

Seafloor Spreading (p. 276 – 278)

I. Mapping The Ocean Floor

1. Circle the letter of each sentence that is true about mid-ocean ridges.

- a. The mid-ocean ridges were mapped using sonar sound waves.
- b. The mid-ocean ridges are found only below the Pacific Ocean.
- c. The mid-ocean ridges are completely underwater.
- d. The tops of some mid-ocean ridges are split by a steep-sided valley.

(long, underwater mountain ranges)
 Ex. - Mid-Atlantic Ridge
 - East Pacific Rise

2. How does sonar (sound bouncing device) determine the distance to underwater objects?

Sound waves echo off of the ocean bottom
 (longer return = deeper water)

3. Define the term seafloor spreading.

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Seafloor Spreading – process that continually adds new material to the ocean floor
 (New crust forms at mid-ocean ridges)

4. Who developed the theory of seafloor spreading?

Harry Hess

5. When was the seafloor spreading theory developed?

1962

6. In seafloor spreading, where does new crust come from?

Molten material that erupts + cools.

II. Evidence For Spreading

1. What was the name of the research ship that collected seafloor rock samples in 1968?

Glomar Challenger (Equipped with a drilling rig.)

2. How did drilling samples show that seafloor spreading really has taken place?

The farther away from the ridges the samples were taken, the older the rocks were.
 (Younger rocks = closer to the ridges)

Student
DEMO

3. Circle the letter of each sentence that is true about Earth's magnetism.

- a. At times in the past, a compass needle on Earth would have pointed South.
 b. Rock that makes up the ocean floor lies in a pattern of magnetized strips.
 c. The pattern of stripes is different on both sides of mid-ocean ridges.
 d. The magnetic memory of rock on the ocean floor changes over time.

4. Define the term magnetometer.

Magnetometer – sensing device used to detect magnetic fields

III. Subduction At Trenches (Not in the book.)

1. What is a long, narrow & deep canyon where the seafloor bends down toward the mantle?

deep ocean trench →

2. What is subduction?

Ex. Mariana Trench

Process by which ocean floor sinks beneath a trench + back into mantle

3. What process in Earth's interior causes subduction and seafloor spreading?

Convection Currents

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Conveyor belt movement

4. Complete the following flow chart.

Convection Currents in Earth's mantle.

↓
Causes

Subduction

↓
Causes

Seafloor Spreading

↓
Results in

The ocean is changes in size & shape.

5. At deep-ocean trenches, ^{subduction} ~~conduction~~ allows oceanic crust to sink back into the mantle.

Circle One :

True

False

6. The Pacific Ocean is shrinking.

Circle One :

True

False

7. Why is the Atlantic Ocean expanding?

The Atlantic Ocean has only a few short trenches. The spreading ocean floor has nowhere to go.

- Lava
Lamps
- Noodles
- Magma
- Hot Air
Balloon

Ocean floor
is renewed
every 200
million yrs.