

Sea Floor Spreading

Chapter 4
Section 4



Standard

- S 6.1 Students know evidence from plate tectonics is derived from the fit of the continents and mid ocean ridges.

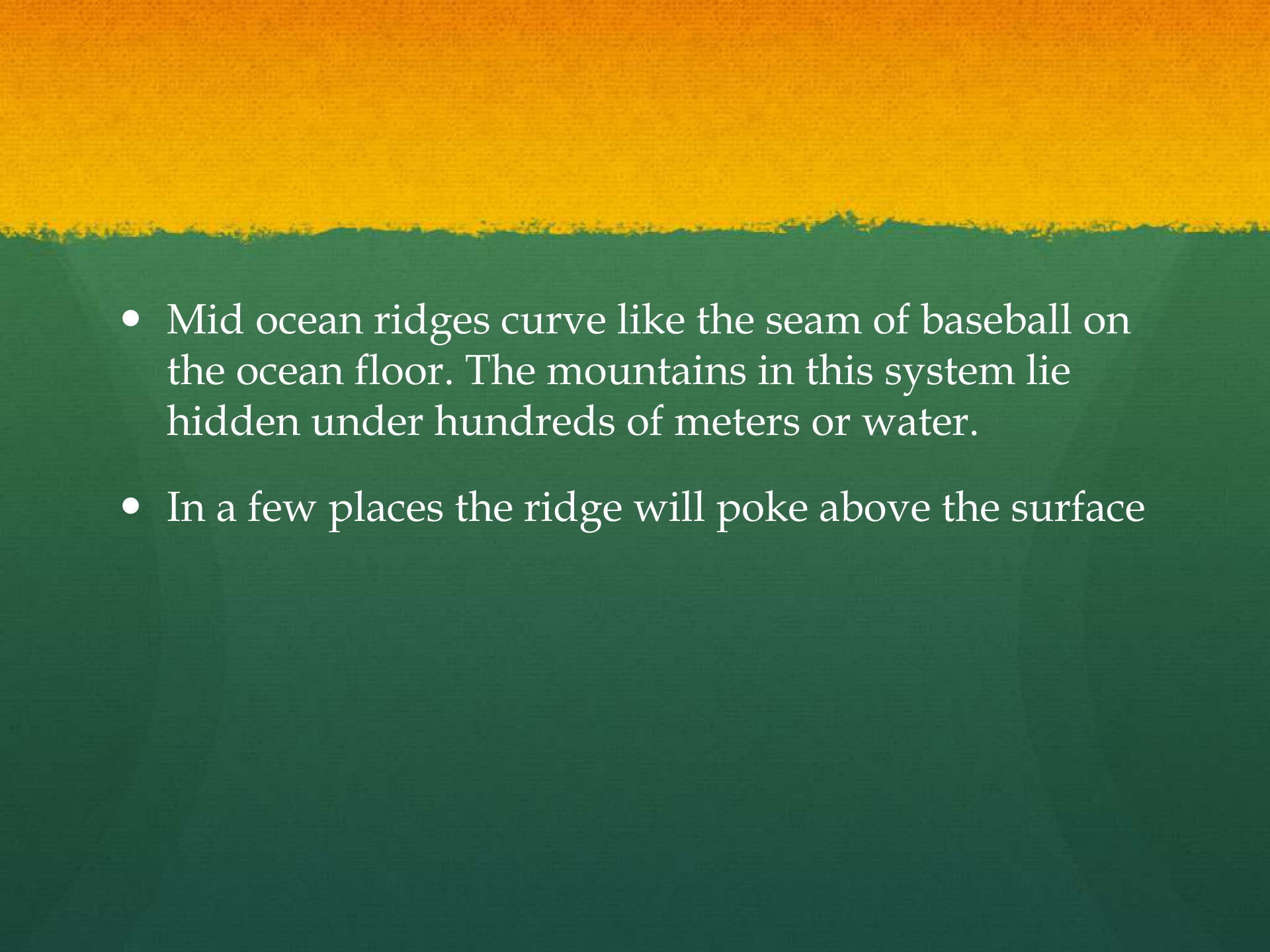
Vocabulary

- Mid-ocean ridges
- Sonar
- Sea floor spreading
- Deep ocean trench
- subduction

Anticipatory Set

- Close your eyes
- Deep in the ocean, the temperatures are freezing
- No light
- There are bizarre creatures living down there
- Giant, red tipped tube worms, giants clams, and spider like crabs
- This is what the bottom of the ocean looks like

- Sonar is what scientist use in the mid-1900s to map the mid-ocean ridge.
- Mid ocean ridges are found in all of Earth's oceans.

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- Mid ocean ridges curve like the seam of baseball on the ocean floor. The mountains in this system lie hidden under hundreds of meters of water.
 - In a few places the ridge will poke above the surface

Sea Floor Spreading

- Scientists in a submersible saw rocks formed by the rapid hardening of molten material when they observed mid-ocean ridges.
- In Sea-floor spreading, molten material rises from the mantle and erupts along the mid-ocean ridges.
- The sea floor spreads apart along both sides of the ocean ridge as new crust is added.
- The ocean floor moves like a conveyor belt, carrying the continents along with them.

- It forms a crack in the oceanic crust
- Molten materials rises and erupts from the crack
- It moves over the old crust
- Then begins to cool
- It then forms a new strip of rock

Evidence of Sea Floor Spreading

- Evidence:
 - Eruptions of molten material-
 - Alvin- small submarine (withstand crushing forces) and the crew found rocks shaped liked pillows
 - Magnetic stripes in the rock of the ocean floor
 - Patterns in the rocks, contains iron, creates a magnetic strip
 - The ages of the rocks
 - Drilling samples, brought up through pipes
 - Scientists discovered that rocks farther away from the mid-ocean ridge were older than those near it by determining the age of rock samples obtained by drilling on the sea floor.

Subduction at Trenches

- Part of the ocean floor sinks back into the mantle at deep ocean trenches
 - Subduction
- New ocean floor is hot
- Moves away and cools and becomes dense
- Gravity pulls the older floor beneath the trench

Together

- Together they have changed the size and shape of our oceans
- The Pacific Ocean is shrinking, how can that be?
- The trenches around the edges are pulling in the older crust.

Checking for Understanding

- _____ is what scientist use in the mid-1900s to map the mid-ocean ridge.
- _____ are found in all of Earth's oceans
- What is subduction?



Guided Practice

Independent Practice

- Guided Practice “Building Vocabulary”
- Stop!!! See Me!!!
- Independent Practice: Side one #1-5
- Back side: Homework!