Lesson 2 Development of a Theory

Predict *three facts that will be discussed in Lesson 2 after reading the headings. Write your predictions in your Science Journal.*

Main Idea

Mapping the Ocean Floor

I found this on page 225 .

Seafloor Spreading

I found this on page 226 .

Details

Assess *information about the ocean floor. Read the statements below. If the statement is true, write* true *on the line. If it is false, write* false *on the line and rewrite the underlined portion of the statement so that it is true.*

A device called an echo-sounder can determine the depth of the ocean.

true

Topographic maps of the seafloor made from ocean depth data reveal that the seafloor is almost completely flat.

false; vast mountain ranges stretch along the seafloor

Mid-ocean ridges are shorter than mountain ranges found on land.

false; longer than mountain ranges found on land

Sequence *the process of* seafloor spreading.

The seafloor spreads at a mid-ocean ridge. Solid mantle material begins to melt. This material is less dense than the surrounding solid rock.

The liquid magma rises through cracks in the crust and erupts from volcanic vents along the mid-ocean ridge.

The magma, now called lava, cools, solidifies, and forms a rock called basalt.

Magma continues to rise and solidify. It pushes the newly-formed crust away from the mid-ocean ridge. Younger, less dense, warmer rocks are found close to the ridge. Older, denser, cooler rocks are found farther from the ridge.

Main Idea

I found this on page 226.

Details

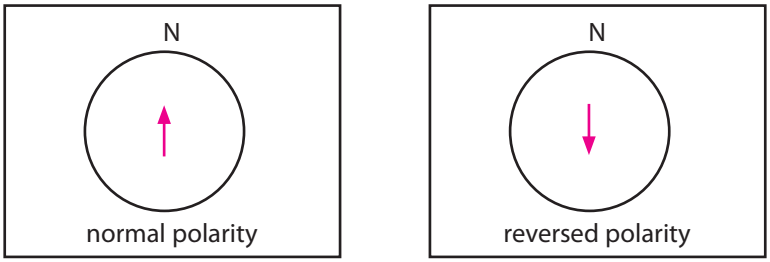
Summarize *the importance of the idea of* seafloor spreading.

The idea of seafloor spreading provides a mechanism to explain why continents move. Continents move with the ocean crust as it spreads away from mid-ocean ridges.

Development of a Theory

I found this on page 228.

Model normal polarity *and* reversed polarity *by drawing arrows in the diagrams below.*



I found this on page 229.

Draw *the seafloor on either side of a* mid-ocean ridge. *Show the rocks that formed during times of* normal polarity *in blue. Show those that formed during times of* reversed polarity *in red. Then write a sentence to explain how* magnetic reversal *confirms the idea of* seafloor spreading.

Drawings should show a cross-section of the seafloor with a mid-ocean ridge in the middle. Parallel bands of alternating polarity should be mirrored on both sides of the ridge.

Sample answer: The magnetic stripes on both sides of mid-ocean ridges match up. The ocean crust is made at the ridges and is carried away in both directions.

Connect It Recall the questions that scientists had about Wegener's continental drift theory. Explain how seafloor spreading answers one or more of those questions.

Accept all reasonable responses. Sample answer: One of the questions was how the continents were able to move through the solid rock of Earth's crust. The answer explained by seafloor spreading is that the crust itself is moving, and that the continents are "riding along" on the floating sections of crust.