

Name _____ Class period _____

PLATE TECTONICS

Features of the Seafloor

Before World War II, people thought the seafloor was completely flat and featureless. There was no reason to think otherwise. But during the war, battleships and submarines carried devices called echo sounders. An echo sounder produces sound waves that travel outward in all directions. The sound waves bounce off underwater objects and the seafloor and return to the ship. The echo sounder has a receiver that detects the returned sound waves and records how long it took for them to return. The speed of sound in seawater is known and can be used with the echo sounder data to calculate the distance to the objects that the sound waves hit. The purpose of using echo sounders during the war was to detect enemy submarines. However, most of the sound waves did not hit submarines. Instead, they traveled to the bottom of the ocean and provided data that could be used to map the seafloor.

Scientists were surprised to learn that there are long, continuous ridges of huge mountains in the middle of the oceans. For example, a mid-ocean ridge runs approximately north-south through the center of the Atlantic Ocean. Scientists were also surprised to find out that there are very deep trenches around the edges of continents near chains of active volcanoes. For example, deep-sea trenches are found near the west coast of Central and South America. Trenches are the deepest places on Earth. The deepest trench is the Mariana Trench in the southwestern Pacific Ocean. This trench plunges about 11 kilometers (35,840 feet) below sea level. The seafloor also has isolated mountains scattered across the ocean floor as well as flat areas lacking other features. The flat areas are called abyssal plains.

Circle the letter of the correct choice.

1. Before World War II, people thought the seafloor
 - a. had huge mountain ranges.
 - b. contained deep trenches.
 - c. was flat and featureless.
 - d. had active volcanoes.

2. Echo sounders were first developed to

- a. map the ocean floor.
- b. locate enemy submarines.
- c. determine the depth of the ocean.
- d. find evidence for seafloor spreading.

3. The deepest place on Earth is

- a. 11 km below sea level.
- b. 110 km below sea level.
- c. 1100 km below sea level.
- d. none of the above

4. Reversed polarity means that the north and south magnetic poles are

- a. located in the same positions as they are right now.
- b. located opposite their present positions.
- c. both in the same location.
- d. no longer magnetic.

5. The alternating magnetic stripes on the ocean floor show

- a. how Earth first formed.
- b. why the seafloor spreads.
- c. when polar reversals occurred.
- d. where sediments were deposited.

6. New seafloor forms at

- a. deep-sea trenches.
- b. mid-ocean ridges.
- c. continental edges.
- d. two of the above

7. Old seafloor sinks into the mantle at

- a. deep-sea trenches.
- b. mid-ocean ridges.
- c. continental edges.