Earth History

Formation of Earth

Planet Formation

- The Earth formed nearly 4.6 billion years ago, along with the rest of the Solar System.
- Gravity caused rocks, metal, dust, and gases from the solar nebula to come together.
- Planetoids become larger until they are planets

Study Tip

The extreme heat of the early Earth was a major factor in shaping its geography.

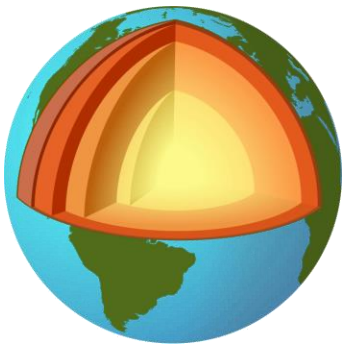
Molten Earth

When Earth first came together it was really hot due to:

- Gravitational Contraction
  - Gravity within an enormous body compresses the material in its interior, increasing its internal pressure and temperature.
- Radioactive Decay
  - Radioactive decay releases heat.
- Bombardment
  - Asteroid impacts were very common.
  - Earth was struck so much in its first 500 million years that the heat was intense

Differentiation

- The separation of the Earth into layers based on density is known as differentiation.
- The densest material moved to the center of the planet to create a dense, metallic core.
- Materials with a moderate density became part of the mantle.
- Lighter materials accumulated at the surface of the mantle to become the crust.



The different layers of Earth were split up into multiple layers.

Early Solar System Materials

- The only information we have from the Earth's earliest years are from zircon crystals, meteorites, and lunar rocks.

Concept Check

- What kinds of materials formed the Earth?
- What is differentiation? What determines the order of the layers?