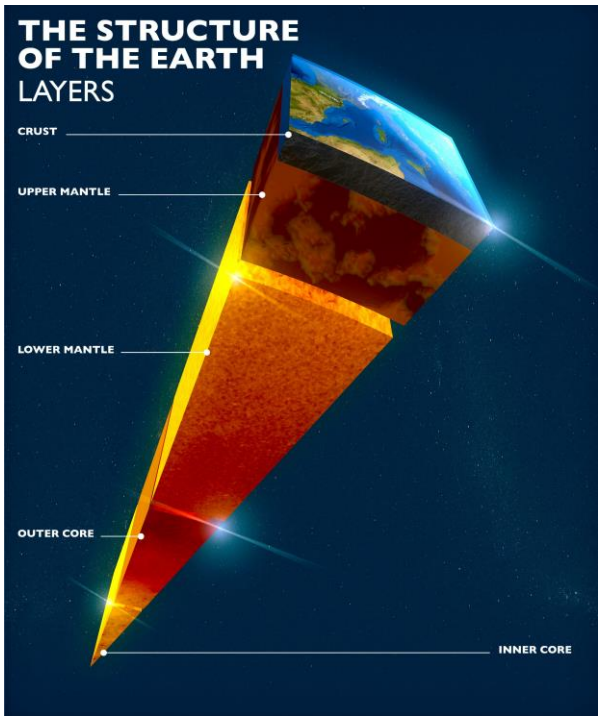
Plate Tectonics

Section I: Earth's Interior

Geologists use two main types of evidence to learn about Earth's interior. They use direct evidence from rock samples and indirect evidence from seismic waves. Holes are drilled deep inside Earth, bringing up rock samples that allow geologists to make inferences about conditions there. Indirect evidence from seismic waves also provides information about Earth's interior. **Seismic waves** produced by earthquakes enable scientists to measure the speed at which they travel, giving clues to the planet's structure.

The three main layers of the Earth vary significantly in size, composition, temperature, and pressure. First, the **crust** is the layer of solid rock that form's the Earth's outer "skin." It includes both the dry land and the ocean floor. The oceanic crust consists primarily of rocks such as basalt. The Continental crust, or the crust that forms the continents, consists mainly of granite.



The next layer is the **mantle**, which plays a significant role in shaping the Earth. It is a layer of solid, hot rock forty kilometers beneath the surface and divided into layers. The **lithosphere** is the uppermost part of the mantle and the crust that forms a ridge layer about 100 kilometers thick.

The **asthenosphere** is the softest part of the mantle below the lithosphere, which is hotter and under increased pressure. Finally, the **lower mantle** is made of solid material extending to the Earth's core.

The final layer is the **core**, which is made mainly of the metals iron and nickel. Consisting of two parts, the **outer core** is the molten metal layer surrounding the inner core, and the **inner core** is a dense ball of solid metal. The movement of the liquid outer core creates the Earth's magnetic field.

Review:

1. What types of evidence do geologists use to learn about Earth's interior?
2. What does the mantle consist of?
3. Compare the inner core to the outer core.