Mini-Task: Plate Tectonics

Part 1: The Ring of Fire Video

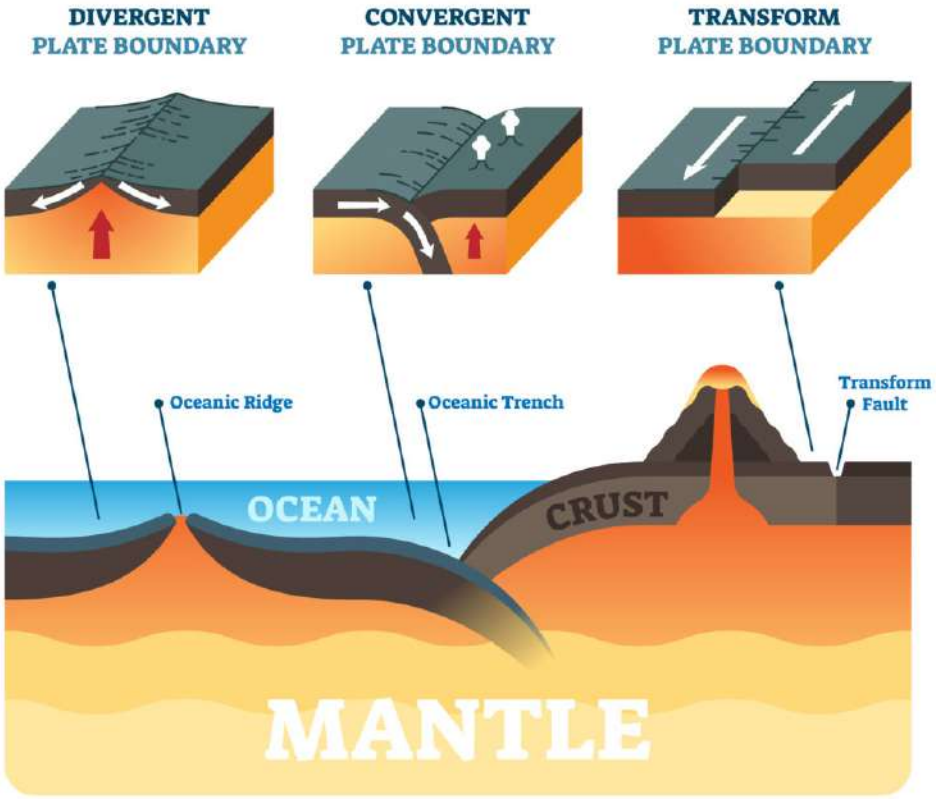
After watching the video, brainstorm with your table partner what unique feature of Earth causes the volcanoes, earthquakes, and other disasters at the ring of fire.

Part 2: Movement of Earth's Tectonic Plates

Read the following article and answer the questions that follow.

What are the different types of plate tectonic boundaries?

There are three kinds of plate tectonic boundaries: divergent, convergent, and transform plate boundaries.



The Earth's lithosphere, which includes the crust and upper mantle, is made up of a series of pieces, or tectonic plates, that move slowly over time.

A **divergent boundary** occurs when two tectonic plates move away from each other. Along these boundaries, earthquakes are common and magma (molten rock) rises from the Earth's mantle to the surface, solidifying to create a new oceanic crust. The Mid-Atlantic Ridge and Pacific Ring of Fire are two examples of divergent plate boundaries.

When two plates come together, it is known as a **convergent boundary**. The impact of the colliding plates can cause the edges of one or both plates to buckle up into mountain ranges or one of the plates may bend down into a deep seafloor trench. A chain of volcanoes often forms parallel to convergent plate boundaries and powerful earthquakes are common along these boundaries.

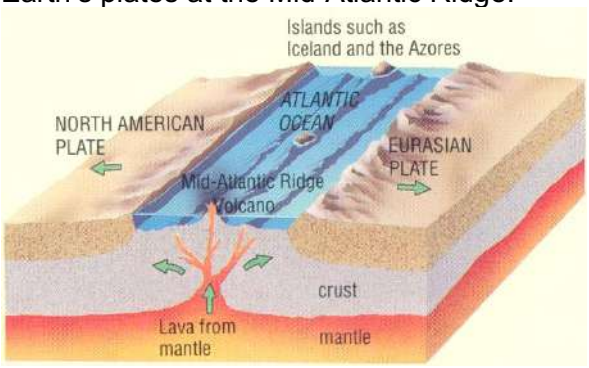
At convergent plate boundaries, oceanic crust is often forced down into the mantle where it begins to melt. Magma rises into and through the other plate, solidifying into granite, the rock that makes up the continents. Thus, at convergent boundaries, continental crust is created and oceanic crust is destroyed.

Two plates sliding past each other forms a **transform plate boundary**. One of the most famous transform plate boundaries occurs at the San Andreas fault zone, which extends underwater. Natural or human-made structures that cross a transform boundary are offset—split into pieces and carried in opposite directions. Rocks that line the boundary are pulverized as the plates grind along, creating a linear fault valley or undersea

canyon. Earthquakes are common along these faults. In contrast to convergent and divergent boundaries, crust is cracked and broken at transform margins, but is not created or destroyed.

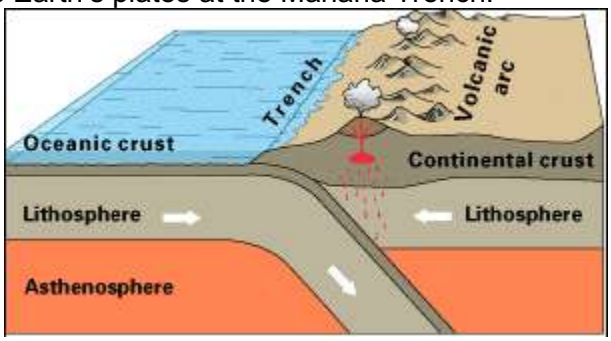
Questions

1. The picture below shows Earth's plates at the Mid-Atlantic Ridge.



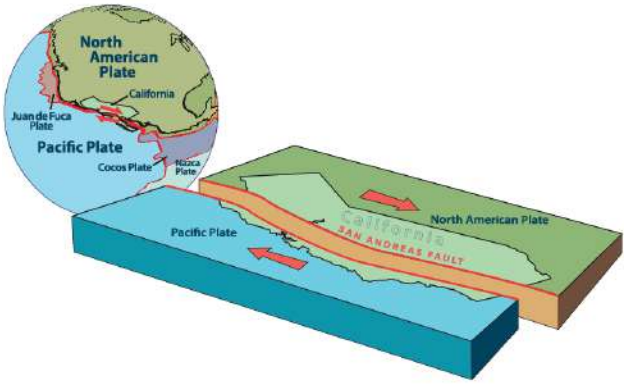
What type of plate boundary exists at the Mid-Atlantic Ridge in the center of the Atlantic ocean? How do you know?

2. The picture below shows Earth's plates at the Mariana Trench.



What type of plate boundary exists at the Mariana Trench in the Pacific ocean? How do you know?

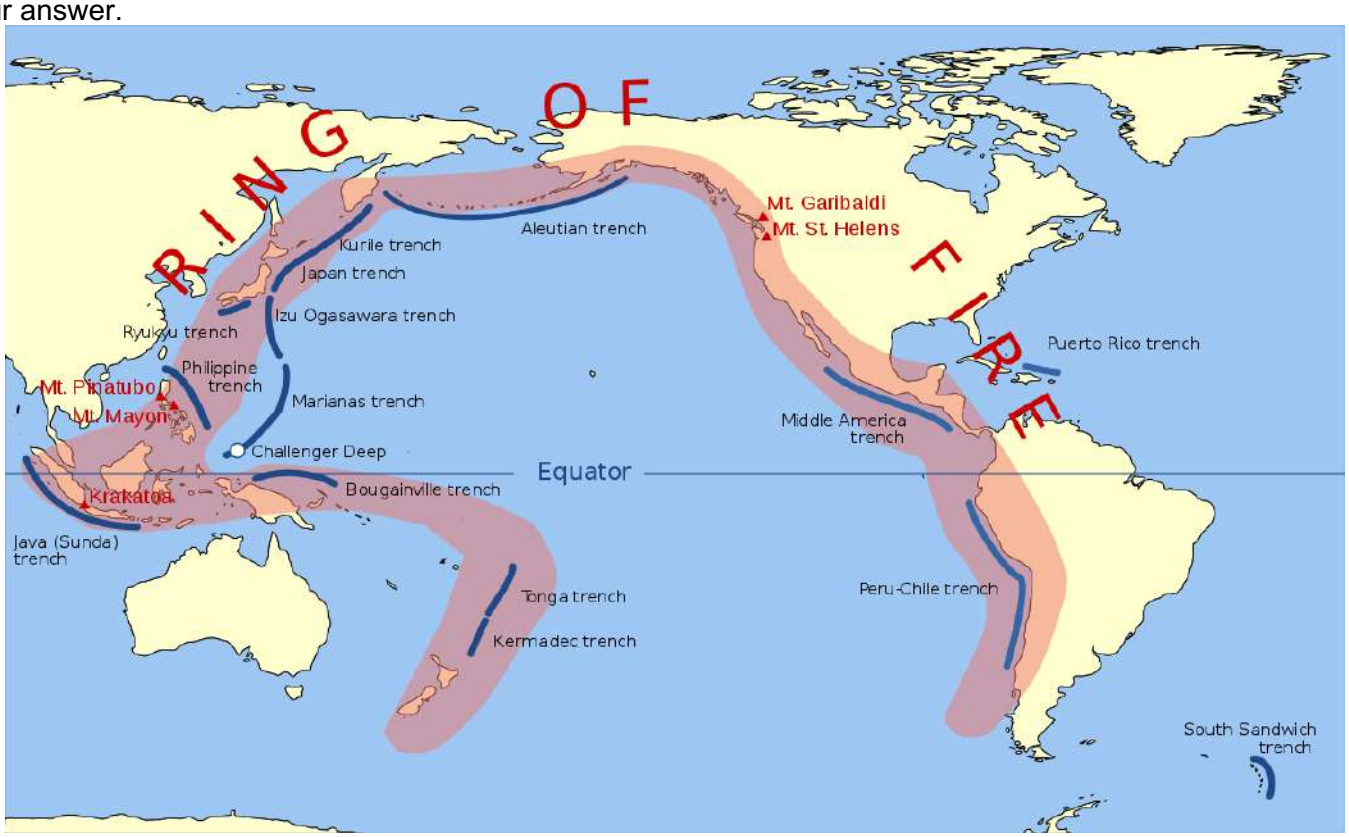
3. The picture below shows Earth's plates at the San Andreas Fault.



What type of plate boundary exists at the San Andreas fault? How do you know?

Part 3: Revisit the Ring of Fire

For each event occurring at the Ring of Fire, list what type of plate boundary you think is responsible. Explain your answer.



1. Volcanoes

2. Earthquakes