Question: How have geologists learned about Earth's interior structure?

Earth's Interior

Geologists have used two main types of evidence to learn about Earth's interior:

1. Direct evidence from rock samples - rocks drilled from deep inside Earth allow geologist to make inferences about conditions

2. Indirect evidence from seismic waves - seismic waves produced by earthquakes allow scientists to measure the speed in which they travel giving clues to the structure of the planet.

Three main layers of Earth vary greatly in size, composition, temperature and pressure. They are:

«« THE CRUST »»

- layer of solid rock that forms Earth's outer "skin"
- includes both dry land and ocean floor
- oceanic crust consists mostly of basalt
- continental crust, or the crust that forms the continents, consists mainly of granite

«« THE MANTLE »»

- layer of solid, hot rock 40 kilometers beneath the surface
- divided into layers:
  - → lithosphere - uppermost part of mantle and the crust for a ridge layer about 100 kilometers thick
  - → asthenosphere - softer part of mantle below the lithosphere which is hotter and under increased pressure
  - → lower mantle - solid material extending all the way to Earth's core

«« THE CORE »»

- made mostly of the metals iron and nickel
- consists of two parts:
  - → outer core - layer of molten metal that surrounds inner core
  - → inner core - dense ball of solid metal
- movement of liquid outer core creates Earth's magnetic field