surroundings and surviving.

**Glossary**
- **pigmentation** the natural color of animal or plant tissue
- **physiology** a branch of biology that deals with inner workings of living things
- **hormone** a chemical in the body that regulates the growth of a tissue or organs

**Reading Skill Questions**

1. What can be inferred about the rabbit or sand beetle in the Sahara Desert?
   a. They might have the sandy colored body.
   b. Skin cells on them change the balance in hormones.
   c. Their body temperature changes to the amount of daylight.
   d. Their hormone changes happen when the weather warms up.

2. You can guess from the passage that sharks benefit from countershading because ________________.
   a. it allows them to see the surface more easily
   b. they can catch less food if they go undetected
   c. they need to match the color of surrounding fish
   d. they can blend in with similar colored backgrounds
1 What is the main purpose of camouflage?

2 Which of the following is true about the chameleon?
   a. It changes its fur each summer and winter.
   b. It grows new skin cells when it feels threatened.
   c. It changes its skin color to survive.
   d. It uses branches to change its pigmentation.

3 What is the closest in meaning to the word perching on used in the passage?
   a. resting on
   b. binding in
   c. eating up
   d. living on

4 What happens to animals that use cryptic coloring?
   a. They alter the type of skin pigmentation.
   b. They hide amongst similar matching surroundings.
   c. They blend into their potential attackers to survive.
   d. They change their appearance to match the color of their prey.

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

( change camouflage surroundings countershading adapting survival hide from )

_______________ to one’s environment is one of the most essential features for an animal’s _______. Most animals use camouflage to _________ others. Animals and birds cannot change the color of their skin, feather, or fur. However, some species like the chameleon can _________ their color at will to match their _______. This is referred to as background adaptation. A second type of _________ involves hiding amongst similar color backgrounds. _________ is a third type of camouflage technique where an animal has two opposite shades or colors on its body.
Look at the graphic organizer below and fill in the blanks. Match each inference using information from the passage.

<table>
<thead>
<tr>
<th>Text Info</th>
<th>Potential Situation</th>
<th>Inference</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Camouflage</strong></td>
<td>When a green lizard masks itself behind a bunch of leaves ...</td>
<td>... the lizard can go undetected if a predator appears.</td>
</tr>
<tr>
<td>Using camouflage allows a</td>
<td></td>
<td></td>
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<tr>
<td>creature or plant to conceal its location.</td>
<td></td>
<td></td>
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<tr>
<td><strong>Changing Colors</strong></td>
<td></td>
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<td></td>
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<tr>
<td><strong>Countershading</strong></td>
<td></td>
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</tr>
</tbody>
</table>
Adaptation

In the biological world, the term adaptation refers to the process where an animal, bird, insect or other living thing becomes better suited to its surrounding environment. In addition to an animal changing its coloring (camouflage), there are two main ways for a given species to adapt over time. These include changing the size or shape of its body (physical adaptation), and behavioral changes (behavioral adaptation). One of the simplest examples of physical adaptation is the webbed feet of ducks that are specifically adapted to help the duck swim better through water. Animals that cannot adjust or adapt to changes in their environment will soon die out. That leaves the “strongest” to survive. This was a central part of Charles Darwin’s theory of evolution.

Physical Adaptation

Physical adaptation is an evolutionary process allowing an animal or organism to survive, reproduce or succeed in living in a specific habitat. On the plains of Africa, the cheetah’s physical adaptation allows it to better hunt and kill its prey. Cheetahs have a very light frame, long back legs and powerful thigh muscles. With flexible backbones, cheetahs have a large range of motion that allows them to bring their back legs far forward before pushing themselves forward. In the Sahara desert, one of the most inhospitable environments with daytime temperatures easily reaching 50 degrees Celsius and higher, insects and reptiles use physical adaptation to deal with extreme heat. Finding water is a major chore for animals and insects in the desert. Most insect species have a waxy covering on their bodies to reduce moisture loss. The Sahara scorpions use the liquids from their prey to survive, so they rarely drink water. Many animals are quite small, so as not to exert too much energy.

Adapting to the Environment

One of the most interesting adaptations among large animals is that of the addax, a member of the antelope family that lives in the Sahara desert. It is able to go
without water for several years, needing only a basic amount of fluids found in plants and morning dew. To find shelter from the heat and sandstorms, the addax digs holes in the sand dunes with its large, flat hooves. Additionally, the flat hooves are ideal when walking on steep sand dunes.

**Behavioral Adaptation**

Migration, where birds fly south to a warmer climate, is perhaps the best known type of behavioral adaptation. In other cases of adaptation, many insects in the desert burrow in the ground during daytime to cope with the extreme temperatures, only coming out at night to eat. This is similar to the behavior of bats that seek out cool dark places to sleep or rest. In the harshness of the Sahara, the scarab beetle, known for its burgundy, copper, and mint green coloring, collects dung from gazelles and lays its eggs in it, safe from the elements.

**Glossary**

- **dew** moisture from the air that collects on outdoor surfaces
- **burgundy** a dark red or reddish brown color similar to red wine
- **dung** the excrement or waste from animals, birds and insects

### Reading Skill Questions

1. You can infer from the passage that large animals in the desert will

   a. be easier for prey to find them  
   b. use too much water and energy, and find it hard to survive  
   c. sweat too much and attract its prey  
   d. will develop a keen sense of smell to find water

2. What can be inferred about the reason the scarab beetle buries its eggs?

   a. To hide the eggs from the male scarab beetle.  
   b. To add nutrients from the dung necessary for baby beetles.  
   c. To protect the eggs from Sahara winds or intruders.  
   d. Most gazelle dung is found near juicy berries in the desert.
Comprehension Questions

1 The main purpose of the passage is _________________.
   a. to show how species have changed to survive
   b. to encourage more interest in studying biology
   c. to explain what the best adaptation strategies are
   d. to decide which species are most adaptable to the environment

2 Which of the following is true about the insects in the Sahara desert?
   a. They have sharp teeth to pierce tough desert plants.
   b. They have burgundy colored horns to attract a mate.
   c. They have made coloring adaptations to fool its prey.
   d. They have made physical adaptations to deal with the weather.

3 Which is an example of physical adaptation?
   a. Ducks have the webbed feet.
   b. Birds fly south to a warmer climate in winter.
   c. Scarab beetles lay their eggs in dung from gazelles.
   d. Bats seek out cool dark places to sleep and rest.

4 Which is an example of behavioral adaptation?
   a. Chameleons change its color.
   b. Lizards regenerate its broken tail.
   c. Cheetahs hunt and kill their prey.
   d. Insects in the desert burrow in the ground to cope with the temperature during daytime.

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

( physical       changing       adaptation       behavioral       seek out       moisture loss )

The term ____________ refers to the process where living creatures become better suited to its surrounding environment. This includes ____________ the size or shape of its body (___________ adaptation), and behavioral changes (behavioral adaptation). Cheetahs have a very light frame and powerful thigh muscles and some insects in the desert have small bodies and use a waxy covering on their bodies to reduce _____________. Addax uses its large, flat hooves to burrow shelter in the sand dunes. ____________ adaptation involves techniques like bats that ____________ cool dark places to sleep or rest.
Adaptation in the Animal Kingdom
Adaptation refers to processes where an animal, bird, or insect becomes better suited to its surrounding environment.

Adapting to Environment
The addax lives in the Sahara desert and is able to go without water for several years, just drinking fluids found in plants.

Physical Adaptation
Most insect species in the desert have a waxy covering on their bodies.
Many animals in the desert are quite small.

Behavioral Adaptation
In order to protect its eggs, the scarab beetle lays its eggs in animal dung.

<table>
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</tr>
</thead>
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<td>In order to protect its eggs, the scarab beetle lays its eggs in animal dung.</td>
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</table>
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<table>
<thead>
<tr>
<th>Highlighted Words</th>
<th>Definition</th>
</tr>
</thead>
<tbody>
<tr>
<td>I like the composition of your photograph, but I find the hue bothersome.</td>
<td>a. color, tint</td>
</tr>
<tr>
<td>He has very little potential of winning the state lottery given the mathematical odds.</td>
<td>b. possibility; unrealized talent, ability or capacity</td>
</tr>
<tr>
<td>The whale’s underbelly had many remoras, a kind of sea leech that attaches itself to fish.</td>
<td>c. the lowest part; dark and dirty section</td>
</tr>
<tr>
<td>Scientists say that the surviving species are almost perfectly adapted to the new environment.</td>
<td>d. to change to one’s environment</td>
</tr>
<tr>
<td>Evil geniuses enjoy preying on the weak and helpless.</td>
<td>a. to hunt or catch as prey; to be harmful or destructive</td>
</tr>
<tr>
<td>Check out the sparrow perched at the top of that telephone pole.</td>
<td>b. to hide</td>
</tr>
<tr>
<td>We will have to burrow underneath forty meters of open ground to escape the prison.</td>
<td>c. to sit atop a high point</td>
</tr>
<tr>
<td>If you want to work in the public sector, you will have to wear long-sleeve shirts to conceal your tattoos.</td>
<td>d. to dig</td>
</tr>
<tr>
<td>This is the habitat for the Black Hawk.</td>
<td>a. marine, related to water</td>
</tr>
<tr>
<td>Did you know that the polar bear is an aquatic animal?</td>
<td>b. not conducive to comfortable living</td>
</tr>
<tr>
<td>The behavioral habits of the red squirrel interested the natural scientist.</td>
<td>c. the environment and natural conditions where an animal or plant lives</td>
</tr>
<tr>
<td>The arctic is extremely inhospitable. It is one of the harshest environments on the earth.</td>
<td>d. having to do with how a person or animal behaves</td>
</tr>
</tbody>
</table>
To analyze both language and vocabulary, look closely at how the words, phrases and sentence structure are used. Understand what context they are used in in the passage and what the overall meaning is. Then you can understand the different ways ideas are expressed.

Q. What is the best description for the phrase blessing in disguise?

When oil surpassed the $150 a barrel mark in the summer of 2008, there was a newfound sense of urgency. Many environmentalists predicted that a future of high petroleum prices would be a blessing in disguise. The higher the cost of oil, they argued, the more feasible alternative energy will be.

Environmentalists will start to bless alternative energy costs of $150 a barrel.

b. Higher oil prices are disguised from consumers who want to drive in the summer.

c. Developing alternative energy would become less cost efficient.

d. Although high oil prices are bad, they will encourage research into alternative energy.

Strategy to Answer

In this passage, “blessing in disguise” means a fortunate occurrence found during an unfortunate event (the $150 a barrel price of oil). So if oil is more expensive, people will be encouraged to seek cheaper forms of transportation like electric or hybrid cars. Also, companies are more likely to be encouraged to invest in alternative energy when oil prices are high. This makes answer d the best answer.
How Did the Universe Begin?  

**Big Bang Theory**

Mankind has always been interested in explaining the birth of the universe. Although the Big Bang theory suggests an explosion as in an atomic bomb, this is misleading. The expansion of the universe lies at the center of the Big Bang theory, not any particular explosion. The theory postulates that the universe is constantly expanding outward from a central point; hence it must have been much more contracted at some earlier point in time. Incredible amounts of mass and energy were propelled outward, gradually cooling down and becoming less dense. It is these dense particles that ended up forming planets, asteroids, stars and galaxies. From the original Big Bang, gravitational forces formed, allowing for the formation of planets and moons. The Big Bang theory, widely acknowledged in the scientific community, has come closest to explaining the origins of the universe. However, since the Big Bang theory is a theory, it cannot be fully proven. Only in the early years of the 20th century have astronomers and cosmologists been able to begin to confirm the Big Bang theory using new technology.

**Measuring Space**

In 1924, a famous astronomer Edwin Hubble devised what is known as the cosmic distance ladder. Using a telescope, Hubble estimated distances to various galaxies from Earth. He used Albert Einstein’s theory of relativity to calculate the age of the universe. Based on measurements of radiation waves in the universe, scientists have been able to extrapolate backwards how the universe began. Using large machines in physics laboratories called particle accelerators, scientists have recreated conditions of atoms or matter exploding apart at high velocities. Particle accelerators smash atoms and electrons together at incredible speeds. By calculating how fast a particular star or galaxy is expanding away from Earth, scientists have learned more about the origins of the Big Bang.
**Hubble Telescope**

The Hubble Space Telescope, launched in 1990 by the Space Shuttle, was instrumental in furthering the Big Bang theory. This new space-based telescope that orbits Earth gave astronomers clearer images of deep space. The greatest achievement from launching the Hubble Telescope is being able to confirm that the Earth is approximately 13.73 billion years old. Cosmologists now have much more detailed measurements of the different stages of the Big Bang theory.

**Problems with the Theory**

The earliest phase in the Big Bang theory is unknown. How matter and energy were created out of nothing is still a mystery. Due to incomplete scientific evidence about what existed before the big bang, those who believe the Creation theory (where God created the universe in six days) think that is the best theory explaining the origins of the universe. To this day, scientists do not claim that the Big Bang demonstrates how the universe began, just how it evolved, spreading matter out into planets and stars.

**Glossary**

- **gravitational** relating to the pull or force of gravity upon an object that has mass
- **cosmologist** a person who studies the origin of the stars and galaxies
- **relativity** a physics theory describing the relationship of matter, time and space

**Reading Skill Questions**

1. **How is the term postulate used in the passage?**
   - a. To disprove an existing theory of the universe
   - b. To give a weakly supported theory of the universe
   - c. To illustrate an unlikely explanation about the universe’s explosion
   - d. To suggest a possible explanation about an expanding universe

2. **What is the closest meaning to extrapolate backwards used in the passage?**
   - a. To determine something in advance
   - b. To measure sound waves by counting onwards
   - c. To guess at the meaning of universe’s origins
   - d. To discover something by measuring in reverse
Comprehension Questions

1. What happened after the initial explosion of mass and energy?
   a. It created a situation called the Hubble Theory.
   b. It formed icy particles similar to asteroids.
   c. It sped up and gathered together in space.
   d. It cooled down and became less dense.

2. What fields are most likely associated with a cosmologist?
   a. Radio waves and atomic accelerators
   b. Geological forces on Earth and the moon
   c. Galaxies, stars, planets and the universe
   d. Measuring different stages of the theory of relativity

3. What theory did Hubble use to calculate the age of the universe?
   ➡️

4. Which of the following is NOT true?
   a. The Earth is approximately 14 billion years old.
   b. The astronomer Edwin Hubble invented the cosmic distance ladder.
   c. In the early 19th century, scientists discovered how the universe began.
   d. The Big Bang theory suggests that the universe is expanding.

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

( Big Bang expanding evolved universe recreated exploding astronomers )

Mankind has always been interested in explaining the ‘birth of the __________.’ The __________ theory postulates that the universe is constantly __________ outward from a central point. Incredible amounts of mass and energy were propelled outward, cooling down and becoming less dense. In the early 20th century __________ and cosmologists have been able to perfect the Big Bang theory. Using particle accelerators in physics laboratories, scientists have __________ conditions of atoms or matter __________ apart. To this day, scientists do not claim that the Big Bang demonstrates how the universe began, just how it __________.
**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.

1. **Answer the questions.**

   **What process does the term “the birth of the universe” refers to as used in paragraph 1?**
   a. The first moment in time just as stars began to create planets in the universe.
   b. The first moment in time when material started to form in the universe.
   c. When hot material was propelled into the universe, creating God’s birth.
   d. When large particle physics machines recreated circumstances at the universe’s beginning.

   **What is the point of “smash atoms and electrons together” as mentioned in paragraph 2?**
   a. To recreate conditions known in the universe when matter began to spread quickly.
   b. To recreate conditions in the universe when the first planets began to implode.
   c. To simulate conditions when the first matter in the universe began to form and spread out.
   d. To understand when particles in the universe began to accelerate at the speed of sound.

2. **Fill in the context clues chart for the target words.**

   Tip: You can use context clues to find the meaning of these words. Context clues are tips in the nearby words or sentences that can help you figure out what an unknown word means.

<table>
<thead>
<tr>
<th>Target Word</th>
<th>propelled</th>
<th>theory</th>
<th>instrumental</th>
</tr>
</thead>
<tbody>
<tr>
<td>Word Clues</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Meaning of Word</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Teaching Creationism in the Classroom

**Education Controversy**

In the United States, there is an educational controversy in science classrooms over how to teach the origins of the universe (Big Bang theory) and the evolution of life on Earth. This debate, referred to as the Creation-Evolution debate, pits a religious interpretation against the theories and knowledge of science. A growing group of fundamentalist Christian worshippers in the United States believe in a literal interpretation of the Bible. This interpretation of the Bible, called Creation theory or Creationism, maintains that a superior being like God created all life and matter, both on Earth and in the Universe. This is contrary to the scientifically based Big Bang theory. The Book of Genesis in the Bible states that God created Earth and man in six days. Some religious scholars refer to this moment as “a day without yesterday.” Proponents of Creationism argue that the Big Bang theory should be taught in high school textbooks with an explanation of God’s possible role in the creation of the universe—not just from a scientific perspective.

**Court Cases and Textbooks**

The controversy over the Creation-Evolution debate went to court in 1914, when a Tennessee man was prosecuted by a pro-Creationist state government for teaching Evolution in the classroom. The court case was nicknamed the Scopes Monkey Trial, a reference to the theory of Charles Darwin, the naturalist and biologist. Darwin wrote about natural selection and how man evolved from apes. The Tennessee case was the first of many cases where teaching the Big Bang and Evolution theory would result in legal arguments. In 1961, almost a half century later, the first major Creationism textbook was published in an attempt to get the Creationism argument accepted into classrooms. It refuted the Big Bang theory, stating that the Earth was created in six days and that humans lived at the same time as dinosaurs. This contravenes scientific findings of fossils and carbon dating that states humans did not live more than 200,000 years ago.
Intelligent Design

Although some school districts adopted the Creation curriculum, most states in the U.S. still taught the Big Bang theory and Evolution. In the 1990s, several Christian organizations with the support of right-wing politicians, devised another so-called scientific theory called Intelligent Design. The theory of intelligent design states that certain features of the physical universe and of biological living things are best explained by an ‘intelligent cause.’ The intelligent cause is supposed to be God. By creating Intelligent Design as a theory similar to the Big Bang, they thought it would gain acceptance into science textbooks. They would no longer challenge the Big Bang theory; just offer a competing “scientific” theory. Now, the Creationism-Evolution debate is growing more polarized as political parties have taken sides in the debate. Only the students are confused.

Glossary
- fundamentalist someone who takes an extreme view on something
- naturalist a scientist who studies nature and biology
- proponent a person or group that argues for a given cause
- contravene to disobey or disregard something

[ Reading Skill Questions ]

1. What does a day without yesterday allude to in the passage?
   a. The beginning point in time when matter was spiraling inward.
   b. The first few days before God created the Earth.
   c. The beginning point in time when galaxies were spiraling outward.
   d. The first point in time before which there was no history.

2. Why does the writer use the phrase so-called to refer to the Intelligent Design theory?
   a. Christian scientists are still refining the theory and collecting evidence.
   b. It is not a scientifically recognized theory.
   c. Most scientists have not read journal articles on the subject.
   d. The U.S. Supreme Court ruled it was not scientific enough.
1 Which is NOT true about the Creation-Evolution debate?
   a. Creationism refers to a superior being creating all matter and life.
   b. Natural selection is an evolutionary process designed by intelligent people.
   c. A teacher was prosecuted in Tennessee for teaching Evolution.
   d. God has a possible role in the universe’s creation.

2 Which one of the following points is related to the beliefs of Creationists?
   a. The Earth and dinosaurs were created 200,000 years ago.
   b. Both Intelligent Design and Big Bang theories were stated in the Bible.
   c. Charles Darwin had many valid theories about the universe.
   d. The Earth was created in six days by a superior being.

3 How did Christian organizations teach the origins of the universe in the 1990s?
   a. They found new carbon dating techniques.
   b. They sent a satellite into space to explore old galaxies.
   c. They supported the idea of Intelligent Design.
   d. They started publishing new textbooks.

4 Which of the following is true about the Intelligent Design?
   a. It didn’t gain support of the political parties.
   b. It tried to disprove the Big Bang theory.
   c. Most states in the U.S. started to teach the Intelligent Design.
   d. It claims that existence of life is best explained by an intelligent cause.

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

( God origins science religious evolution creationists Intelligent Design )
In the U.S., there is an educational controversy in classrooms over how to teach the _______ of the universe and the ________ of life. This debate, referred to as the Creation-Evolution debate, pits a(n) ________ interpretation against ________. ________ argue that the Big Bang theory should be taught in high school textbooks with an explanation of God’s possible role. A Tennessee court case was the first of many legal arguments. In the 1990s, several Christian organizations devised another so-called scientific theory called ________. It states that certain features of the physical universe and of biological living things are best explained by an ‘intelligent cause’—that of ________. 
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 How might the word “nicknamed” have been chosen for the Scopes Monkey Trial in 1914?
   a. The Tennessee man owned a lot of monkeys which he used in his science class.
   b. The monkeys represented the anti-Creationism argument that supported Evolution.
   c. The monkeys represented Charles Darwin’s work on how apes evolved from man.
   d. The monkeys were symbolic of the Creationist theory put forth by God.

2 Fill in the context clues chart for the target words.
   Tip: You can use context clues to find the meaning of these words. Context clues are tips in the nearby words or sentences that can help you figure out what an unknown word means.

<table>
<thead>
<tr>
<th>Target Word</th>
<th>superior being</th>
<th>refute</th>
<th>polarized</th>
</tr>
</thead>
<tbody>
<tr>
<td>Word Clues</td>
<td>“a superior being like God created all life and matter”</td>
<td>“It refuted the Big Bang theory”</td>
<td>“the Creationism-Evolution debate is growing more polarized as political parties have taken sides”</td>
</tr>
<tr>
<td>Meaning of Word</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Synonym</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Osama Bin Laden is a **fundamentalist** of the Islamic faith.

Dr. King was a great **proponent** of the civil rights movement.

Some scholars spend a lot of their academic careers on **interpretations** of the Bible.

The measurements for this new room seem wrong. It looks much smaller than on paper.

- a. an account of size or weight
- b. a way of understanding
- c. a person who supports; an advocate
- d. a person who strictly adheres to a set of idea, religion, or movement

We are **prosecuting** the suspect on a number of charges.

Einstein **postulated** that energy and matter represent two different states of the same thing.

The debating team deftly **countered** the other side’s arguments to win the OECD competition.

We are here today to **acknowledge** everything that you have done for our school and its students.

- a. to formulate an idea
- b. to give recognition
- c. to go against
- d. to take to court in a criminal case

The debate in the U.S. Senate was so **polarized** that no compromise was reached.

The two boxers were **pitted** against each other in a fierce battle to the end of twelve rounds.

Advertisements are often **misleading**. They provide an inaccurate description of what the products can actually do.

- a. to set into combat against another
- b. to cause two opposing sides to stay divided
- c. tending toward false information
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. To accomplish his purpose, the author uses a tone that ________________.

The Shanghai and Beijing art scene is swarming with trendy customers who are ready to part with their cash. Ever since China's art scene started opening up a decade ago, the value of Chinese art has skyrocketed. Appraisers predict that art prices will be going upward for the next few years.

a. is instructional about Chinese art  
b. informs about China's art history  
c. expresses feelings and emotion  
d. describes China's wealthy art scene

Strategy to Answer

In this passage, the first sentence refers to the type of customers who are spending money on art. Then the following sentences refer to the idea of rising prices. The answer is d. No other option talks about both these factors.
Helicopters: How Lift is Generated

Rotor Blades
The first mass-produced helicopter was built by a Russian, Igor Sikorsky in 1944. But how does a heavy machine, in essence, float on air? A helicopter does not have wings like an airplane, yet it uses the same principle of physics in keeping it aloft. Technically, a helicopter is classified as a rotorcraft because it gets its lift by its rotor blades turning around a mast or shaft.

This term “lift” is used by physicists to describe the aerodynamic forces that lift an airplane wing or helicopter blade (which is essentially a thinner version of an airplane wing). Air is forced quickly over the blades as they rotate, creating lift. As air pressure forces the rotor blades upwards, the helicopter starts to fly.

Spinning Top
The turning rotor blades are connected directly to an engine via a main shaft. Based on the law of physics, the rotor blades on a helicopter, just like the wings on an airplane, need to force air downwards and thereby, create lift. As the main rotor blades rotate, air is forced over the blades. The only reason a helicopter can fly straight is that this rotating action is countered by the tail rotor, which spins in the opposite direction. This is the smaller rotor located on the far end of the helicopter’s tail. Without the tail rotor, a helicopter would spin around like a top regardless of the pitch of the rotor blades.

Autogyros
The very first helicopter designs, developed between World War One and World War Two, were called autogyros. These autogyros were not powered like modern helicopters. Instead, they relied on aerodynamic forces to turn the rotors and a separate engine like a propeller plane for forward thrust. An autogyro’s rotor blades generate lift in the same way as a glider, and like a glider they did not have enough power to travel forward on its own.
Steering and Balancing
The steering mechanism is very precarious. A helicopter pilot uses three “sticks,” or levers, to steer. One lever makes the helicopter go up or down by changing the angle of the rotor blades. If the helicopter needs to stay in one place, called hovering, this same lever is used. A second lever is used to make the helicopter go forward, backward, or sideways. Finally, the small rotor blades on the back of the helicopter are controlled by the third lever. Agility, skill and coordination are needed to move all three levers at once. In essence, flying a helicopter is like sitting on a really big plastic ball that keeps trying to tip over. Given all these complex challenges, it is surprising how popular the helicopter has become in the past half century.

Glossary
- **mass-produced** when a product is produced in large numbers
- **autogyro** a primitive design used on the first helicopters

[Reading Skill Questions]

1. **What is the author's overall purpose in the passage?**
   a. To show the evolution of helicopters and how they fly.
   b. To tell about different types of helicopters
   c. To demonstrate how hard it is to fly a helicopter
   d. To explain how difficult it was to design the first helicopters

2. **The author's purpose in the second paragraph is to _________________.**
   a. show how many pilots have difficulty flying helicopters
   b. demonstrate the strength of the material used for rotor blades
   c. explain how helicopters stay aloft due to principles of physics
   d. detail how a spinning helicopter defies the laws of physics
1. In the context of the passage, **aloft** means _________________.
   a. to generate downdraft on an aircraft
   b. to stay up in the air and fly
   c. to be lit up at night when flying
   d. to cause an upward motion on the rotors

2. Why is a helicopter not classified as an airplane?
   a. A helicopter uses rotors, not wings.
   b. Its tail is prone to wobbling all over the place.
   c. It is difficult for a pilot to balance.
   d. A helicopter’s lift comes from the tail.

3. What is needed to be a good helicopter pilot?
   a. Skill, agility, coordination
   b. Precariousness and reliability
   c. Agility, reliability and knowledge of terrain
   d. Fearlessness, coordination, flight skills

4. Why is flying a helicopter comparable to sitting on a plastic ball?
   a. Using the levers is like an aerobatic flight.
   b. The rotor blades often behave erratically.
   c. It is hard to coordinate the three sets of levers.
   d. It is highly stable to fly during liftoff.

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

( lift   skill   wings   agility   rotorcraft   to steer   forward thrust )

The first mass-produced helicopter was built by a Russian, Igor Sikorsky in 1944. Technically, a helicopter is classified as a ________ because it gets its lift by its rotor blades turning around a mast or shaft. Based on the law of physics, the rotor blades on a helicopter, just like the ________ on an airplane, need to force air downwards and thereby, create ________. The first helicopters, called autogyros, relied on aerodynamic forces to turn the rotors and a separate engine for _________. A helicopter pilot uses three levers _________. Flying a helicopter needs tremendous ________, ________ and coordination to keep the helicopter from trying to tip over.
1. **How does the author describe the functioning of a helicopter? Write any words or sentences from the 1st paragraph to support your answer.**

   The author informs us that:
   - A helicopter does not have wings like an airplane, yet it uses the same principle of physics in keeping it aloft.

   <Supporting ideas>

2. **Why did the author write the 4th paragraph? Write any words or sentences from the 4th paragraph to support your answers.**

<table>
<thead>
<tr>
<th>Writer's Purpose</th>
<th>Supporting Ideas: Words or Sentences</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
</tr>
</tbody>
</table>

3. **If the statement is a fact, write F. If the statement is an opinion used by the writer, write O.**

   1. Power on a helicopter comes from the main engine shaft.  
      -  
   2. The steering mechanism of a helicopter is very precarious.  
      -  
   3. Gliders do not have enough internal power to travel forward on their own.  
      -  
   4. Agility, skill and coordination are needed to move all three levers at once.  
      -  
   5. The first helicopter designs, developed between the wars, were called autogyros.  
      -  

---

**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.
How Helicopters Revolutionized Flight

Helicopter Evolution
Over the past half century, helicopters have gained popularity throughout the world in a surprisingly short amount of time. Although the first use of helicopters was in the military, their use has expanded to many more fields. They quickly lift people out of burning buildings or flooded towns, or deliver much needed supplies to refugee camps. From tree logging to air ambulances and traffic reports, helicopters have forever changed the face of modern transportation.

Designs
The evolution of a rotary flying craft started with an initial idea devised by the Chinese. Later on, Leonardo da Vinci drew up plans for a spiral design helicopter in 1490 called the Helical Air Screw. It was not until the start of the Industrial Revolution that technology would advance the rotary design further. By World War One, the first helicopters helped to spot enemy troops during combat missions. Prior to the war, large hot air or helium blimps were used for aerial observation to spot enemy troops. Through the 1920s and 1930s, crude helicopter designs were devised by the French, Germans and Russians.

But it took a Russian who immigrated to the United States (Igor Sikorsky) to truly advance helicopter technology in the 1940s. With $2 million in financial backing from the United States government, he pushed forward rotary-wing research. The U.S. military used helicopters based on the Sikorsky R-4 design to protect merchant ships in the Atlantic Ocean. These helicopters could fly from the deck of an aircraft carrier, destroyer or merchant ship looking for German U-boat submarines. The target of the U-boat submarines was the merchant convoys bringing troops and supplies from the U.S. to England. After deploying helicopters to protect Allied merchant ships, the number of losses to German U-boats decreased markedly. This one pivotal accomplishment taught the military how useful the helicopter could be.
Helicopter in Battle
It was during the Korean War and Vietnam War that helicopters really proved their resourcefulness on a wide scale. Soldiers were rescued from hard to get to places in the dense jungles and high-altitude terrain. Helicopters could hover over the trees and fire at enemy soldiers hiding in the foliage. By providing firepower from a stationary position in the air (something an airplane couldn’t do), wounded soldiers could be quickly rescued.

Tree Logging and Medevacs
Helicopter use blossomed in the 1970s and 1980s. Since they had attributes that airplanes did not have, they were ideal for landing in enclosed places. Forestry companies quickly seized on the helicopter for logging on steep mountainsides. The coast guards of many nations started using helicopters as did hospitals. This led to a new term “medevac” meaning medical evacuation. Although not as popular as airplanes, helicopters today have become almost more useful in their various applications.

Glossary
- blimp a large airship that uses helium or hydrogen to stay aloft
- resourcefulness being full of initiative and good at problem solving
- foliage the leaves and vegetation of a plant of tree

Reading Skill Questions
1. What's the writer's purpose in this article?  
   a. To emphasize a helicopter's historical significance  
   b. To illustrate a helicopter's shape and form  
   c. To warn of the danger of helicopters as a public transportation  
   d. To give information about the changing role of helicopters

2. What is the writer's viewpoint of the role of helicopters in World War One?  
   a. World War One was lost because of poor safety standards.  
   b. Helicopters first began to be used to help with observation.  
   c. They began to be used as effective gunships.  
   d. The army questioned the usefulness of the helicopters.
1. **What was da Vinci’s contribution to helicopter design?**
   - a. He drew up plans for a basic rotary craft.
   - b. He devised a way to improve the turbine engine.
   - c. He perfected the original Chinese design.
   - d. He worked with Sikorsky to make the medivac helicopter.

2. **What was the mission of merchant ships during World War Two?**
   - a. The ships took helicopters to the Burmese coast.
   - b. The ships shot at the German U-boats.
   - c. They helped carry wounded soldiers to hospitals.
   - d. They carried troops and supplies to Europe.

3. **Which of the following is NOT one of the pivotal accomplishments?**
   - a. Building army hospitals in the Vietnamese jungle
   - b. Rescuing wounded soldiers from the inaccessible places
   - c. Helicopters tracking down Germany U-boat submarines
   - d. Evacuating injured people from the tops of buildings

4. **How is the term pushed forward used in the third paragraph?**
   - a. Pushed forward the helicopter through the air.
   - b. Helped write the research grant for turbine engines.
   - c. Helped develop research for helicopters.
   - d. Pulled forward the helicopter through the air.

**Summary**

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

(rescued protect lifting military supplies stationary usefulness)

The first use of helicopters was in the ________, but their use has expanded to ________ people out of disasters. The evolution of a rotary flying craft started with an initial idea devised by the Chinese. But it was a Russian who truly advanced helicopter technology in the 1940s. The U.S. military used helicopters to ________ merchant ships transporting troops and _________. And during the Korean War and Vietnam War, helicopters proved their _________ on a wide scale. By providing firepower from a _________ position in the air, wounded soldiers could be quickly _________. Today, helicopters have become very useful in their various applications.
Look at the piece of writing from the passage and identify the category in which it belongs. What seems to be the writer's aim in writing the piece?

**Writing Selection**
They quickly lift people out of burning buildings, flooded towns, or deliver much needed supplies to refugee camps. From tree logging to air ambulances and traffic reports, helicopters have forever changed the face of modern transportation.

**Writer's Aim**

<table>
<thead>
<tr>
<th>Informational</th>
<th>Imaginative</th>
</tr>
</thead>
<tbody>
<tr>
<td>Narrative</td>
<td>Personal/Expressive</td>
</tr>
<tr>
<td>Persuasive/Argumentative</td>
<td>Scientific</td>
</tr>
</tbody>
</table>

**Writing Selection**
After deploying helicopters to protect Allied merchant ships, the number of losses to German U-boats decreased markedly. This one pivotal accomplishment taught the military how useful the helicopter could be.

**Writer's Aim**
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>Word</th>
<th>Definition</th>
</tr>
</thead>
<tbody>
<tr>
<td>classified</td>
<td>arranged in categories</td>
</tr>
<tr>
<td>stationary</td>
<td>not moving, fixed</td>
</tr>
<tr>
<td>precarious</td>
<td>very dangerously unstable or uncertain</td>
</tr>
<tr>
<td>blossomed</td>
<td>to come to fruition; to develop in a pleasing or promising way</td>
</tr>
<tr>
<td>agility</td>
<td>litheness; the gracefulness of a person that is quick and nimble</td>
</tr>
<tr>
<td>logging</td>
<td>the lumber industry</td>
</tr>
<tr>
<td>essences</td>
<td>basic element or characteristic</td>
</tr>
<tr>
<td>rotating</td>
<td>a small engineless airplane</td>
</tr>
<tr>
<td>deploying</td>
<td>to organize troops or military ready to be used</td>
</tr>
<tr>
<td>deployed</td>
<td>to set free from danger</td>
</tr>
<tr>
<td>firepower</td>
<td>weaponry</td>
</tr>
<tr>
<td>scrapped</td>
<td>to destroy or dispose of something completely</td>
</tr>
<tr>
<td>rescuing</td>
<td>to set free from danger</td>
</tr>
<tr>
<td>firepower</td>
<td>weaponry</td>
</tr>
<tr>
<td>firepower</td>
<td>weaponry</td>
</tr>
</tbody>
</table>

The engine remained stationary for another 10 minutes.
His health is very precarious and he needs to resign his position.
The cherry trees blossomed early this year because of the warm spring we had.
A house cat has a surprising amount of agility.
If the weather is suitable, let's take out our gliders this weekend.
During the Great Depression of the 1930s, many men found work in logging.
The essences of many flowers are in widespread use in the perfume industry.
The motor is rotating at 1,200 rpm.
Lift it up above your head and pass it to Mary.
The U.S. government decided to deploy additional troops to Afghanistan.
The crew was rescued from the ocean about 10 miles southeast of Miami.
The American army has had more firepower than any enemy they have faced in the past hundred years.
RECOGNIZING COHERENCE

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. Sometimes all four squares appear in one paragraph. Sometimes they are spread across the end of one paragraph and the beginning of another.

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

Turning his attention to Hollywood where animated movies were popular, Disney made his first movie in 1928 about a mouse.

Where would the sentence best fit?

(A) Walt Disney started out in entertainment as a cartoonist, working for a small company in Kansas making cinema advertisements. (B) The mouse character of Mortimer soon developed into a more recognizable name, Mickey. (C) Mickey Mouse quickly became famous with Walt as the animator, creator and voice of Mickey for over 30 years. (D) 

Strategy to Answer

In this passage, the highlighted sentence refers to events that happen after the first sentence since it uses the transition phrase “turning his attention.” The other sentences refer to actions that occurred after 1928 when Walt Disney became famous. Hence the answer is b.

a. (A)  b. (B)  c. (C)  d. (D)
Polio: The Dreaded Disease

A Child’s Disease
In the 20th century, one of the most difficult diseases confronting doctors and scientists was polio. Polio’s technical name is poliomyelitis or infantile paralysis, meaning children often become paralyzed, losing movement in parts of their bodies. An estimated 7,000 people in the U.S. died, mainly from 1911~17. Since it was easily transmitted from human to human, polio was highly contagious. The first recorded case of polio occurred in 1835 and was usually found among children. In an infected person, muscles became progressively weaker and joints became sore. The most famous polio victim was U.S. President Franklin D. Roosevelt who spent much of his life in a wheelchair.

Entering the Spinal Cord
The polio virus invades the central nervous system, primarily the spinal cord and the brain, entering through the mouth. (A) This dreaded disease often causes weakness, paralysis, breathing problems or death. (B) The contaminated fecal matter on their hands enters the body through the mouth and begins to multiply in the throat and intestinal tract. (C) Once a person is exposed to polio, it usually takes about three to five days for symptoms to appear. (D) After the polio virus enters the victim’s throat, it travels to the intestines. In the warm and nurturing environment of the body, the virus grows. Finally, the virus makes its way to the brain or spinal cord. Within a week, paralysis often occurs, disabling the individual. The virus attacks the motor neuron cells that control the muscles for the trunk, arms and legs. This also affects muscles needed for swallowing, respiration and circulation.

Polio Symptoms
In approximately 95 percent of cases, polio produces no symptoms at all (called asymptomatic polio). For the other 5 percent of cases, the most common
symptoms are: excessive fatigue, joint and muscle pain, breathing difficulties and progressive muscle weakness. The condition is made worse during cold weather, often causing muscle weakness and sometimes a burning pain.

Quarantined
During the 1914 and 1919 polio epidemics, there was much hysteria about this unknown disease. (E) It was not uncommon for doctors and nurses to go from house to house in search of infected persons. (F) Children were the usual victims. (G) This meant they were kept isolated in a separate section of the hospital. (H) They were prohibited from going outside their homes or to work, unless they were no longer potentially infectious. In thousands of cases, family members only saw their children at the funeral after dying. By 1952 it was killing more children than any other communicable disease. Only years later would polio decrease in the Western world.

Glossary
- paralyzed when the ability to move one’s body or limbs is lost
- fecal matter human waste or excrement
- asymptomatic not showing or producing indications of a disease

[ Reading Skill Questions ]

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

   The virus is usually spread by fecal matter when an infected person fails to wash their hands.

   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 fourth paragraph:

   Many of them were taken away to hospitals and quarantined.

   Where would the sentence best fit?
   a. (E)  b. (F)  c. (G)  d. (H)
1 Why were so many people fearful of polio in the early 1900s?
   a. They didn’t want to be like President Roosevelt.
   b. Muscle joints became more relaxed.
   c. The virus affected its victims quickly and there was no cure.
   d. It was expensive to be quarantined in a hospital.

2 Which of the following is NOT true about polio?
   a. It is usually found among children.
   b. 95% of cases shows no symptoms at all.
   c. It is usually transmitted from animal to human.
   d. The virus enters through the victim’s mouth.

3 It can be concluded that adverse changes in the weather caused ____________
   a. polio victims to have greater rates of infection
   b. people to spread the virus more quickly when contacting animals
   c. people to exercise more frequently to flex their weak muscles
   d. people to refrain from going outside in the cold or dampness

4 What does the term communicable disease refer to in the fourth paragraph?
   a. A type of infection that is highly resistant.
   b. A disease where everyone eventually dies.
   c. A disease that is passed from person to person.
   d. A dormant virus that causes no symptoms.

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

( polio symptoms movement paralysis hysteria quarantined contaminated )

In the 20th century, one of the most difficult diseases confronting doctors and scientists was ___________. It caused infantile ___________, meaning children often lost all ___________ in their bodies. This dreaded disease often causes weakness, paralysis, breathing problems or death. ___________ fecal matter enters the body through the mouth and begins to multiply in the throat and intestinal tract. In approximately 95 percent of cases, polio produces no ___________ at all. During the 1914 and 1919 polio epidemics, there was much ___________ , so patients were often ___________.

Property Of The ChoiceMaker Korea Co.
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. In the 20th century, the most difficult disease confronting doctors and scientists was polio.
   b. Polio’s technical name is poliomyelitis or infantile paralysis, meaning children often become paralyzed, losing movement in parts of their bodies.
   c. An estimated 7,000 people in the U.S. died, mainly from 1911-17.

   Why?

2. Which of the following sentences could best end the reading?
   a. Nurses were often applauded for their quiet, but essential work on the polio vaccine.
   b. Isolation was no longer necessary for polio victims after all school children received vaccinations.
   c. Finally, scientists found that their expertise was needed elsewhere when new viruses appeared.

   Why?
The Struggle to Find a Cure for Polio

Finding a Cure for Polio

Unless you were born before 1955, polio just seems to be another long forgotten disease. (A) Throughout the early 1900s, polio epidemics killed many. (B) In 1952 and 1953, 3,000 people died in the United States from polio outbreaks. (C) For decades, scientists had been laboriously researching vaccines to protect people from polio, but all in vain. (D)

Trial and Error

In the early 20th century, medical research was often painstakingly slow, requiring hundreds of hours of work. In the United States, millions of dollars was spent by pharmaceutical companies in the hopes of finding and marketing a polio vaccine. One research assistant at New York University in the 1930s tried to create a vaccine using a dead polio virus from monkey spinal cords. But the vaccine, when tested on 3,000 children, led to allergic reactions and none developed immunity to polio.

Laboratory Struggles

Jonas Salk, a Jewish scientist, was young and ambitious and wanted to bring an end to the dreaded disease. He was the first to successfully experiment with dead polio viruses, which still contained proteins from the virus. Competing with another prominent doctor Albert Sabin, Salk and Sabin were often bitter rivals. Unfortunately, their frequent criticism of each other’s vaccine work (using alternate research methods) diverted much energy, often slowing down their research. However, Salk was much better funded, having received his own laboratory at the University of Pittsburgh in 1947. (E) In the end, the race to find a polio cure came to the better funded of the two doctors. (F) On April 12, 1955, after conducting a massive experiment on 1.8 million school children, Salk announced that his team had discovered a polio vaccine. (G) The vaccine (only after multiple injections) stopped the polio virus from spreading. (H)
March of Dimes
Throughout the early 1950s as scientists were researching a polio cure, a new collective spirit towards charity blossomed in the United States. Led by the National Foundation for Infantile Paralysis (NFIP), a charity program called “The March of Dimes” aimed to collect money for polio research and to help its victims. The NFIP was instrumental in recruiting over 90,000 volunteer workers from the American middle class. These volunteers helped in hospitals and put a more human face on the disease. At the time, many hospitals refused to admit polio victims.

The Forgotten Disease
The polio vaccine discovery by Jonas Salk is undoubtedly one of the most important preventive health medicines discovered in the past century. By 1962 polio had almost become extinct, with only 910 cases reported that year—down from 37,476 worldwide in 1954. Today, more than 3 billion people in 134 countries and territories now live in areas certified polio-free.

Glossary
- **crippling** resulting in the impairment of a limb or limbs
- **immunity** a body’s ability to resist a disease through antibodies or inoculation
- **inoculation** to inject a fluid, usually medicine, through a needle, to protect against diseases

[Reading Skill Questions]

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

   Over 58,000 and 35,000 polio cases were reported to various health authorities, respectively.

   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:

   A nationwide inoculation campaign began.

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

1. **Who likely received the publicity when a polio vaccine was found?**
   - a. The pharmaceutical companies
   - b. Jonas Salk and his research team
   - c. The National Foundation for Infantile Paralysis
   - d. Albert Sabin and his research team

2. **What might happen if a polio victim only received one shot of Salk’s vaccine?**
   - a. The polio victim would need to use crutches.
   - b. The patient might not fully be cured of polio.
   - c. The patient would not receive immunity for a few weeks.
   - d. Their body would receive too many antibodies.

3. **What was the main purpose of The March of Dimes charity?**
   - a. To increase research funds for Albert Sabin
   - b. To raise funds for polio research
   - c. To collect thousands of dimes for Salk’s research
   - d. To inform people about the dreaded disease

4. **What were the likely results from the experiment on 1.8 million children?**
   - a. Salk found out that his vaccine did not work as well as Sabin’s.
   - b. The Univ. of Pittsburgh professor discovered he didn’t have a cure.
   - c. Many school children donated money to the March of Dimes.
   - d. Salk saw that the children did not become infected with polio.

**Summary**

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

( collect  vaccine  funded  dreaded  allergic  outbreaks  polio virus )

In 1952 and 1953, 3,000 people died in the United States from polio _________. Some researchers tried to create a vaccine using a dead _________ from monkey spinal cords, but it led to _________ reactions. Jonas Salk wanted to bring an end to the _________ disease. There was competition among several doctors, but Salk was much better _________ . After an experiment on 1.8 million school children, Salk announced a polio _________ that worked. A charity program called “The March of Dimes” aimed to _________ money for polio research, helping many victims.
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 4 without losing coherence?
   a. Led by the National Foundation for Infantile Paralysis (NFIP), a charity program called “The March of Dimes” aimed to collect money for polio research and to help its victims.
   b. The NFIP was instrumental in recruiting over 90,000 volunteer workers from the American middle class.
   c. At the time, many hospitals refused to admit polio victims.

   Why?

2 Look at the four squares [a] and choose a place where the following sentence could be added in paragraph 2:

   A [a] In the early 20th century, medical research was often painstakingly slow, requiring hundreds of hours of work. B [a] In the United States, millions of dollars was spent by pharmaceutical companies in the hopes of finding and marketing a polio vaccine. C [a] One research assistant at New York University in the 1930s tried to create a vaccine using a dead polio virus from monkey spinal cords. D [a] Countless trial and error experiments were conducted, leading to frustration on the part of the scientists.

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

| ______ | His body was paralyzed after a dreadful car accident |
| ______ | The military encountered a crashed space ship in the Utah desert. |
| ______ | The restaurant was certified by the health authorities as being safe to eat in. |
| ______ | Each weekend, she went to volunteer at the church, handing out food to the homeless. |

a. when the ability to move one's body or limbs is lost  
b. to work without being paid, usually by helping others  
c. when something has passed or achieved a given standard  
d. to meet someone or something unexpectedly

| ______ | Her daughter was very allergic to peanut butter and couldn’t eat it. |
| ______ | His back pain became progressively better after months of physiotherapy. |
| ______ | The mother of seven adopted children was very good at nurturing small children. |
| ______ | The prominent scientist had won many awards including a Nobel prize for AIDS research. |

a. to give tender care to a young child or animal or offer encouragement  
b. more and more in one direction  
c. having a strong aversion to something (flower, food, etc.)  
d. very distinguished or well-known

| ______ | Eating this steak will give you valuable proteins and make you strong. |
| ______ | Unfortunately, he broke his spinal cord in a car accident and couldn’t walk. |
| ______ | Nurses need to clean up fecal matter waste of some of the crippled patients. |
| ______ | All the students at school were given a vaccine inoculation for the H1N1 flu. |
| ______ | She couldn’t take the criticism of her friends when they made fun of her blue hair. |

a. excrement or waste from an animal  
b. a thick bony cord of nerves running down one's back  
c. a natural energy-rich substance found in living cells  
d. a spoken or written opinion that expresses disapproval about something  
e. injecting a fluid, usually medicine, through a needle, to protect against diseases
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. From the writer’s point of view we may conclude that a child who reads mainly by memorizing ________________.

During a child’s development, a young child takes great pleasure in becoming able to read some words. But when confronted with more difficult text, the excitement fades as the child is forced to reread the same words over and over. Word recognition comes from a child learning the word in context—not just memorizing a list of vocabulary words.

a. will never learn how to read
b. will not achieve word recognition
c. will not gain much joy and satisfaction from reading
d. will come to enjoy literature later in life

Strategy to Answer

In this passage, the main goal of a child’s development in relation to reading is “word recognition” or knowing how to use a word in a sentence. It refers to the limitation of reading if a child just “memorizes” words.
Genetically Modified Organisms

What is a GMO?
Since the time of Charles Darwin, people have tried to breed different species in the hopes of producing a superior flower, dog or cow. How species can be adapted to specific situations has always been of interest to scientists. Since the early 1970s, genetic scientists have tried to alter hundreds of plant species using genetic modification. Unlike natural changes in evolution, biotechnology and genetic engineering techniques have been able to artificially change living organisms. This has led to the term GMO or genetically modified organisms. GMOs are living organisms that have been altered at the genetic level. The term applies to any plant, animal or microorganism.

Surviving Cold Spells
The main goal is to transform crops like corn and wheat in order to gain greater crop yields. This means producing a particular type of plant or seed that is more resistant to bad weather, disease or pesticides. Creating GMO crops gives consumers a wider range of food choices by prolonging the growing season. By changing the DNA of a specific crop, biotech scientists can help a crop grow for a longer period, surviving unforeseen cold spells during the early spring and late fall seasons. When a GMO crop is created, the DNA structure of a specific plant cell is altered in a laboratory. A single gene of DNA is isolated and removed, then altered outside the cell. Finally, that single gene is reinserted into another plant cell.

Changing Wheat DNA
The aim of GMO research is often to introduce a new or altered characteristic to the target plant or crop. Maybe that target crop is Hard Red Winter Wheat (used in bread making) grown in the winter or in colder climates. This particular type of wheat has specific genes to combat the cold and diseases that only occur in winter. But with global warming, winters are now becoming less chilly. This has
introduced insects and diseases that would normally only seek out spring and summer crops like Soft Red Spring Wheat. This is detrimental since Hard Red Winter Wheat has never adapted to insects and diseases that only survive in warmer weather. By genetically modifying the Hard Red Winter Wheat, scientists can make the wheat resistant to insects that normally occur in summer.

**Ethical Debate**

Ever since GMOs started to make their way into large-scale farms, people have been concerned about their safety. They could affect the local insect population and upset the balance of nature. In the United States, there are currently no regulations mandating that food containing GMO products in the supermarket be labeled. In 2003, the European Union instituted a ban on GMO products. Only a few exceptions have been made. France is the one EU member that vigorously supports the GMO ban. Other countries like Italy want to overturn the ban.

**Glossary**

- **genetic** relating to genes which consist of sequences of DNA or RNA
- **biotechnology** the use of biological processes in industrial production
- **modification** to make changes or alterations to something
- **unforeseen** something that is not expected to happen

### Reading Skill Questions

1. **A GMO wheat crop designed for cold climates will** ________________.
   a. probably not survive diseases native to the tropics
   b. have problems producing a larger bushel of wheat
   c. probably die off when a cold spell occurs
   d. decrease the nutritional value of bread

2. **Since GMO labels on food products are not required in the U.S., consumers** ________________.
   a. could feel safer that they are eating an approved food
   b. will be well-informed about their bread
   c. would know more about the type of crop used in their food
   d. would not know if their food used GMOs or not
1 How do consumers benefit from GMO crops?
   a. GMO crops artificially change pests that prey on crops.
   b. Some GMO crops increase the size of the crop in winter.
   c. More crops are available to eat during the different seasons.
   d. GMO crops limit the growing season of crops.

2 What is NOT a correct meaning for the phrase genetic modification?
   a. To change specific plant species to deal with new climates
   b. To revise the number of plant species on farms
   c. To adjust the amount of DNA in a specific plant cell
   d. To vary the amount of cells in a specific plant species

3 Which goal is NOT likely to be pursued by scientists with GMO crops?
   a. They want to make crops more resistant to common diseases.
   b. They want to modify crops so they can grow longer.
   c. They want to correct imbalances in nature.
   d. They want to alter the overall sizes of crops.

4 How is the GMO version of Hard Red Winter Wheat advantageous?
   a. The wheat can resist all types of bugs in the winter.
   b. The wheat results in a better tasting type of bread.
   c. The wheat can be transported to tropical climates.
   d. The wheat can be grown in warmer climates.

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

( grow safety altered species surviving genetic modification )

Since the time of Charles Darwin, people have tried to breed different _________. ________ scientists have tried to alter plant species using genetic _________. By changing the DNA of a specific crop, biotech scientists can help a crop ________ for a longer period, ________ unforeseen cold weather or diseases. When a GMO crop is created, the DNA structure of a specific plant cell is ________ in a laboratory. By altering a plant or crop like Hard Red Winter Wheat (grown in winter), the crop can grow in warmer climates. People have been concerned about their _________.


What is a GMO?
Genetic scientists have tried to alter many plant species using genetic modification.

Surviving Cold Spells
The main goal is to transform crops like corn and wheat in order to gain greater crop yields.

Wheat DNA
Hard Red Winter Wheat is normally grown in the winter or in colder climates.

Ethical Debate
In 2003, the European Union instituted a ban on GMO products with only France supporting the ban vigorously.
How Certain Crops Helped Different Cultures Dominate

One of the most intriguing questions for anthropologists has been “Why did some civilizations dominate others so easily?” A recent book *Guns, Germs and Steel* presented a strong argument that civilizations were successful because they had access to better crops. This helped to support larger populations, more complex political systems and strong militaries. Powerful nations like Spain, France, England or the Roman and Chinese civilizations were not smarter than people living elsewhere. Rather, their abundance of plants and animals suitable for domestic use gave them a competitive edge over other cultures in Africa, the Americas and Australia.

Centralized Societies

The earliest humans lived as hunter-gatherers, tracking down animals for food. But eventually, mankind moved from a hunter-gatherer existence to one based on agriculture. People started to domesticate animals and grow wild crops. This agricultural production, which developed fastest in Europe and regions of Asia, led to food surpluses. Consequently, large cities were established as were government bureaucracies and most importantly, large militaries capable of conquering others. Athens, Rome, the Chinese dynasties, all were based on large societies supported by a farming infrastructure.

The Curse of Geography

With more than 200,000 wild plant species on Earth, there are very few that offer nutritional value to humans. More than 80 percent of the crops eaten come from just 12 species. These are bananas, barley, corn, manioc, potatoes, rice, sorghum, soybeans, sugar beets, sugarcane, sweet potatoes and wheat. A majority of these easily grow in moderate climates like Europe and the Middle East. Additionally, Europe was home to 13 of the 14 domesticated animals that could be utilized to plow the fields (i.e. donkeys, horses, cows or chickens). The Fertile Crescent, an area centered on what is now Iraq, Jordan, Syria and parts of Turkey, had four of the five most important domesticated mammals (the cow, goat, pig and sheep). Through the luck of living on a preferable piece of geography, Europeans and...
Asians were able to develop their agriculture earlier than Africans, Native Americans or other peoples.

**East-West Axis**
In addition to preferable geography, a second factor that helped Europe and Asia was the direction of their continent’s axis. The Eurasian landmass is oriented east-west rather than north-south like Africa and the Americas. If you look at a map, the moderate climate of France and Germany (rich in fertile soil) extends eastward through the Balkans, Turkey, Central Asia and onto China and Japan. This similarity in latitude means that in Europe and Asia, similar types of crops can be grown across a wide area. Conversely, both North and South America had difficulty adapting crops grown at one latitude for use at other latitudes. Also, Africa had extreme variations in climate from north to south. Few large deserts and an absence of jungles gave Europe an **unparalleled advantage**. All of these factors gave certain regions a head start.

**Glossary**
- **anthropologist** a scientist who studies the development of human societies
- **domesticate** to adapt an animal or plant for local use
- **latitude** an east-west line joining points on the Earth’s surface that are of equal distance from the equator

**Reading Skill Questions**

1. **It can be concluded that Native American cities could have developed more quickly** _________________.
   a. if they had grown taller crop species
   b. if they had more large domesticated animals
   c. if they traded with people living in the Fertile Crescent
   d. if they had fed enough people in their tribal villages

2. **It can be concluded that the east-west axis of Eurasia made it easier** _________________.
   a. to adapt crops grown in lower latitudes
   b. to continue planting seeds in new regions
   c. to begin planting crops in the springtime
   d. to breed animals that were not native to the region
**Comprehension Questions**

1. What is the main thesis behind the book Guns, Germs and Steel?
   - a. Regions on a north-south axis had a distinct advantage over others.
   - b. European and Asian civilizations had a unique advantage over others.
   - c. Civilizations from Europe are smarter than those in other areas.
   - d. All civilizations that have hunter-gatherers cannot succeed at all.

2. What advantage did large civilizations have over others?
   - a. They had more creative people who could become artists.
   - b. They preferred not to attack or conquer other nations.
   - c. They formed complex political systems and very strong militaries.
   - d. Their crops could be traded for higher prices.

3. Why was the Fertile Crescent a beneficial place to raise food?
   - a. The region had a tradition of ancient farming techniques.
   - b. They had many large domesticated animals.
   - c. There were plenty of rivers that helped farmers' crops.
   - d. They had many small juicy domesticated crops.

4. In paragraph 4, what does the term **unparalleled advantage** mean?
   - [Blank]

**Summary**

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

( crops  plow  dominate  geography  agriculture  domesticated  suitable for )

One of the most intriguing questions has been “Why did some civilizations dominate others so easily?” A new argument states that civilizations were successful because they had access to better **agriculture**. Eventually, mankind moved from a hunter-gatherer existence to one based on **geography**. This developed fastest in Europe and regions of Asia. Many crops easily grow in Europe and the Middle East. Additionally, Europe was home to 13 of the 14 **domesticated** animals that could be utilized to **dominate** the fields. Through the luck of **unparalleled advantage**, Europeans and Asians had a majority of crops growing in their region that were suitable for **humans**. A second factor that helped Europe and Asia was the direction of their continent's axis.
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>Supporting Information A1</th>
<th>Supporting Information B1</th>
<th>Supporting Information C1</th>
</tr>
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<tbody>
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<table>
<thead>
<tr>
<th>Supporting Information A2</th>
<th>Supporting Information B2</th>
<th>Supporting Information C2</th>
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</table>

**Conclusion A**
We can conclude that the first hunter-gatherers did not have a stable food supply since they always had to move around.

**Conclusion B**
It can be concluded that different regions developed at different rates depending on their access to good crops.

**Conclusion C**
With access to a wide range of suitable crops, it can be concluded that centralized societies were able to make a profit from selling their crops. Thus they had more money to establish a large military.
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>Highlighted Word</th>
<th>Definition</th>
</tr>
</thead>
<tbody>
<tr>
<td>unforeseen</td>
<td>a. when something is not expected to happen</td>
</tr>
<tr>
<td>latitude 51</td>
<td>c. an east-west line joining points of the Earth’s surface that are of equal distance from the equator</td>
</tr>
<tr>
<td>modifications</td>
<td>b. to make changes or alterations to something</td>
</tr>
<tr>
<td>anthropologist</td>
<td>d. a scientist who studies the development of human societies</td>
</tr>
<tr>
<td>nutritional</td>
<td>a. relating to genes which consist of sequences of DNA or RNA</td>
</tr>
<tr>
<td>oriented</td>
<td>b. geared toward a certain direction</td>
</tr>
<tr>
<td>detrimental</td>
<td>d. causing damage or harm to something</td>
</tr>
<tr>
<td>domesticated</td>
<td>e. to adapt an animal or plant for local use</td>
</tr>
<tr>
<td>genetic</td>
<td>a. relating to genes which consist of sequences of DNA or RNA</td>
</tr>
<tr>
<td>insect species</td>
<td>b. a biological classification containing individuals that resemble one another</td>
</tr>
<tr>
<td>hunter-gatherers</td>
<td>c. people who hunt for their food, moving around</td>
</tr>
<tr>
<td>infrastructure</td>
<td>d. the use of biological processes in industrial production</td>
</tr>
</tbody>
</table>

Maintaining a good nutritional intake will lead to a healthy lifestyle.

Their beachside house was oriented toward the ocean to receive the fresh breeze.

Smoking is very detrimental to a person's health and should be avoided at all costs.

The farmer domesticated a new type of corn, taking it from the wild and growing it locally.

The cloning scientist was using genetic material to alter the characteristics of the sheep's DNA.

There are many unknown insect species living in the Brazilian rainforest.

In primitive times, hunter-gatherers chased animals, throwing spears or rocks at them.

Biotechnology research uses industrial processes to improve things such as vaccines.

There was not enough money in the budget to build more infrastructure projects like highways.