

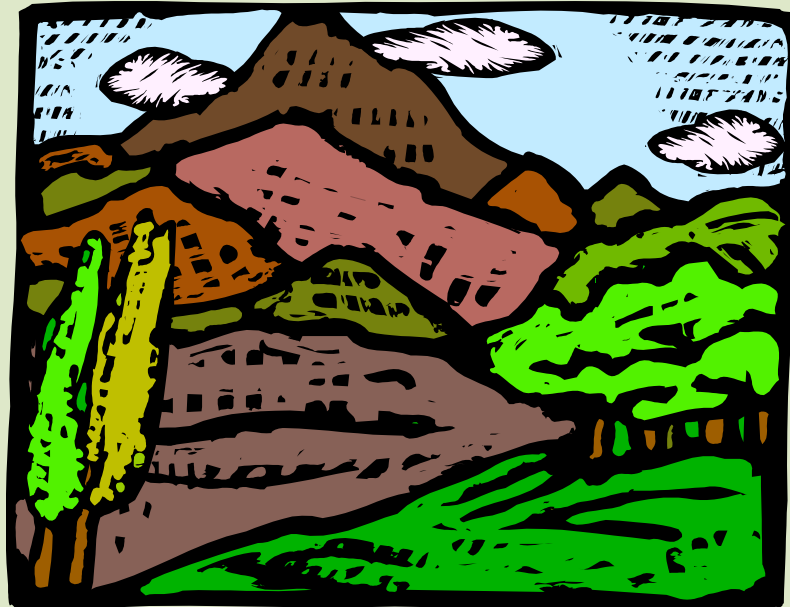
Chapter 2: Earth's Structure

The BIG Idea: Heat escaping from Earth's internal layers constantly changes the planet's surface.

Lesson 1: Landforms

Main Idea

Forces inside and outside Earth produce Earth's diverse landforms.



What you'll learn...



- **Classify Landforms.**
- **Explain how landforms are produced.**
- **Relate your knowledge of landforms to California landscapes.**

WHY?!

You'll appreciate landforms around you as you discover how they form and change.



Vocabulary

- **Landforms:** Features sculpted by processes on Earth's surface.
- **Uplift:** Any process that moves the surface of Earth to a higher elevation.
- **Erosion:** The wearing away of soil and rock.
- **Weather:** The current condition of the atmosphere; temperature, wind speed & direction, humidity, and air pressure.
- **Transport:** to carry from one place to another; Rivers can transport debris from one place to another.

How do landscapes form?

An endless interaction of forces reshapes Earth's topography.

Transfer of matter
& energy inside
Earth builds
mountains.

Forces on the
surface wear down
the mountains
(caused by uneven
heating of the
surface from the
sun).

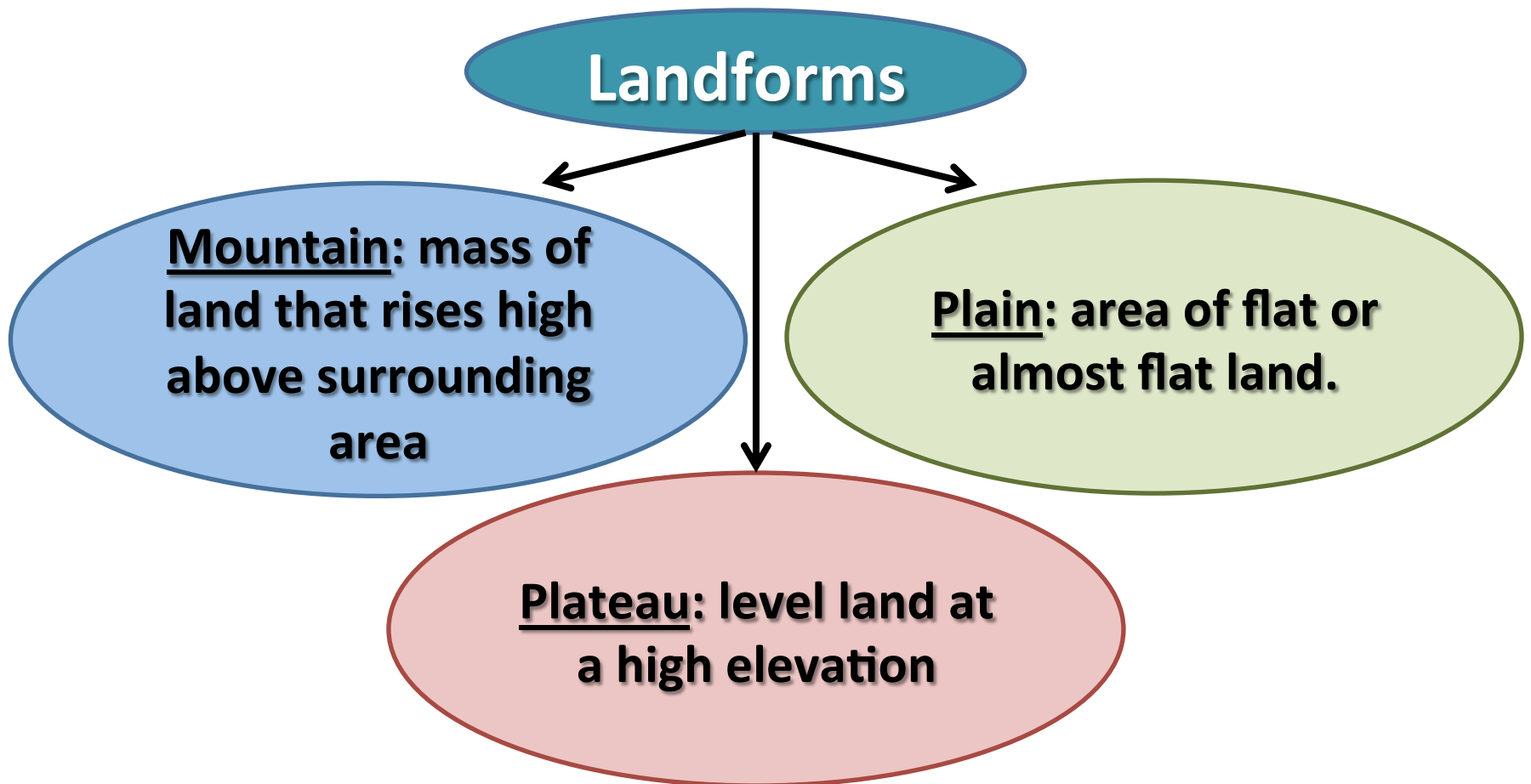
This energy is
transferred to the
atmosphere.

This makes
weather that can
erode surface
material,
especially in
higher areas.

Without these competing forces, the planet's surface would be a flatter and less exciting place to live!

Landforms

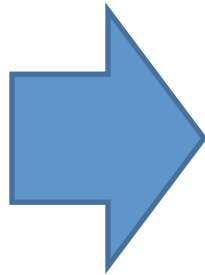
There are 3 types of landforms:



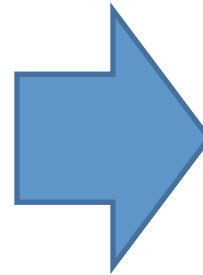
Compare and Contrast a mountain and a plateau by completing the table:

	Mountain	Plateau
Description	A mountain with steep slopes	A large flat mountain
Formed by	<p>Solid rock is pushed up, forming high peaks; “uplift”</p> <p>Volcanic eruptions: Melted rock pours out from the center onto the land surface.</p>	<p>E’s internal energy = uplift. Thermal energy from the inside of E moves toward the surface and moves matter inside the E upward.</p> <p>Plate tectonics</p>

**Water erodes
soil and rock**



**Rivers and
streams carry
rock fragments
downhill.**



**Mountains wear
down to flat
plains.**

**As rivers flow
toward lakes or
oceans, they carve
deep valleys and
steep canyons.**

**Beaches can be
created.**

California Landforms

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graph TD; A[California Landforms] --> B[External Forces: Yosemite Valley]; A --> C[Internal Forces: Lassen Peak];
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External Forces:

Yosemite Valley

(Precipitation caused glacial ice to accumulate, shaping the landscape)

Internal Forces:

Lassen Peak

(Volcanic eruptions altered the landscape surrounding the mountain)

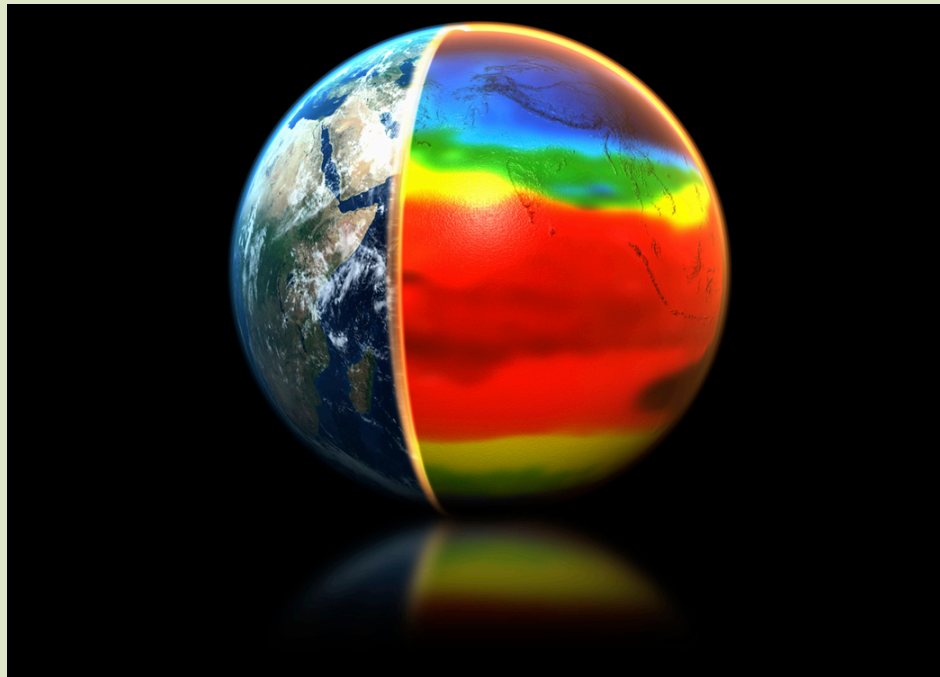
California Landforms

Landform	Characteristics
Mountains	Formed by uplift and volcanic eruptions
Valleys	Formed by deposition and erosion
Beaches	Formed by deposition and erosion along the coasts

Lesson 3: Earth's Interior

Main Idea

Earth's interior has a layered structure.



What you'll learn...



- Explain how scientists determined that Earth has internal layers
- Describe Earth's internal layers
- Analyze the role that convection plays inside Earth

WHY?!

Learning about Earth's interior will help you understand formations and changes on Earth's surface.



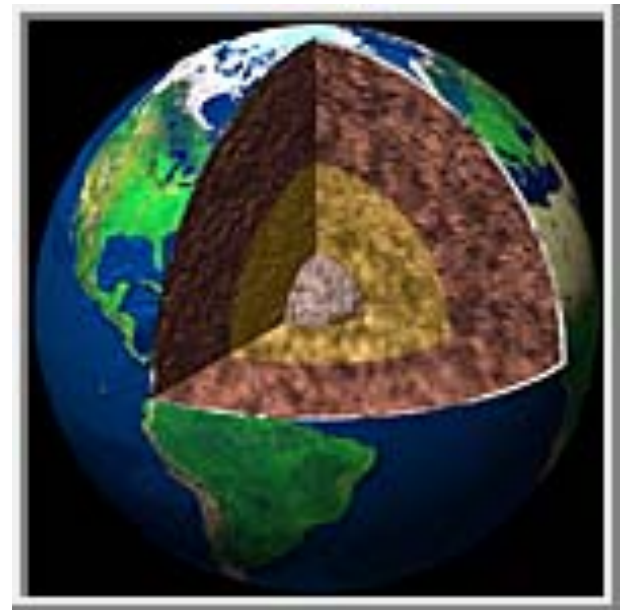
Vocabulary

- **crust**: Thin, rocky, outer layer of Earth
- **mantle**: Below the crust; thick, dense middle layer of Earth. Composed of oxygen, silicon, magnesium, and iron.
- **asthenosphere**: Plastic, mostly solid, layer of the mantle; flows slowly.
- **core**: Dense metallic center of Earth.
- **lithosphere**: Brittle outer layer of Earth, made out of the crust and the uppermost mantle.



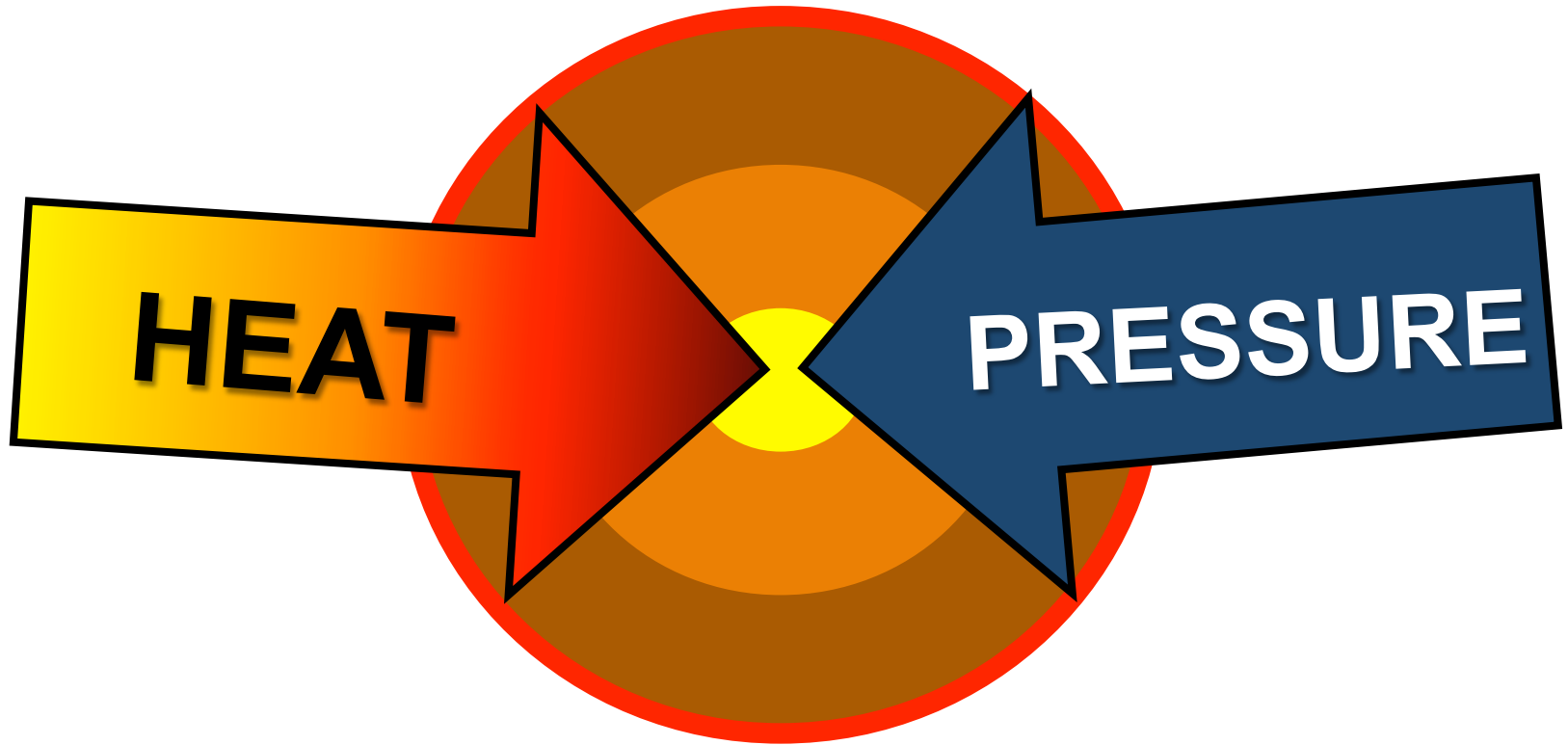
Vocabulary

- **layer: one thickness, course, or fold laid or lying over or under another.**
 - The cake had a thin layer of icing covering the top.



- The Earth is divided into layers based on composition.

Heat and Pressure change inside Earth.



**Temperature and Pressure increase
as you go deeper into Earth.**

Earth's Major Layers

Characteristics

Crust

**Thin, rocky, outer layer;
brittle**

Mantle

**Denser than crust; divided
in layers; upper mantle is
brittle, lower mantle is
plastic**

Core

**Denser than mantle;
metallic**

Earth's Density

Least Dense

Most Dense



Crust

Mantle

Core

Thermal Energy: Convection

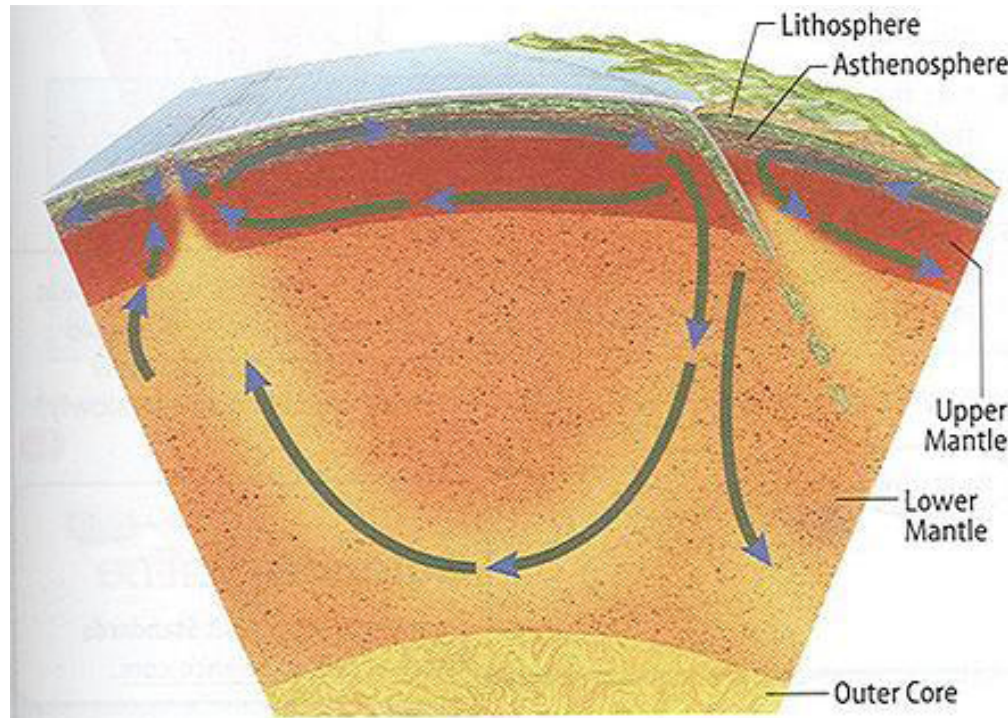
1. Convection in the outer core produces Earth's magnetic field.



As Earth spins on its axis, convection currents of molten iron produce a magnetic field around the planet.

Thermal Energy: Convection

2. Convection in the mantle is important for plate tectonics. Energy and matter from the mantle are transferred to the plates.



Roles of Convection

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graph TD; A[Roles of Convection] --> B[In the outer core]; A --> C[In the mantle]; B --> D[Magnetic Field]; C --> E[Plate Tectonics (Earthquakes & Uplift)]
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In the outer core

Magnetic Field

In the mantle

**Plate Tectonics
(Earthquakes &
Uplift)**