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Warm-Up | Earth's Interior

Lesson Question

Lesson Goals

Explain how geologists learn about Earth's interior.

Compare and _____ the three main layers of Earth.

Words to Know

Write the letter of the definition next to the matching word as you work through the lesson. You may also use the glossary to help you.

_____ epicenter	A. the place deep inside Earth where a shift in Earth's crust occurs, causing an earthquake
_____ lithosphere	B. the place on Earth's surface directly over the focus of an earthquake
_____ focus	C. a rigid layer composed of the crust and the upper mantle
_____ seismic waves	D. the layer of the mantle on which the lithosphere floats
_____ mantle	E. the outermost layer of Earth that forms Earth's surface
_____ asthenosphere	F. the thick region between Earth's core and crust
_____ crust	G. waves of energy that travel through Earth's crust and interior

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Geologists

Geologists are scientists who study the solid [ ].

- Forces that shape Earth
- Rocks and [ ] of Earth
- Materials that form solid earth

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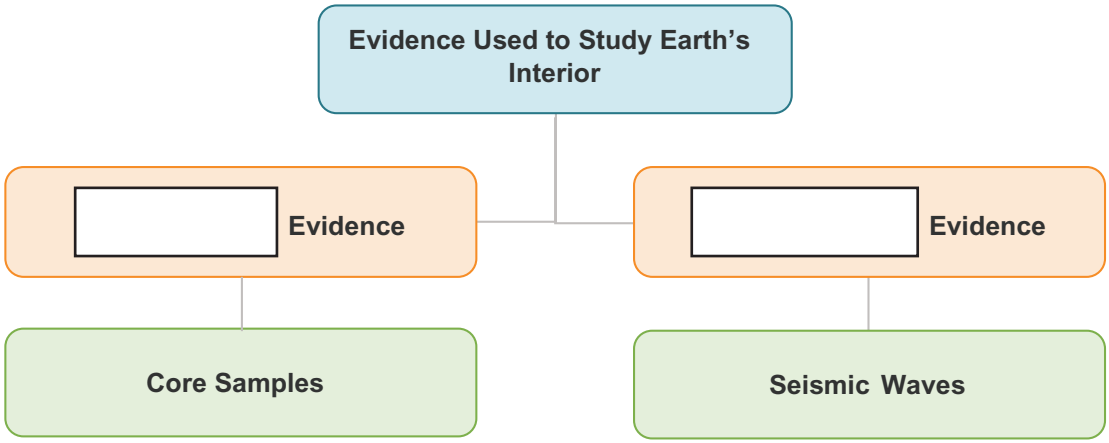
Geologic Evidence



Direct Geologic Evidence

Geologists study direct evidence of Earth's interior by collecting core _____.

- A core sample is a cylinder-shaped section of rock drilled out of the earth.
- Core samples provide _____ about Earth's interior.

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Indirect Geologic Evidence

Seismic waves provide indirect evidence.

- Caused by _____
- Travel through Earth's _____
- Have two centers: **epicenter** and **focus**
- Radiate _____
- Are studied using seismographs

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Seismic Waves

Geologists use seismic waves to study Earth's interior.

- Primary (P) waves:
  - move like a _____.
  - travel through _____ and _____.
- Secondary (S) waves:
  - move like _____ in water.
  - travel through _____ only.

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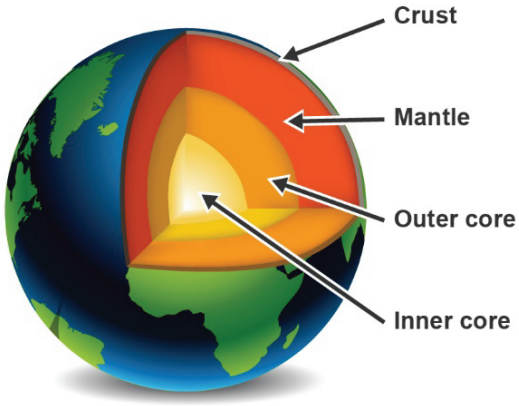
The Main Layers of Earth

Geologists have identified three main layers of Earth.

- _____
- Mantle
- _____



The three layers vary in size, composition, temperature, and pressure.

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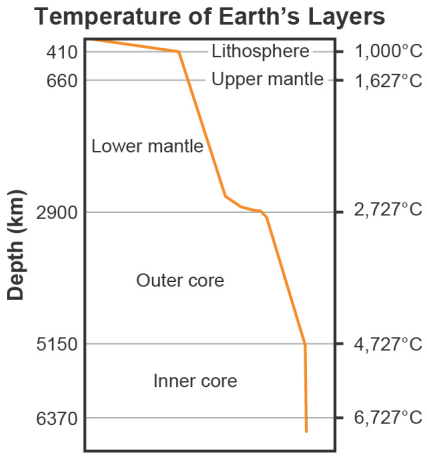
Change in Temperature

Earth's layers vary in temperature.

- Closer to the _____, temperatures are relatively _____.
- Heat is left over from the formation of Earth and _____ substances in the core.



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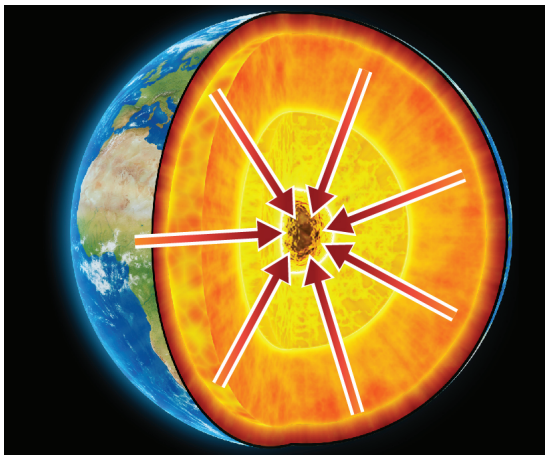
Change in Pressure

Earth's layers vary in pressure.

- Pressure increases from the surface of Earth toward the _____.
- Increased pressure is due to the weight of rock pressing _____.



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The Crust

The crust is the _____ layer of Earth.

- Solid rock
- _____ crust and oceanic crust
- Soil and water that cover Earth

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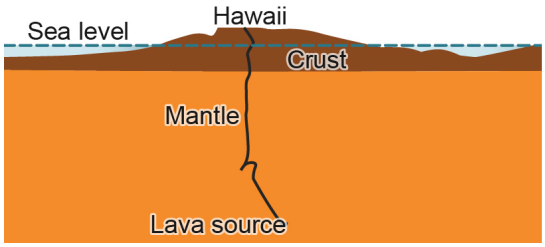
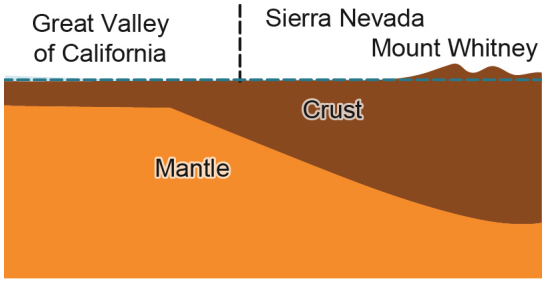
Slide 10

Earth's Crust

Earth's crust varies in [ ].





Usually about 5–40 [ ] thick, up to 70 kilometers thick

Thicker under [ ], thinner beneath oceans

Oceanic vs. Continental Crust

Oceanic and continental crust have several [ ].

Continental Crust	Oceanic crust
• Composed mostly of [ ]	• Composed mostly of [ ]
• Up to [ ] kilometers thick	• 5–10 kilometers thick
• Less [ ]	• [ ]
• Older	• Younger

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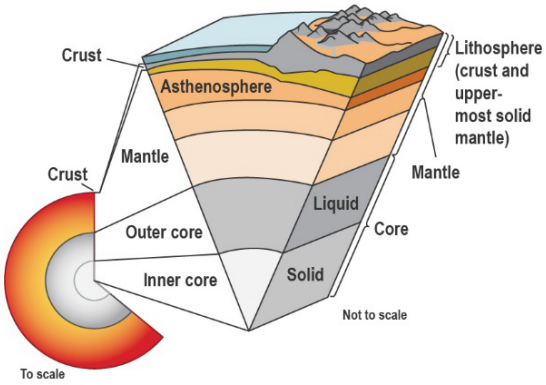
The Mantle

The mantle is about 40 kilometers under Earth's surface.

- Solid layer of hot rock
- Nearly [ ] kilometers thick
- [ ] than the crust
- **Lithosphere**, [ ], and lower mantle



The Layers of the Mantle

	[ ]	[ ]	[ ]
Location	uppermost part of mantle and crust	below lithosphere	below asthenosphere
Thickness	100 km	180 km	2,250 km
Consistency	Solid	Tarry consistency	Solid

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The Core

The core of Earth is mostly iron and nickel.

- [ ] kilometers thick
- Outer core: molten metal, 2,266 kilometers thick
  - May create Earth's [ ] field.
- Inner core: solid metal, 1,220 kilometers thick

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Summary | Earth's Interior

Lesson Question

How is Earth's interior characterized?

Answer

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Review: Key Concepts

Geologists use two main types of evidence to learn about Earth's interior.

[ ] **Evidence**	[ ] **Evidence**

• Core samples
  • Provide clues about conditions inside the Earth
	• Seismic waves
	  • Provide clues about Earth's internal structure based on the speed and path of the waves

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Review: Key Concepts



- Outermost layer
- Solid rock: both dry land and ocean floor
- Thinner under ocean; thicker under mountains



- Solid layer of hot rock
- Three parts: solid lithosphere, tarry asthenosphere, and solid lower mantle



- Two parts: molten outer core and solid inner core

Use this space to write any questions or thoughts about this lesson.

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