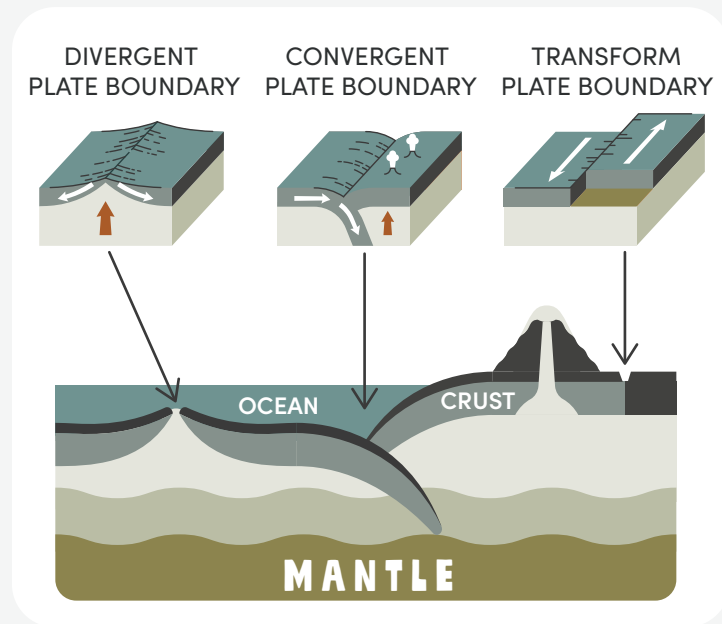


TECTONIC PLATE BOUNDARIES

Read the passage below to learn how tectonic plate boundaries affect our world.

The **theory of plate tectonics** says that Earth's crust and the uppermost part of the mantle are broken up into pieces called **tectonic plates**. The breaks between plates are called **tectonic plate boundaries**. Tectonic plate boundaries are classified by the way the plates are moving relative to each other.



A **divergent plate boundary** occurs when two tectonic plates pull away in opposite directions. Magma rises to the surface to fill the gap, creating new crust.

A **convergent plate boundary** occurs when two tectonic plates collide. When two oceanic plates or an oceanic and continental plate collide, the denser oceanic plate is forced under the other plate and into the mantle. This process, called **subduction**, destroys the crust of the plate. When two continental plates collide, neither is dense enough to subduct under the other. Instead, the crust buckles and forms mountains.

A **transform plate boundary** occurs when two tectonic plates slide past each other. Crust is neither created nor destroyed at transform plate boundaries.

Answer the following questions.

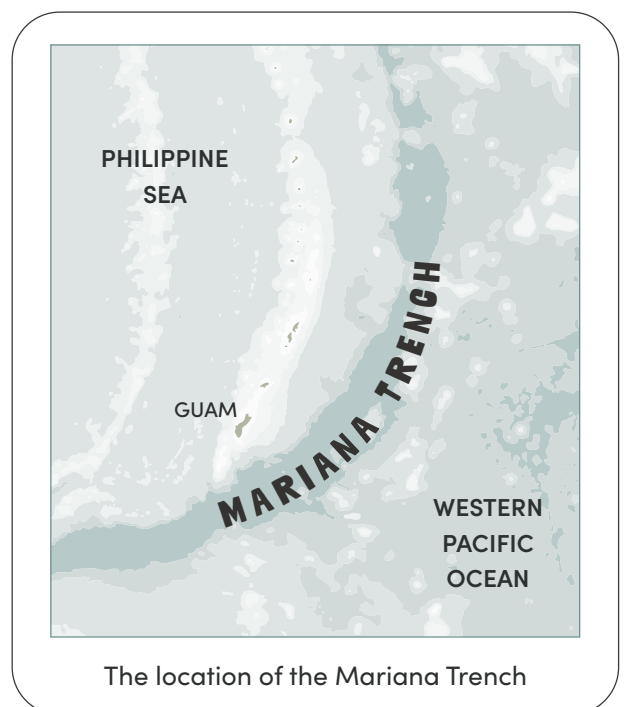
1. The Mariana Trench is the deepest oceanic trench on Earth. It is located in the western Pacific Ocean near the Mariana Islands, and it's formed as the Pacific Plate is subducted under the Mariana Plate.

a. How are the Mariana Plate and Pacific Plate moving relative to each other? How do you know? **(Sample Answer)**

Since the Pacific Plate is subducted under the Mariana Plate, the two must be colliding or moving toward each other.

b. What type of tectonic plate boundary exists at the Mariana Trench?

convergent



The location of the Mariana Trench

TECTONIC PLATE BOUNDARIES

Keep going! Answer the following questions.

2. The San Andreas Fault exists at the boundary between the North American Plate and the Pacific Plate. No crust is created or destroyed at this tectonic plate boundary, and no mountains are formed.

- a. How are the North American Plate and Pacific Plate moving relative to each other? How do you know? (Sample Answer)

Since no crust is being created or destroyed, and no mountains are forming, the North American and Pacific plates must be sliding past each other.

- b. What type of tectonic plate boundary exists at the San Andreas Fault?

transform



An aerial view of the San Andreas Fault

IMAGE: John Wiley, CC BY 3.0

3. The Mid-Atlantic Ridge is an oceanic ridge that stretches the length of the Atlantic Ocean. In the North Atlantic Ocean, the Mid-Atlantic Ridge separates the North American Plate from the Eurasian Plate. The Mid-Atlantic Ridge grows larger each year as magma fills in the gap created by the movement of the North American and Eurasian plates.

- a. How are the North American Plate and Eurasian Plate moving relative to each other? How do you know? (Sample Answer)

Since the movement of the North American Plate and Eurasian Plate is leaving a gap, they must be moving away from each other.

- b. What type of tectonic plate boundary exists at the Mid-Atlantic Ridge?

divergent



A section of the Mid-Atlantic Ridge, Iceland

4. The terms **constructive** and **destructive** are occasionally used to describe convergent and divergent plate boundaries. Which plate boundary (convergent or divergent) do you think is described as constructive, and which do you think is described as destructive? Explain your reasoning. (Sample Answer)

Divergent plate boundaries are described as constructive, and convergent plate boundaries are described as destructive. This is because divergent plate boundaries create, or construct, new crust, while convergent plate boundaries destroy crust.