

Key Concept Summaries

Earth's Interior

How Do Geologists Learn About Earth's Interior?

Geologists have used two main types of evidence to learn about Earth's interior: **direct evidence from rock samples and indirect evidence from seismic waves.** Geologists have drilled holes as deep as 12.3 kilometers into Earth. The drills bring up samples of rock. These rocks give geologists clues about Earth's structure and conditions deep inside Earth. When earthquakes occur, they produce **seismic waves**. Geologists record the seismic waves and study how they travel through Earth.

What Are the Features of Earth's Crust, Mantle, and Core?

The three main layers of Earth are the **crust, the mantle, and the core.** These layers vary greatly in size, composition, temperature, and pressure. Pressure results from a force pressing on an area. **The deeper down inside Earth, the greater the pressure. The temperature inside Earth increases as depth increases.**

Earth's **crust** is the layer of rock that forms Earth's outer skin. **The crust is a layer of solid rock that includes both dry land and the ocean floor.** The overall composition of oceanic crust is much like **basalt**, a dark rock that has fine grains. Overall the composition of continental crust is much like **granite**, a rock that usually is a light color and has coarse grains. The solid material of the **mantle** is a layer of hot rock. Earth's mantle is made of rock that is very hot, but solid. Scientists divide the mantle into layers based on the physical characteristics of those layers. Overall, the mantle is nearly **3,000 kilometers thick.** Geologists often group the crust and uppermost mantle into a single layer called the **lithosphere**. The soft layer just beneath the lithosphere is called the **asthenosphere.** **The core is made mostly of the metals iron and nickel. It consists of two parts—a liquid outer core and a solid inner core.** The **outer core** is a layer of molten metal surrounding the inner core. The **inner core** is a dense ball of solid metal. Scientists think that movements in the liquid outer core create Earth's magnetic field.

On a separate sheet of paper, explain how geologists know that Earth's core is made up of two parts.

