

# 43.1 Planet Earth II

Physical  
Science

Summarize main points from each video.

Video Title / topic \_\_\_\_\_

Video Title / topic \_\_\_\_\_

Video Title / topic \_\_\_\_\_

# Topic Introduction



**Summarize your understanding of each paragraph.**

The mechanically rigid outer layer of Earth, the lithosphere, is divided into pieces called tectonic plates. These plates are rigid segments that move in relation to one another at one of three types of plate boundaries.

Earthquakes, volcanic activity, mountain-building, and oceanic trench formation can occur along these plate boundaries. The tectonic plates ride on top of the asthenosphere.

As the tectonic plates migrate, oceanic crust is subducted under the leading edges of the plates at convergent boundaries. At the same time, the upwelling of mantle material at divergent boundaries creates mid-ocean ridges.

The seven major plates are the Pacific, North American, Eurasian, African, Antarctic, Indo-Australian, and South American. Other notable plates include the Arabian Plate, the Caribbean Plate, and the Nazca Plate .

# Read/Summarize/Define



1. Read the passage.
2. Underline key expressions.
3. Define each expression listed.

*Wikipedia: Earth.*

Below the ocean's surface are much of the continental shelf, mountains, volcanoes, oceanic trenches, submarine canyons, oceanic plateaus, abyssal plains, and a globe-spanning mid-ocean ridge system.

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Continental shelf

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Mountains

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Volcanoes

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Oceanic trenches

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Submarine canyons

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Oceanic plateaus

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Abyssal plains

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Mid-ocean ridge

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# Read Text for Comprehension

Read this article for deeper understanding. No summary is required, although you may want to circle, underline, or mark key ideas and words.

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## **Tectonic plates**

Tectonic plates are composed of oceanic lithosphere and thicker continental lithosphere, each topped by its own kind of crust. Along convergent boundaries, subduction, or one plate moving under another, carries the lower one down into the mantle; the material lost is roughly balanced by the formation of new (oceanic) crust along divergent margins by seafloor spreading. In this way, the total surface of the lithosphere remains the same. This prediction of plate tectonics is also referred to as the conveyor belt principle. Earlier theories, since disproven, proposed gradual shrinking (contraction) or gradual expansion of the globe.

Tectonic plates are able to move because the Earth's lithosphere has greater mechanical strength than the underlying asthenosphere. Lateral density variations in the mantle result in convection; that is, the slow creeping motion of Earth's solid mantle. Plate movement is thought to be driven by a combination of the motion of the seafloor away from spreading ridges due to variations in topography (the ridge is a topographic high) and density changes in the crust (density increases as newly formed crust cools and moves away from the ridge).

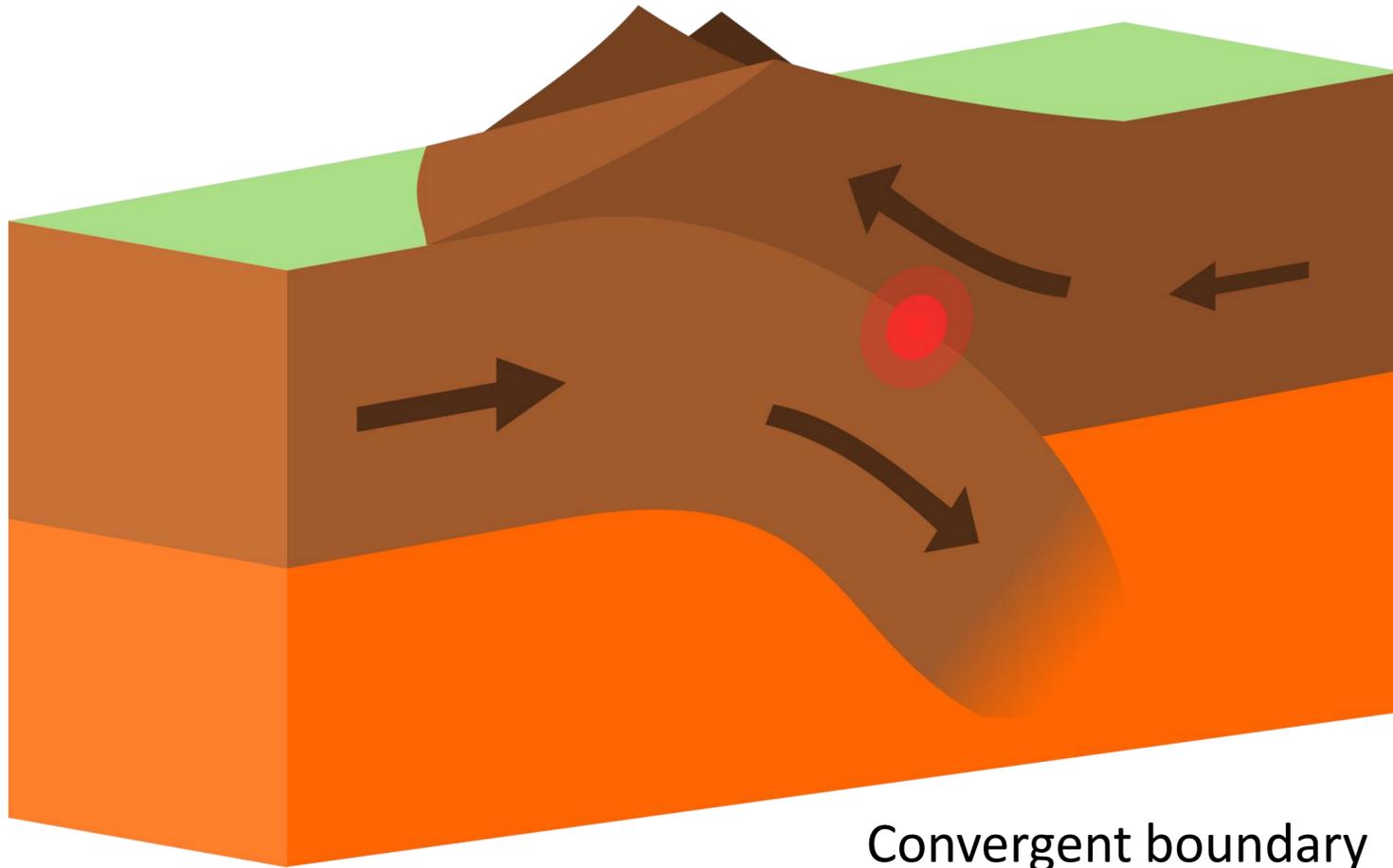
The outer layers of the Earth are divided into the lithosphere and asthenosphere. The division is based on differences in mechanical properties and in the method for the transfer of heat. The lithosphere is cooler and more rigid, while the asthenosphere is hotter and flows more easily.

The key principle of plate tectonics is that the lithosphere exists as separate and distinct tectonic plates, which ride on the fluid-like (visco-elastic solid) asthenosphere. Plate motions range up to a typical 10–40 mm/year (Mid-Atlantic Ridge; about as fast as fingernails grow), to about 160 mm/year (Nazca Plate; about as fast as hair grows).

# Draw Illustration



Copy and Label the Illustration in the Space Provided



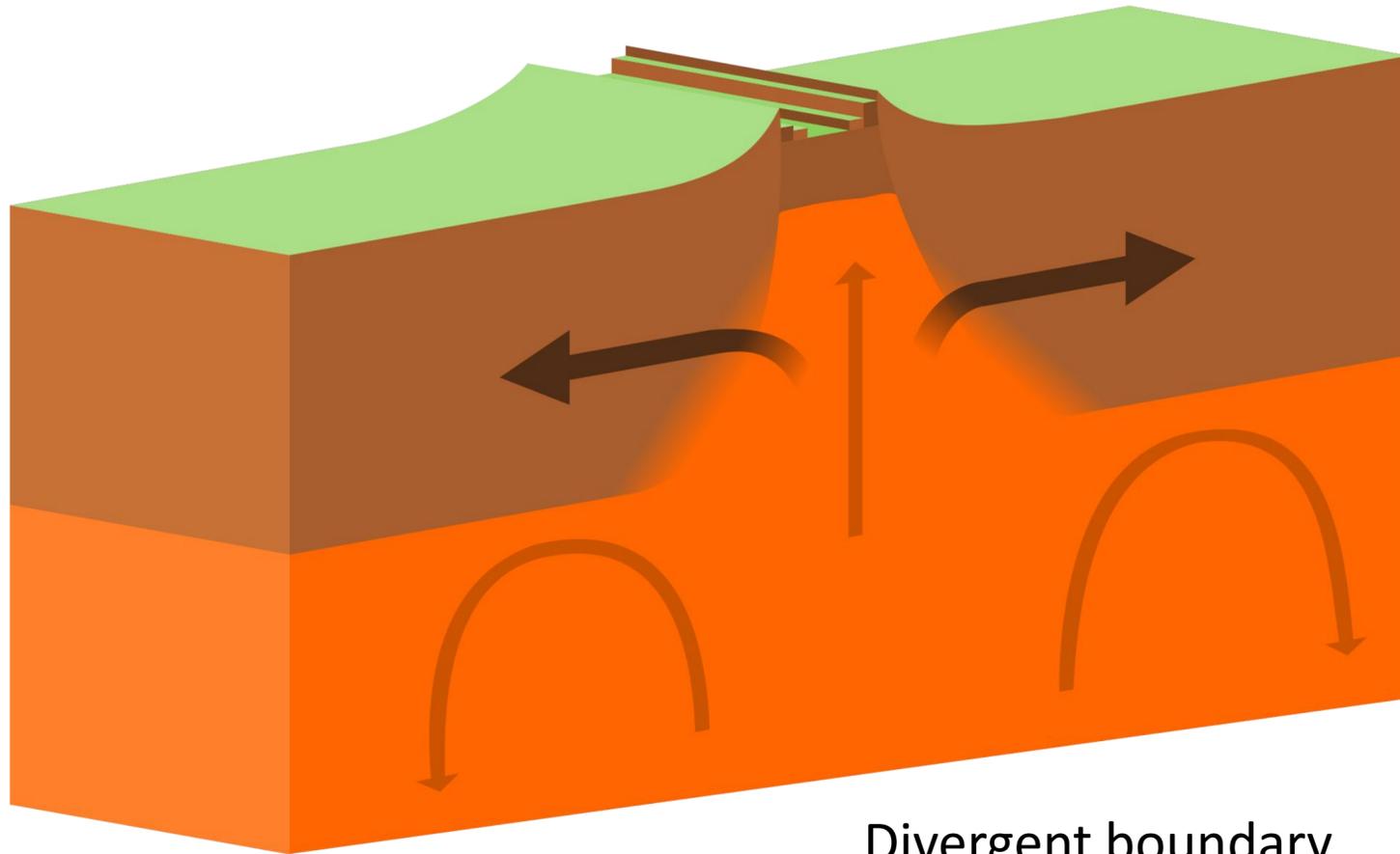
Convergent boundary

Draw (Copy) the Illustration Here

# Draw Illustration



Copy and Label the Illustration in the Space Provided



Divergent boundary

Draw (Copy) the Illustration Here

# Show-Off Your Smarts!



## Instructions

- Complete as an individual. Prepare to discuss in class.
- Use critical thinking skills (rational, skeptical, & unbiased).

**Q1. How might an understanding of Earth's tectonics be applied to a young adults life? List at least two ways.**

**Q2. Where are some locations in the world that might rely on information about Earth's tectonic activity? Why?**

**Q3. List several ways a scientist might use their understanding of tectonics to improve their scientific efforts.**

**Q4. How would a person from 100 years ago view this information?**

# Make a Poster

In the space provided here, create/draw a poster which conveys the concepts you have learned on this topic. Use a process, pyramid, relationship diagram, and one additional sketch of any kind.

***Process***

***Pyramid***

***Relationship***

***Sketch***