Main Idea and Summary

Grade 5 Reading Worksheet

Name _____ Date _____

Circle the answer.

READ THIS FIRST

Marie Tharp Maps the Ocean Floor

In the 1940s, most people pictured the bottom of the ocean as a flat, muddy plain. No one could see it. Sunlight fades within a few hundred meters of the surface, and the deepest seafloor lies several kilometers down. Marie Tharp, a young scientist in New York, helped change that picture forever.

Tharp worked at a time when women were not allowed on most research ships. Her partner, Bruce Heezen, sailed across the Atlantic Ocean collecting data. The ships used echo sounders, machines that send a ping of sound down to the seafloor. By timing how long the echo took to return, scientists could tell how deep the water was at that spot. Heezen brought home long paper rolls covered with thousands of these depth readings.

Tharp's job was to turn those numbers into a picture. She worked at a large drafting table, plotting each reading by hand. Slowly, a shape began to appear. She drew six long lines of readings across the Atlantic. In every line, she found the same thing. A tall mountain range ran down the middle of the ocean. Even more surprising, a deep valley split the top of the mountains, like a crack.

Tharp believed the valley showed that the seafloor was pulling apart. At the time, most scientists did not accept the idea that continents slowly move. Heezen himself first called her idea "girl talk." Tharp kept checking her work. She compared her map with records of undersea earthquakes. The earthquakes lined up along her valley. That evidence finally convinced Heezen.

Over the next twenty years, Tharp and Heezen mapped the floors of the world's oceans. They found that the mid-ocean ridge winds around the whole planet like the seam on a baseball. In 1977, they published a full map of the ocean floor. An Austrian artist, Heinrich Berann, painted it using their data.

Today, scientists know that new seafloor forms along these ridges as the plates of Earth's crust slowly spread apart. Tharp's hand-drawn maps were some of the first strong evidence for this idea. She showed that careful work with numbers can reveal a hidden world no person has ever seen.

1. Which two main ideas does the author develop in this text?

   Heezen collected depth readings at sea, and an Austrian artist later painted a world map.

   Ships used echo sounders, and women were not allowed to sail on them.

   The ocean floor is a flat plain, and sunlight cannot reach the bottom.

   Tharp's maps revealed an undersea ridge, and they helped prove the seafloor spreads.

2. Which detail best supports the idea that Tharp's maps revealed something new?

Heezen brought home long paper rolls of readings.

She worked at a large drafting table in New York.

A tall mountain range ran down the middle of the ocean.

Women were not allowed on most research ships.

3. How did the earthquake records support Tharp's idea?

The earthquakes happened mostly near North America.

The earthquakes showed that the seafloor was flat.

The earthquakes lined up along the valley she drew.

The earthquakes proved that continents never move.

4. What is the main idea of the second paragraph?

Heezen did not believe that continents could move.

The Atlantic is deeper than any other ocean.

Ships measured ocean depth by timing echoes of sound.

Tharp plotted every reading by hand at a table.

5. Which detail would be least important in a summary of the text?

Tharp found a valley splitting the undersea ridge.

An Austrian artist painted the 1977 map.

Her maps supported the idea that the seafloor spreads.

Earthquake records matched the valley on her map.

6. Why does the author include Heezen calling the idea "girl talk"?

to show Tharp's idea was doubted until evidence won

to show that Heezen did most of the careful mapping work himself

to show that Tharp later changed her own mind

to explain how echo sounders measured the depth

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Answer Key - Grade 5 Reading Worksheet

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