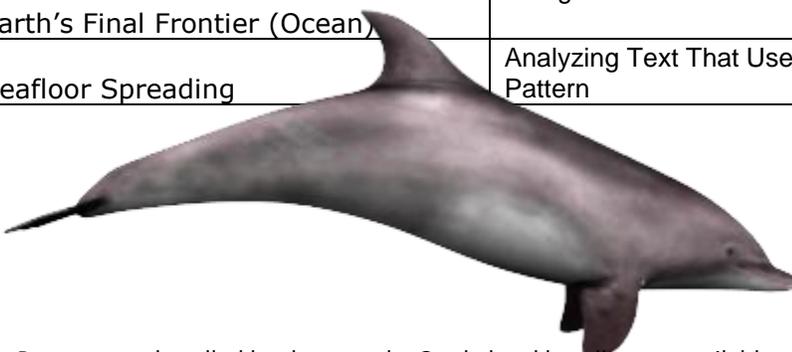


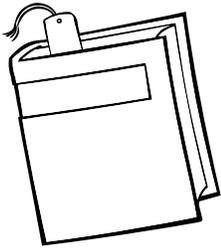
Bodies of Water



| Print Partner Title / First Line | Skill |
|-----------------------------------|----------------------------------------------------------------------|
| On the Sailboat | Retell a Story: Character |
| A Visit to the Red Sea | Recognizing Similes, Metaphors, Idioms, & Alliteration |
| Summer Vacation (Beach) | Comparing and Contrasting and Connecting Themes |
| The Dolphin and the Otter (Ocean) | Recognizing Similes and Metaphors |
| The Niagara Falls | Paraphrasing Information from Text |
| Long Ago in Egypt (Nile River) | Distinguishing Fact and Opinion |
| An Ocean Mystery | Using Affixes and Roots to Identify Word Meaning |
| Life at the Bottom of the Ocean | Using Structure of Informational Text to Aid in Understanding |
| Tide Pool Life | Categorizing Words |
| The Great Barrier Reef | Using Question-and-Answer Relationships to Improve Comprehension |
| Earth's Final Frontier (Ocean) | Using Question-Answer Relationships to Improve Comprehension |
| Seafloor Spreading | Analyzing Text That Uses the Cause-and-Effect Organizational Pattern |



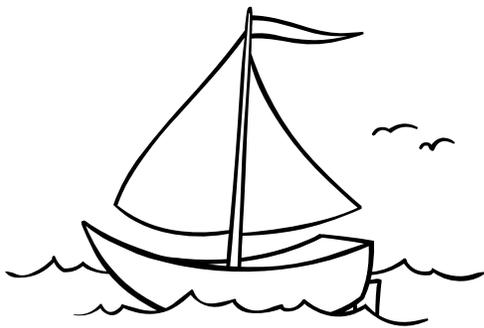
- Print Partners are bundled by theme only. Grade level bundles are available.
- Each Print Partner is a stand-alone worksheet. Pagination on the bottom of each page denotes numbering designed for individual worksheets.



Retell a Story: Character

Directions: Cut out the pages and put them in order. Staple the pages together. Then read the story and answer the questions.

On the Sailboat



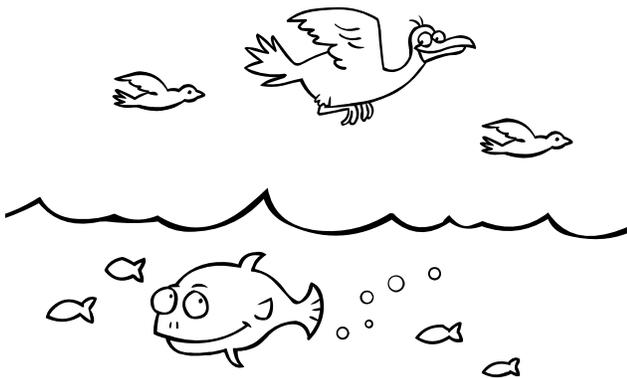
by René Holden

Name _____



Will is on a sailboat.
It is in the water.

1



Will sees birds.
Will sees fish.

2



Will sees a big ship. He
sees a dog on the ship.

3



Will waves at the dog.
Will likes the sailboat a lot.

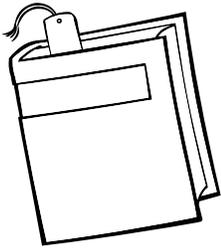
4

Who is this story about?

5

What is the story about?

6



Retell a Story: Character

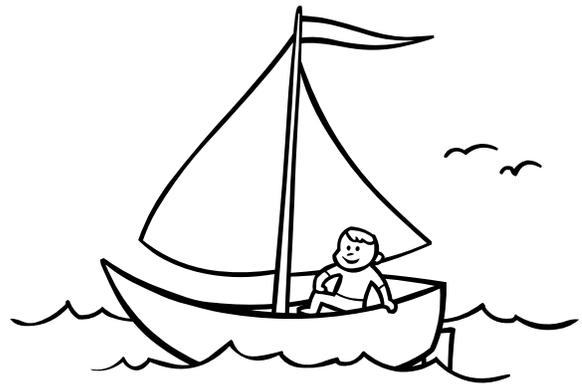
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On the Sailboat



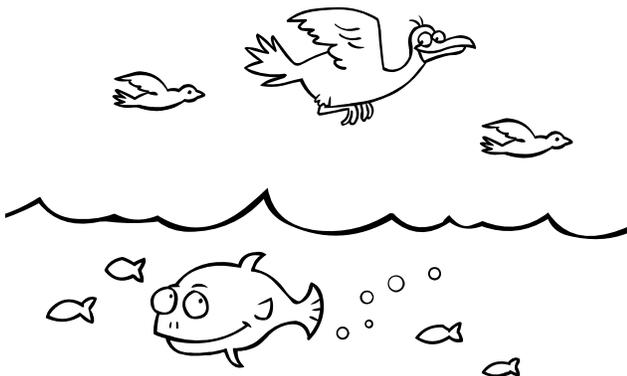
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Name _____



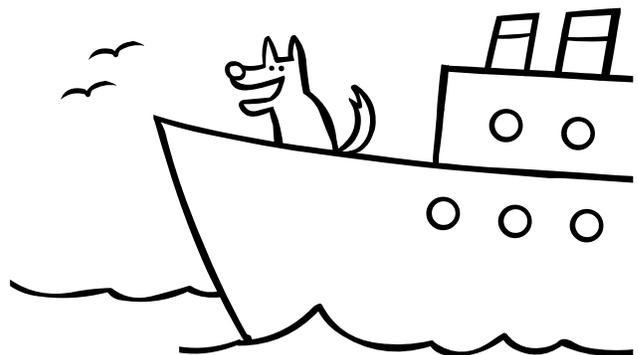
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Will waves at the dog.
Will likes the sailboat a lot.

4

Who is this story about?

Pictures
will vary.

----- **Will** -----

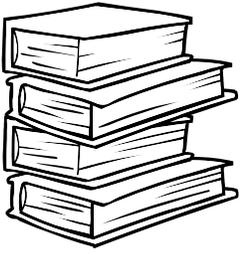
5

What is the story about?

Pictures
will vary.

----- **a boy on a sailboat** -----

6



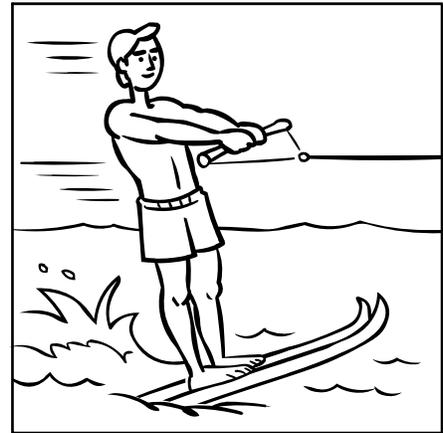
Mixed Skills: Recognizing Similes, Metaphors, Idioms, and Alliteration

Directions: Read the passage. Then answer the questions that follow.

A Visit to the Red Sea

¹Mr. Lopez planned his vacation. ²He wanted to visit the Red Sea. ³He read all about this beautiful body of water. ⁴The book said the water was like glass. ⁵It also said that people enjoy doing water sports in the sea. ⁶He could swim, sail, and ski in the water. ⁷Mr. Lopez was very excited about the trip.

⁸He asked his neighbor to watch his pet rabbit for him. ⁹He packed his clothes. ¹⁰Mr. Lopez left in the blink of an eye.



1. Which sentence has an idiom?
 - A. sentence 2
 - B. sentence 3
 - C. sentence 9
 - D. sentence 10

2. Which sentence uses alliteration?
 - A. sentence 6
 - B. sentence 7
 - C. sentence 8
 - D. sentence 9

Directions: Read the sentences. Then answer the questions.

Mr. Lopez asked his neighbor to watch his pet rabbit for him.

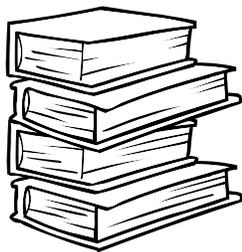
3. What does the word **watch** mean in the sentence?
- A. to clean something
 - B. to look at or care for
 - C. an object that tells time
 - D. a lock on the front door

The book said the water was like glass.

4. This is an example of _____
- A. an idiom.
 - B. a simile.
 - C. a metaphor.
 - D. a homonym.

Directions: Underline three homophones in the sentence.

He wanted to visit the Red Sea.



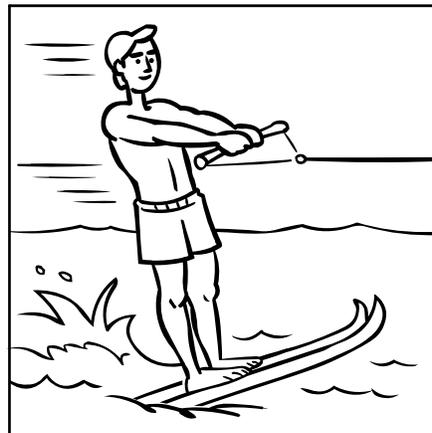
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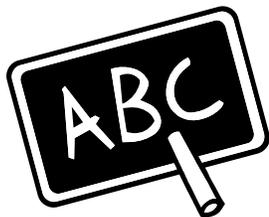
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Directions: Underline three homophones in the sentence.

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Comparing and Contrasting and Connecting Themes

Directions: Read the passage. Then answer the questions.

Summer Vacation

Maria was happy. It was the first day of summer. She and her family gathered around the kitchen table. They wanted to decide on their vacation trip. Maria's family liked the beach, but they were thinking about going to the mountains.

First, they talked about the mountains. "There is a lake where we can water-ski," said Maria.

"We can also bike and hike through the mountains," said her mother.

Next, they talked about the things they could do at the beach. "We can make sandcastles," said her little sister.

"We can ride our bikes on the paths by the ocean," her father said.

The family agreed that both the beach and the mountains can be fun. They both have water for swimming and paths for bike riding. It was a hard decision to make.

Maria's parents were glad they had talked about the two places. In the end, they had a great time in the mountains.

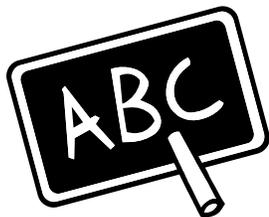
1. The theme of this story is ____
 - A. always be nice to other people.
 - B. think before making decisions.
 - C. forgive other people.
 - D. always do your best.

2. The story compares and contrasts ____
 - A. Maria and her sister.
 - B. Maria's mother and father.
 - C. sand and water.
 - D. the beach and the mountains.

3. To compare and contrast means to look for things that are ____
 - A. the same and different.
 - B. very big and very small.
 - C. right and wrong.
 - D. hard and easy.

4. How does Maria's family find a solution?
 - A. They let her sister decide.
 - B. They compare and contrast.
 - C. They change their minds.
 - D. They choose both places.

5. List the things you need when you go to the beach and to the mountains. Circle the ones that are the same.



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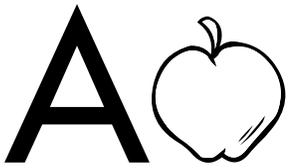
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 - A. They let her sister decide.
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 - C. They change their minds.
 - D. They choose both places.

5. List the things you need when you go to the beach and to the mountains. Circle the ones that are the same. **Answers will vary.**

Possible response: Items for the beach include sunglasses, towels, swimming suit, a hat, and sandals. Items for the mountains include sunglasses, walking stick, pants and shirts, a hat, and hiking boots.



Recognizing Similes and Metaphors

Directions: Read the fable. Then read each question and circle the correct answer.

The Dolphin and the Otter

One day, Dolphin was gliding through a new part of the ocean. He did not usually follow this course. But he liked how the ocean's surface was as smooth as glass. Suddenly, he heard a frightened animal cry. Some boys in a boat were just inches from catching a young otter. He had fallen behind his mother and was now separated from her. She could not get around the front of the boat to save him.

The boys were about to grab the baby when Dolphin swam toward them. He jumped from the water and splashed the boys with a huge wave. The wave was a mountain. The force of it almost turned the boat over. The boys decided to leave the baby alone before their boat started sinking like a rock. They scooped out the water with a bucket as they rowed back to shore.

As Dolphin swam away, he did not see a large fishnet left behind. He soon was hopelessly tangled in it. But Mother Otter quickly came to his rescue. She carefully gnawed on the rope with her sharp teeth until finally Dolphin was free again. Mother Otter waved her paw as Dolphin flipped his fin and swam away. One good turn deserves another.

1. Why was Dolphin in a new part of the ocean?

- A. He was looking for glass in the ocean.
- B. He was going to catch something to eat.
- C. He liked swimming in the smooth waters.
- D. He was looking for the baby otter.

2. What is the moral, or message, of this fable?

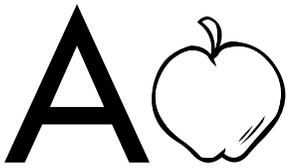
3. Find the simile that describes how the ocean looks. Write the simile on the lines below.

4. Which pair of words describes Mother Otter's actions?

- A. clever, grateful
- B. calm, common
- C. angry, frightened
- D. kind, gentle

5. Find the simile that describes how the boat was sinking. Write the simile on the lines below.

6. Find the metaphor that describes how big the wave was. Write the metaphor on the lines below.



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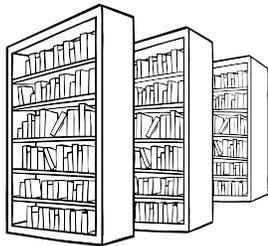
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Their boat started sinking like a rock.

6. Find the metaphor that describes how big the wave was. Write the metaphor on the lines below.

The wave was a mountain.



Assessment for Grade 4, Benchmark 1: Paraphrasing Information from Text

Directions: Read the passage. Then answer the questions that follow.

The Niagara Falls

- 1 Niagara Falls is a large waterfall. It is about 160 feet high. It is on the border of Canada and the United States. On one side of the falls is the town of Niagara Falls, New York. On the other side is Niagara Falls, Ontario.
- 2 Most people believe Niagara Falls formed at the end of the last Ice Age. For many years, much of the land was covered by giant sheets of ice. The ice sheets are called glaciers. The glaciers moved slowly across the land. As they moved, the glaciers dug huge holes in the earth.
- 3 When the giant glaciers moved away some of the ice melted. The melting ice filled the holes and formed most of the Great Lakes. Water from the lakes poured into many small rivers. Where the small rivers came together a large and powerful river was formed. It is called the Niagara River. For thousands of years, the Niagara River pushed and carved the land, forming the falls.
- 4 In the beginning, the river flowed straight over the falls. As time passed, an island formed at the edge of the falls. The island broke the river into two parts. One part of the Niagara River flows into the United States. The other part flows over the Canadian Falls.
- 5 Many people have tried daring stunts at Niagara Falls. In 1859, a man called the Great Blondin stretched a three-inch thick rope across the falls. Then he walked all the way across the rope. Blondin received so much attention that he did it a few more times. Once he even carried another man on his back.

6 In 1901, a 63-year-old teacher named Annie Taylor decided to do a stunt at the falls. She wanted to try something really dangerous. She crawled into a wooden barrel and floated down the river and over the falls. Taylor was the first person to try this daring stunt. Since she lived to tell about it, many others have tried to do the same thing.

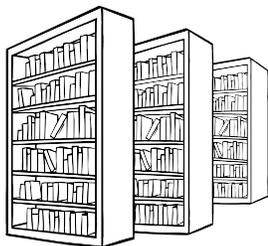
7 Millions of people visit the Niagara Falls every year, but they do not go in barrels or on ropes. There are bridges over the river and boat rides by the falls. Every day of the year people can safely enjoy the beauty of Niagara Falls.

1. What is the passage about?
 - A. the Ice Age
 - B. a waterfall
 - C. daring stunts

2. Which answer shows the best way to reword the information about Annie Taylor?
 - A. Annie Taylor tried a dangerous stunt.
 - B. Annie Taylor was a school teacher.
 - C. Annie Taylor was 63 years old in 1901.

3. What is the most important point in paragraph 3?
 - A. The glaciers changed the face of the land.
 - B. An island formed at the edge of the falls.
 - C. The Great Lakes helped make Niagara Falls.

4. Reread the first two paragraphs of the passage. Rewrite the paragraphs in your own words.



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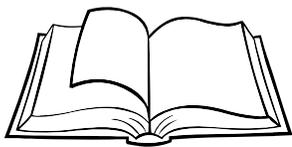
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4. Reread the first two paragraphs of the passage. Rewrite the paragraphs in your own words.

Possible response: Niagara Falls sits on the border between

Canada and the United States. Long ago, glaciers covered the

land. The glaciers made huge holes.



Distinguishing Fact and Opinion

Directions: Read the passage. Then complete the activity that follows.

Long Ago in Egypt

Thousands of years ago, a group of people lived in Egypt. They lived on a little strip of land along the Nile River. Every year, the Nile would flood. When the waters retreated, rich soil was left behind. This soil was perfect for farming, and the ancient Egyptians called it the “Black Land.” All the other land in the area was made up of hot, dry desert. The Egyptians felt lucky to have found this special spot near the river.

Ancient Egyptians did not have many of the things we have today. For example, the Egyptians did not have televisions. They did not have video games. They certainly did not have computers or the Internet! You might be fooled into thinking the Egyptians had nothing to do. Actually, this ancient people kept very busy with work and play.

Egyptians at Work

The Egyptians spent their time doing many of the same things modern people do. They built houses to live in. They also built big, sturdy buildings called *pyramids*. In fact, some of their pyramids are still standing today! The Great Pyramid at Giza is the largest single building ever created on Earth that we know of. No one today could build a pyramid as well as the Egyptians did!

In addition to building pyramids and homes, the ancient Egyptians also farmed land and tended sheep. They taught their children, and they raised them well. The Egyptians also ran businesses. They would sell their crops, cloth for clothes, perfumes, jewelry, furniture, and food, such as bread.

Egyptians at Play

The Egyptians found many ways to entertain themselves in the Nile River region. One of these was writing and telling stories. The Egyptians wrote in one of the most beautiful languages in the world-*hieroglyphics*. Long ago, this language was discovered. Many have studied it over the years. Ancient Egyptians would draw pictures on the walls of the pyramids. This was their way of writing down their special stories.

In these drawings, the Egyptians told about fishing in the Nile River. They also described riverboat trips. They enjoyed relaxing on the shore or swimming in the slow-moving waters of the Nile. They loved music and often played instruments to pass the time. These ancient people also loved to play board games. Sometimes, if they were feeling adventurous, they would even hunt crocodiles or hippos! It seems quite silly to hunt crocodiles or hippos!

Wealthy Egyptians liked to have big parties. They would serve food and drinks to their guests. To entertain their guests, they hired musicians, dancers, and acrobats.

Even though the Egyptians lived a long time ago, they were not that different from people of today.

Directions: Read each statement and decide if it is a *fact* or an *opinion*.

- If it is a fact, place an X under “Fact.”
- If it is an opinion, place an X under “Opinion.”
- If the sentence contains a fact *and* an opinion, place an X in both boxes.
Then underline the words that express an opinion.

| | Fact | Opinion |
|----------------------------------------------------------------------------------------------------------|------|---------|
| The Egyptians felt lucky to have found this special spot near the river. | | |
| For example, the Egyptians did not have televisions. | | |
| The Great Pyramid at Giza is the largest single building ever created on Earth that we know of. | | |
| No one today could build a pyramid as well as the Egyptians did! | | |
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| <i>Hieroglyphics</i> is one of the most beautiful languages in the world. | | |
| This soil was perfect for farming, and the ancient Egyptians called it the “Black Land.” | | |
| Sometimes, they would even hunt crocodiles or hippos. It seems quite silly to hunt crocodiles or hippos! | | |



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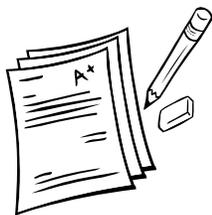
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Directions: Read each statement and decide if it is a *fact* or an *opinion*.

- If it is a fact, place an X under “Fact.”
- If it is an opinion, place an X under “Opinion.”
- If the sentence contains a fact *and* an opinion, place an X in both boxes.
Then underline the words that express an opinion.

| | Fact | Opinion |
|-----------------------------------------------------------------------------------------------------------------|----------|----------|
| The Egyptians felt lucky to have found this special spot near the river. | | X |
| For example, the Egyptians did not have televisions. | X | |
| The Great Pyramid at Giza is the largest single building ever created on Earth that we know of. | X | |
| No one today could build a pyramid as well as the Egyptians did! | | X |
| In addition to building pyramids and houses, the ancient Egyptians also farmed land and tended sheep. | X | |
| <i>Hieroglyphics</i> is one of the most beautiful languages in the world. | | X |
| <u>This soil was perfect for farming</u> , and the ancient Egyptians called it the “Black Land.” | X | X |
| Sometimes, they would even hunt crocodiles or hippos. <u>It seems quite silly to hunt crocodiles or hippos!</u> | X | X |



Using Affixes and Roots to Identify Word Meaning

Directions: Read the passage. Then underline the words that begin with the following prefixes: *under-*, *sub-*, or *mid-*.

An Ocean Mystery

Our submarine floated toward the ocean floor. It seemed like we were going on an impossible mission. Three weeks ago, Professor Perfecto discovered a sunken ship off the Massachusetts coast. The ship laid hundreds of feet below the water's surface. The professor did not know how it got there or where it came from. He asked my brother and me to join him on the underwater adventure to help him uncover clues. "Three pairs of eyes are certainly better than one," he explained to us, and we weren't about to disagree.

The submarine fell further into the dark, deep waters. We felt as if we were driving at midnight without lights on. The professor looked at the radar in front of him. He studied the bright lines that flew across the screen. "Ah, yes, we are getting closer, and we should be there any minute."

Crash! Our submarine collided with something big and hard. It knocked us to the floor. "I think we're there," my brother muttered, rubbing his forehead.

"Indeed," the professor smiled widely. "Now let's turn on these headlights and take a peek, shall we?"

The professor flipped a red switch on the submarine's front panel. A brilliant, white light immediately flooded the murky water revealing a huge, wooden ship buried in the sand up to its midpoint. The submarine drove forward before stopping directly underneath the ship's broken mast. Two big, rusty cannons sat on each side of the mast. They pointed out over what once was the side of the ship. A few heavy cannonballs the size of

grapefruits rolled softly in the ocean's undercurrent.

"There's our first clue, Professor," I said, taking notes in my journal. I underlined the word "cannons."

"And I think I've spotted our next clue," my brother's voice rose in excitement.

The professor and I peeked outside the submarine window at a ripped piece of cloth. It was stuck inside one of the ship's wood planks. A square on the corner of the cloth had three crosses that overlaid each other. The rest of the cloth had stripes running across it. I explained, "It's a flag."

The professor stroked his chin as he thought aloud, "I know I've seen that flag in one of my history books. I can't seem to recall which one it was."

"Let's use our special camera to look for more clues," I suggested.

"Brilliant idea!" the professor exclaimed, and he reached forward and pushed a green button. A long, thin, metal arm with a camera on its tip extended from underneath the submarine. The professor used his computer to guide the camera's direction until he found a hole in the ship's deck. He then moved the camera down the hole. We immediately saw feathers floating in the water.

"What are those?" I asked. "Are they some kind of subhuman life form?"

"Not at all," the professor explained. "Those are quill pens. Hundreds of years ago, people dipped feathers in ink when they wanted to write something." I wrote "quill pens" and "hundreds of years ago" in my journal just as a sparkle in the water caught my eye.

“Look, there are some coins!” The professor guided the camera to the silver dollars buried halfway in the sand. He moved the camera closer until we could see the faded letters imprinted on the coins. “Continental Congress,” I said, reading the words.

“Of course,” the professor shouted, clapping his hands, “this ship sank during the Revolutionary War in 1776!”

“That’s right,” I agreed. “The coins and the flag are from the Continental Congress. That was the first government of the United States. And the sailors on this ship used the cannons in the fight for independence from the English.”

“Let’s look for more!” my brother shouted impatiently.

Just then, a loud alarm sounded throughout the submarine. “I’m sorry to say, we must come back another day,” the Professor sighed. “We’ve been submerged in this water for a long time, and we need to go to the surface so we don’t run out of air.”

The professor pushed several buttons to bring the camera back into its place and to dim the headlights before cranking the engine. As we quickly floated back to the ocean’s surface, I never stopped smiling. I could not wait to undertake our next underwater mission.

Directions: Identify the meaning of the underlined words from the passage by following the steps below. The first one has been done for you.

1. Record the underlined words in the table. For words that appear more than once, write it in the chart only one time.
2. Next, write the meaning of each prefix.
3. Then write the meaning of each root word.
4. Finally, write the meaning of the underlined word.

| Word | Prefix | Meaning of Prefix | Root Word | Meaning of Word |
|-------------|---------------|--------------------------|------------------|------------------------------|
| submarine | <i>sub-</i> | below | marine | a ship that goes below water |
| | | | | |
| | | | | |
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| | | | | |
| | | | | |
| | | | | |
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| | | | | |
| | | | | |

| Word | Prefix | Meaning of Prefix | Root Word | Meaning of Word |
|------|--------|-------------------|-----------|-----------------|
| | | | | |
| | | | | |

Directions: Write two sentences using words from the first column of the table.

1. _____

2. _____



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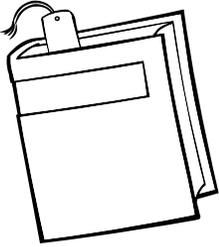
| Word | Prefix | Meaning of Prefix | Root Word | Meaning of Word |
|--------------|---------------|-------------------|-----------|----------------------------------------|
| submarine | <i>sub-</i> | below | marine | a ship that goes below water |
| underwater | <i>under-</i> | below | water | below water |
| midnight | <i>mid-</i> | middle | night | middle of the night |
| midpoint | <i>mid-</i> | middle | point | a point in the middle |
| underneath | <i>under-</i> | below | neath | below something |
| undercurrent | <i>under-</i> | below | current | a current that flows below the surface |
| underlined | <i>under-</i> | below | line | to mark a line under something |
| subhuman | <i>sub-</i> | less than | human | less than human |

| Word | Prefix | Meaning of Prefix | Root Word | Meaning of Word |
|-----------|---------------|-------------------|-----------|----------------------|
| submerged | <i>under-</i> | below | merge | to place under water |
| undertake | <i>under-</i> | below | take | to take on |

Directions: Write two sentences using words from the first column of the table. **Answers will vary.**

1. _____

2. _____



Using Structure of Informational Text to Aid in Understanding

Directions: Read the article. Then complete the activity that follow.

Life at the Bottom of the Ocean

Scientists are busy exploring new life in an unexpected place—at the bottom of the ocean. In the past few years, scientists have found several new species of animal life. These species exist in conditions that one would think could not support life. Here the temperatures are extreme and there is no light. Plus, the pressure from the water would crush most land and ocean animals. Yet in this harsh environment, animal life flourishes.

Hydrothermal Vents

There is no plant life in the deepest parts of the ocean. Plants must have sunlight to live. Scientists used to think that animals relied on plants to produce the oxygen they needed. Several years ago, however, scientists accidentally discovered that there is life deep in the ocean that does not rely on plants. Instead, these creatures rely on chemicals that come from deep in the earth. The chemicals seep through openings in the earth's crust called *hydrothermal vents*. Tiny microbes oxidize the hydrogen sulfide coming through the vents. This process is called *chemosynthesis*. The other creatures get their nutrients either directly or indirectly from these microbes. Life is abundant around these openings deep under the water.

Life Forms

Some life forms in this harsh environment include animals found elsewhere in the ocean. For example, there are deep sea versions of squid, octopi, worms, and mollusks. It is common for some of these deep sea creatures to grow to enormous sizes. Other life forms found in the deepest parts of the ocean cannot be found anywhere else. Giant tubeworms anchor themselves to the ocean floor near the hydrothermal vents.

Scientists have discovered over 300 life forms near the vents. Ninety-five percent of these life forms had never been seen until recently.

Adapting to Harsh Conditions

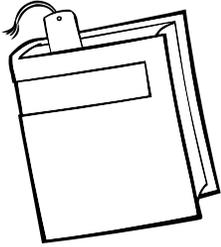
It is cold and dark in this region of the ocean. But animal life has learned to adapt. Some fish produce their own light. The deep sea anglerfish uses light to attract prey. Smaller fish swim toward the light and right into the anglerfish's mouth. Other creatures that live in the depths of the sea have soft bodies and little bone matter. This helps them survive the pressure of the water.

There are still many life forms deep in the ocean that have yet to be discovered. Scientists continue to develop new ways to explore this exciting underwater ecosystem.

Directions: Complete the steps below.

1. First, circle the main idea of the article.
2. Next, underline the details under each subheading.
3. Then complete the graphic organizer below. Include at least three supporting details for each subheading.

| | | |
|---------------------------------------------------|-------------------------------------------|-------------------------------------------------------------|
| Main Idea | | |
| Author's Purpose | | |
| Hydrothermal Vents (Supporting Details) | Life Forms (Supporting Details) | Adapting to Harsh Conditions (Supporting Details) |



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Adapting to Harsh Conditions

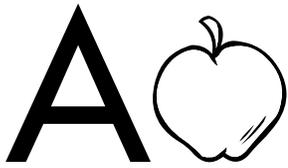
It is cold and dark in this region of the ocean. But animal life has learned to adapt. Some fish produce their own light. The deep sea anglerfish uses light to attract prey. Smaller fish swim toward the light and right into the anglerfish's mouth. Other creatures that live in the depths of the sea have soft bodies and little bone matter. This helps them survive the pressure of the water.

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3. Then complete the graphic organizer below. Include at least three supporting details for each subheading.

| | | |
|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <p>Main Idea</p> <p>Even though conditions are harsh deep in the ocean, life is abundant.</p> | | |
| <p>Author's Purpose</p> <p>The author's purpose is to inform the reader about life deep in the ocean.</p> | | |
| <p>Hydrothermal Vents (Supporting Details)</p> <ul style="list-style-type: none"> • openings in the ocean floor • chemicals seep out • animal life can be found near vents | <p>Life Forms (Supporting Details)</p> <ul style="list-style-type: none"> • squid and octopi are found deep in the ocean • tubeworms grow near vents • 300 life forms have been discovered deep in the ocean | <p>Adapting to Harsh Conditions (Supporting Details)</p> <ul style="list-style-type: none"> • some animals produce their own light • the deep-sea angler fish uses light to catch prey • some animals have soft bodies and few bones |



Categorizing Words

Directions: Read the article. Then complete the activities that follow.

Tide Pool Life

Tide pools are home to some of the most adaptable creatures of the sea. Tide pools are areas of water and rock along ocean shores that experience extreme changes every day. Creatures that live in the tide pools have to survive in difficult conditions. Most tide pool creatures are *invertebrates*, or animals without a backbone. The design of their bodies allows them to survive in a harsh environment.

One group of invertebrates that lives in tide pools are *echinoderms*. Echinoderms often look like stars or flowers. Some have spikes coming off their skin, while others have a rough surface that acts like body armor. Echinoderms also often have tube feet, which are thin tubes with suckers at the ends. The tube feet help the animals stick to rocks and open up shells for food. Echinoderms have body parts extending out from the middle part on their bodies. Sea stars and sea urchins are examples of echinoderms.

A second group of invertebrates that live in tide pools are *arthropods*. Arthropods include animals that live on land and animals that live in the water. Arthropods that live on the land are creatures like spiders and centipedes. Marine arthropods include crabs, lobsters, and shrimp. All arthropods have hard skeletons on the outsides of their bodies. These outer skeletons are their protection against enemies. Marine arthropods also have legs with joints that allow them to crawl along the sea floor, and many of them have claws too. Marine arthropods are an important food source for marine animals and humans alike.

Mollusks are another group of marine invertebrates. Many mollusks, but not all, live in shells that form around their bodies. The shells have two

separate sides that protect their soft bodies. Clams, scallops, and oysters are examples of mollusks with shells. Sea slugs are mollusks that do not have a hard shell to protect them. Mollusks are eaten by many different kinds of creatures. Humans enjoy eating mollusks, as do birds and even sea stars. One mollusk, the oyster, does something special. Some oysters can produce pearls, which are tiny, hard balls. Because of how they shine, humans often make pearls into pieces of jewelry and enjoy wearing them.

A fourth group of animals living in the tide pools is called *cnidarians*. The creatures in this group have stinging cells at the end of tentacles they use for catching food. They also use the stinging cells for protection from predators. The bodies of cnidarians spread out from a middle body part like those of echinoderms. Some cnidarians are free to move about. An example of this type of cnidarian is a jellyfish. Others are anchored to a rock or shell. Sea anemones are cnidarians that are anchored. They rarely move from place to place.

All of these groups of animals can be found in tide pools. Their bodies help them to live at the edge of the ocean where waves crash down on rocks and the water comes and goes with the tide. They all have body parts that help them to find food and be protected in the harsh surrounding.

Directions: Follow the steps below to complete the graphic organizer.

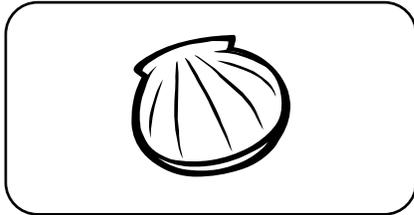
1. Draw a box around the word in the passage that means “animals without a backbone.” Then write this word as the title of the chart below.
2. Circle the names of the four groups of animals found in tide pools. Write each name in the first row of the chart.
3. List examples of animals for each group in the second row of the chart.

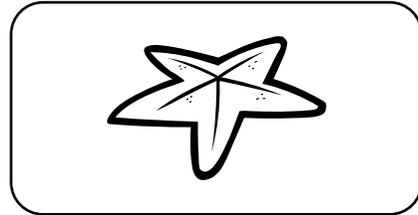
4. Underline words that describe the types of animals that belong to each group. Write a description using the information in the third row of the chart.

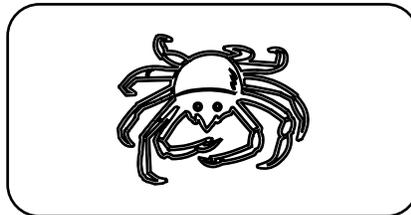
Title: _____

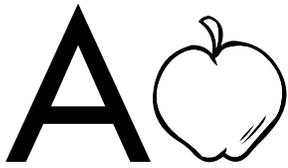
| | | | | |
|-------------|--|--|--|--|
| Group | | | | |
| Animals | | | | |
| Description | | | | |

Directions: Use information from the article to help you decide in which group each animal belongs. Write the name of the group below each picture.









Categorizing Words

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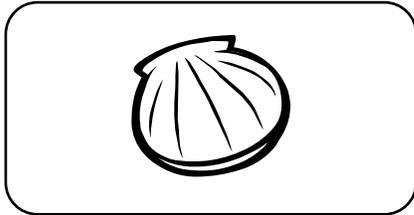
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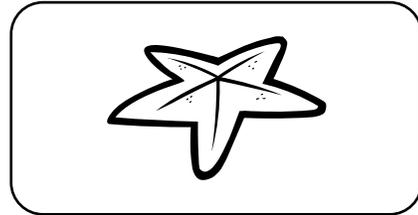
Title: Invertebrates

| Group | echinoderms | marine arthropods | mollusks | cnidarians |
|-------------|--------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Animals | sea stars sea urchins | crabs lobsters shrimp | clams scallops oysters sea slugs | jelly fish sea anemone |
| Description | look like stars or flowers often have tube feet have body parts that extend out from their middle | hard skeleton on outside of body skeleton acts as protection have legs with joints and claws are an important food source | live in shells shells have two separate sides are eaten by many different creatures the oyster makes pearls | have stinging cells at ends of tentacles used to capture food use stinging cells for protection bodies spread out from their middle some are free moving some are anchored |

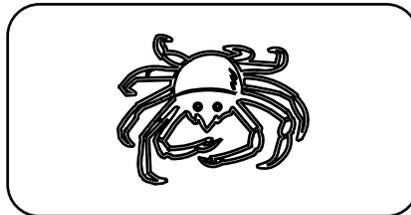
Directions: Use information from the article to help you decide in which group each animal belongs. Write the name of the group below each picture.



mollusk



echinoderm



arthropod

Using Question-and-Answer Relationships to Improve Comprehension



Directions: Read the passage. Then complete the activity that follows.

The Great Barrier Reef

The Great Barrier Reef is the largest coral reef in the world. It measures about 135,000 square miles, which is bigger than the state of Nevada; in fact, the reef is so large that astronauts can see it from space!

The Great Barrier Reef earns its name from its size. The reef is so expansive because it has been growing for thousands of years; it is the largest structure on Earth built by living creatures. The creatures that helped build the reef over such a long time are called polyps.

Coral polyps are tiny water animals that measure less than one inch across; most are about the size of an eraser on the end of a pencil. At the beginning of its life, a soft baby polyp attaches itself to the reef. As it develops, the polyp absorbs calcium, which is a mineral dissolved in the seawater.

The calcium absorbed by the polyp combines with carbon dioxide to make calcium carbonate, which forms a hard outer shell around the creature. The shell protects the soft polyp when it is closed.

When the polyp is open, it uses its tentacles to catch passing food. The coral polyp feeds on zooplankton, which are tiny animals that float in the water. In addition, single-celled algae live inside a polyp's body and use sunlight to make food both for themselves and the polyp.

For the duration of its life, a polyp remains connected to the reef. After it dies, the polyp's skeleton remains connected to the reef. New baby polyps fasten themselves onto the skeletons of dead polyps, and the process begins again.

When you look at the reef, you are seeing the skeletons of thousands of generations of polyps. You are also seeing the work of a special kind of algae called coralline algae. Coralline algae fill in gaps between the polyps and deposit additional calcium carbonate that helps cement the polyp skeletons together. Then, over time, the waves smooth the rough surface of the reef.

This process repeats itself over and over again. As long as baby polyps continue to attach themselves to the reef, the reef will keep growing.

Directions: Read the passage on the previous page. Circle the sentence that most appropriately answers the question. Then write your response to the last question.

1. The passage is mainly about _____.
 - A. what coral polyps use as food.
 - B. structures that are visible from space.
 - C. how baby polyps protect themselves.
 - D. how the Great Barrier Reef was built.

2. What role does coralline algae play in the growth of the Great Barrier Reef?
 - A. It acts like cement, holding the polyp skeletons together.
 - B. It fastens itself to the reef, increasing the reef's size.
 - C. It washes over the reef and smoothes its rough surface.
 - D. It provides food for the polyps that make up the reef.

3. Which one of the following statements is FALSE?
 - A. Zooplankton are tiny animals that float in the water.
 - B. Coralline algae fill gaps between polyps.
 - C. Coralline algae deposit calcium carbonate.
 - D. Zooplankton feed on polyps in the reef.

4. Which of the following explains how the Great Barrier Reef continues to expand?
 - A. Baby polyps fasten themselves to the skeletons of dead polyps.
 - B. Open polyps use their tentacles to catch passing food.
 - C. Coral polyps feed on food produced by single-celled algae.
 - D. Waves wash over the reef, smoothing its rough surface.

5. Summarize how the Great Barrier Reef was built.

Directions: Read the passage on the previous page. Circle the sentence that most appropriately answers the question. Then write your response to the last question.

1. The passage is mainly about _____.
 - A. what coral polyps use as food.
 - B. structures that are visible from space.
 - C. how baby polyps protect themselves.
 - D. how the Great Barrier Reef was built.**

2. What role does coralline algae play in the growth of the Great Barrier Reef?
 - A. It acts like cement, holding the polyp skeletons together.**
 - B. It fastens itself to the reef, increasing the reef's size.
 - C. It washes over the reef and smoothes its rough surface.
 - D. It provides food for the polyps that make up the reef.

3. Which one of the following statements is FALSE?
 - A. Zooplankton are tiny animals that float in the water.
 - B. Coralline algae fill gaps between polyps.
 - C. Coralline algae deposit calcium carbonate.
 - D. Zooplankton feed on polyps in the reef.**

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5. Summarize how the Great Barrier Reef was built.

Answers will vary. Baby polyps attached themselves to the reef. The polyps create calcium carbonate, which they use to grow outer shells for protection. The polyps feed on zooplankton and food made by their single-celled algae. When the polyps die, their skeletons stay connected to the reef. The skeletons remain cemented together by calcium carbonate deposited by coralline algae.

Using Question-Answer Relationships to Improve Comprehension

Directions: Read the passage. Then complete the activity that follows.



Earth's Final Frontier

Just over two-thirds of the Earth is covered with water. This makes the oceans the largest portion of our planet. Even so, the oceans remain the most mysterious and unexplored region on Earth. Strange and eerie creatures roam the depths where no light penetrates and no human has ever walked. Conditions under the surface of the water are as alien and different as those in many places far removed from Earth.

Undersea life requires oxygen just as we do. Sea water is full of oxygen, but our human bodies have no mechanism to remove oxygen molecules from the water the way a fish's gills do.

Pressure is a measurement of how a force spreads out over a given surface. Water is close to 1,000 times heavier than air. Consequently, the pressure of water on someone swimming in the ocean is extremely powerful. A swimmer in the ocean can only withstand the pressure of the water down to 30 or 40 feet.

Even divers in special suits have to descend extremely slowly and then ascend just as slowly. Otherwise they experience a dangerous condition called "the bends," which occurs because nitrogen molecules accumulate in their blood.

Water absorbs light, so light from the sun does not penetrate far below the surface. Just 66 feet down, much light is gone. As you travel deeper and deeper, the light grows dimmer until there is none at all.

Scientists have divided the ocean into different zones according to the depth of the water. There is the Sunlight Zone (from the surface down to 450 feet), the Twilight Zone (from 450 to 3,300 feet), the Dark Zone (from 3,300 to 13,000 feet), and the Abyss (from 13,000 to 20,000 feet). There are still deeper places called trenches, which are deep cracks in the ocean floor. Trenches can be as deep as 36,000 feet.

Around the edges of all the large land masses on Earth are sections of sea bottom called "continental shelves." Here the ocean does not get as deep as it does farther out. But these areas are only a fraction of the sea floor. Oceanographers say that the average depth of all the Earth's oceans is around 12,500 feet.

A submersible is a specialized craft made specifically to allow researchers to descend into the depths of the oceans. Submersibles can reach a depth of 21,000 to 22,000 feet. Unmanned ROVs (Remotely Operated Vehicles) can reach even deeper, taking pictures and samples of ocean life.

There have been several research facilities placed underwater, where scientists have stayed for a few weeks, but none yet has served as a permanent living space for people. Perhaps the future will bring such a development.

Directions: Read the passage. Circle the best answer for each question. Then write your response to the final question.

1. Identify the true statement.
 - A. Three-quarters of the Earth is covered with water.
 - B. Undersea life requires oxygen just like life on the surface.
 - C. Light penetrates to the depths of the ocean.
 - D. The oceans are the most explored regions of the Earth.

2. According to the passage, what is one thing people would have to do to live at the bottom of the ocean?
 - A. figure out a way to deal with the pressure of the water
 - B. determine which country owns the land in the oceans
 - C. pull a source for light from the core of the planet
 - D. avoid the strange and eerie creatures that live there

3. If a submersible landed on the ocean floor at 19,000 feet below sea level, which zone would it be in?
 - A. Sunlight Zone
 - B. Twilight Zone
 - C. Dark Zone
 - D. the Abyss

4. Which situation would most likely cause “the bends”?
 - A. The diver ascends too fast, and too much nitrogen is produced in the blood.
 - B. The diver accumulates too much oxygen in the blood.
 - C. The diver does not have enough air pressure in the submersible.
 - D. The diver does not get any critical ultraviolet sunlight while working in the Dark Zone.

5. What is the main idea of the passage? What should researchers consider when devising an underwater habitat?

Directions: Read the passage. Circle the best answer for each question. Then write your response to the final question.

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5. What is the main idea of the passage? What should researchers consider when devising an underwater habitat?

Answers will vary. The main idea of the passage is that some people want to create a habitat on the ocean floor to conduct research and to learn about this vastly unexplored region of the Earth. There has been quite a bit of research to figure out what issues have to be solved in order for people to survive while living on the ocean floor. There are a number of things that will have to be resolved. Scientists will have to figure out how people can get oxygen out of the water and deal with the enormous pressure created by all that water on top of them. They will also have to find a way to get sunlight to the people living there since it is needed for good health.

Analyzing Text That Uses the Cause-and-Effect Organizational Pattern

Directions: Read the passage. Then complete the activity that follows.



Seafloor Spreading

Deep beneath the ocean floor lies the mid-ocean ridge. It stretches for more than 50,000 kilometers. It is the longest, most massive mountain range on Earth. This underwater chain of towering peaks curves like a winding river, reaching into all of Earth's oceans.

The crest of these great oceanic ridges is the site of a remarkable phenomenon—seafloor spreading. The mid-ocean ridge occurs along a crack in the crust of the ocean floor. At this site, molten rock rises from the mantle and squeezes through the crack.

The molten material spreads out to fill the crack. Then it cools and becomes a strip of solid rock in the center of the ridge. The solid strip splits and is pushed along both sides of the ridge when additional molten material flows from the mantle. This process of seafloor spreading continuously creates new ocean floor.

One of the strongest pieces of evidence that helps prove the existence of the process of seafloor spreading is called magnetic striping. As scientists began studying the rocks on the ocean floor, they discovered that the rocks appear in a pattern of magnetized stripes. These stripes appeared symmetrically on both sides of the mid-ocean ridge.

These stripes of rock on the ocean floor contain a permanent magnetic memory. Bits of iron contained in the rock line up and are “locked in place” according to the direction of the Earth's magnetic poles at a given time. These poles occasionally change, resulting in a directional change for the iron bits.

Scientists used sensitive instruments to measure the magnetic memory of these stripes. They found that the pattern is the same on both sides of the mid-ocean ridge. Each stripe that indicates a time when Earth's magnetic field pointed south is followed by a parallel one indicating a time when Earth's magnetic field pointed north. It has become clear that seafloor spreading occurs in both directions, moving away from the mid-ocean ridge.

Another indication that seafloor spreading occurs comes from samples of rock drilled from the ocean floor. Scientists on the research ship *Glomar Challenger* examined rock samples from various locations to determine their age. They found that the youngest rock was near the mid-ocean ridge. The farther away the rock sat from the ridge, the older it was.

Magnetic striping and the dating of drilled rock samples from the ocean floor are proof that seafloor spreading does occur. If the older, denser oceanic crust did not sink back into the mantle at deep-ocean trenches, the sea floor would forever grow larger and larger.

Directions: Circle the correct answer for each question. Then write a response to the last question.

1. According to the passage, which sentence best describes the cause of seafloor spreading?
 - A. Underwater volcanoes add to the height and length of the mid-ocean ridge.
 - B. Molten rock from Earth's mantle cools upon contact with seawater, forming solid rock.
 - C. Magnetic striping forms a pattern of alternating parallel stripes of rock on the sea floor.
 - D. Young rock is closest to the center of the mid-ocean ridge, while older rock is further away.

2. Which sentence best describes why the sea floor does not get bigger despite seafloor spreading?
 - A. Molten rock rises from the mantle and squeezes through the crack.
 - B. Older, denser oceanic crust eventually sinks back down into the mantle.
 - C. When Earth's poles switch directions, the rocks become "locked in place."
 - D. Peaks from the mid-ocean ridge break off and tumble to the ocean floor.

3. According to the passage, what is the effect of changes in the direction of Earth's magnetic field?
 - A. Molten rock cools and spreads out to form a solid ridge.
 - B. Bits of iron in magnetized stripes of rock change their direction.
 - C. Permanent magnetic striping appears along the mid-ocean ridge.
 - D. Towering peaks are formed that reach into all of Earth's oceans.

4. Which details describe evidence cited by scientists to explain seafloor spreading?
 - A. measurements of Earth's polarity using a magnetometer
 - B. measurements of the length and height of the mid-ocean ridge
 - C. conveyor-belt-like movement of new rock to the top of the mid-ocean ridge
 - D. alternating magnetized rock stripes and age of rock samples from the ocean floor

5. Write a summary of the passage.

Directions: Circle the correct answer for each question. Then write a response to the last question.

1. According to the passage, which sentence best describes the cause of seafloor spreading?
 - A. Underwater volcanoes add to the height and length of the mid-ocean ridge.
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5. Write a summary of the passage.

Answers will vary. Seafloor spreading occurs at the crest of the mid-ocean ridge. Molten rock rises from a crack along the ridge. When it cools, new ocean floor is formed. Older crust sinks back into the mantle, preventing the sea floor from growing too big. Scientists have found other evidence in the magnetic striping of iron bits along the mid-ocean ridge.
