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# Warm-Up | Forces in Earth's Crust

## Lesson Question

## Lesson Goals

**Explain** how stress in the crust affects Earth's surface.

**Explain** why faults form in particular areas.

**Identify** land features that result from _____ movement.

## Words to Know

*Fill in this table as you work through the lesson. You may use the glossary to help you.*

| | |
|---|---|
| | a fault created by tension resulting in the hanging wall moving down relative to the footwall |
| | a fault created by compression resulting in the hanging wall moving up relative to the footwall |
| | a type of stress caused by rocks trying to move past each other in opposite directions |
| | a fold in rock caused by compression that bends upward in an arch |
| | a fault in which rock layers move past each other horizontally |
| | a type of stress created by rocks pulling away from each other that thins the rock |
| | a fold in rock caused by compression that bends downward |
| | a high, table-like formation caused when part of the crust rises upward |

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## Words to Know

| | |
|---|---|
| | a type of stress created by rocks pushing against each other |
| | a mountain formed when one side of a fault is thrust upward while the other side drops downward |

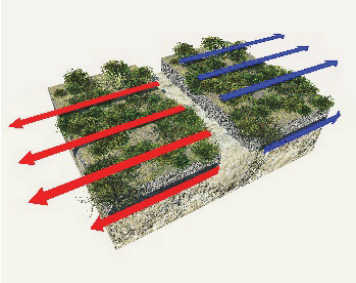
## The Theory of Plate Tectonics

The theory of plate tectonics states that pieces of the _____ are slowly but constantly moving.

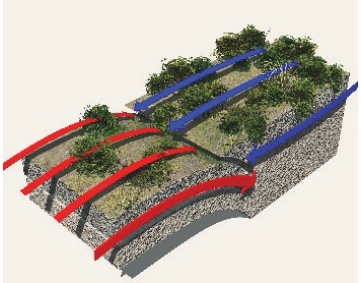
- The motion is driven by convection _____ in the mantle.
- This theory explains the _____, movement, and _____ of Earth's plates.

## Plate Boundaries

Plate boundaries are areas where the edges of Earth's plates meet. They extend deep into the lithosphere. Faults form along these boundaries.



_____ Boundary



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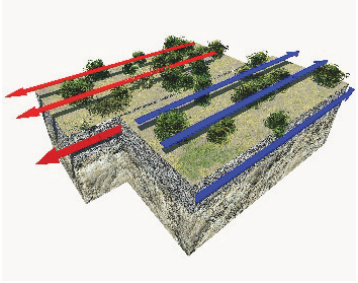

_____ Boundary

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## Stress on Earth's Surface

**Types of Stress**

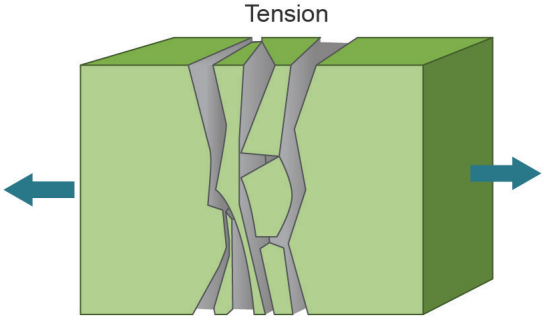
[ ] — **Compression** — [ ]

## Tension

**Tension** is a type of [ ] that occurs where plates move apart.

- [ ] stretch apart.
- Stretching causes rocks to become [ ] in the middle.

**Tension often occurs at [ ] boundaries.**

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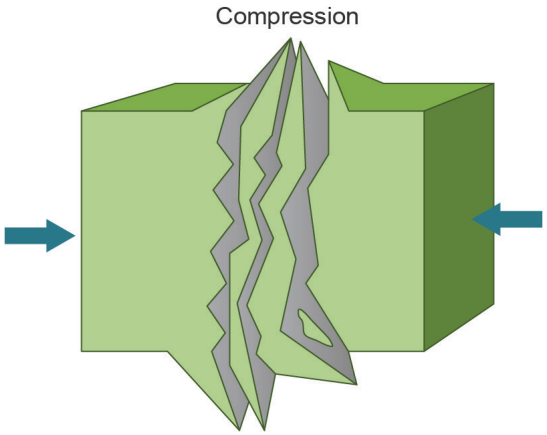
## Compression

**Compression** is stress that occurs when one plate pushes against another.

- Rocks squeeze together until they fold and _____.

**Compression often occurs at _____ boundaries.**

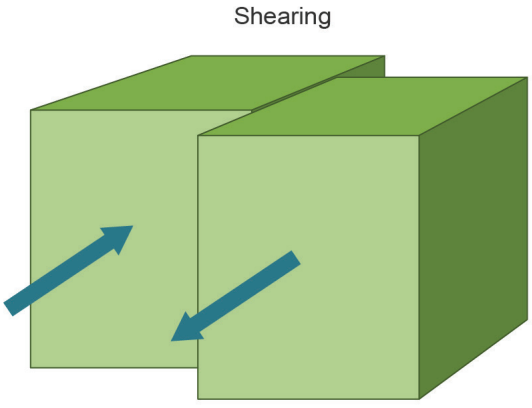



## Shearing

**Shearing** is a type of stress caused when a rock mass is pushed in _____ directions.

- Rocks break and _____ apart.
- Rocks change shape.

**Shearing is common at _____ boundaries.**

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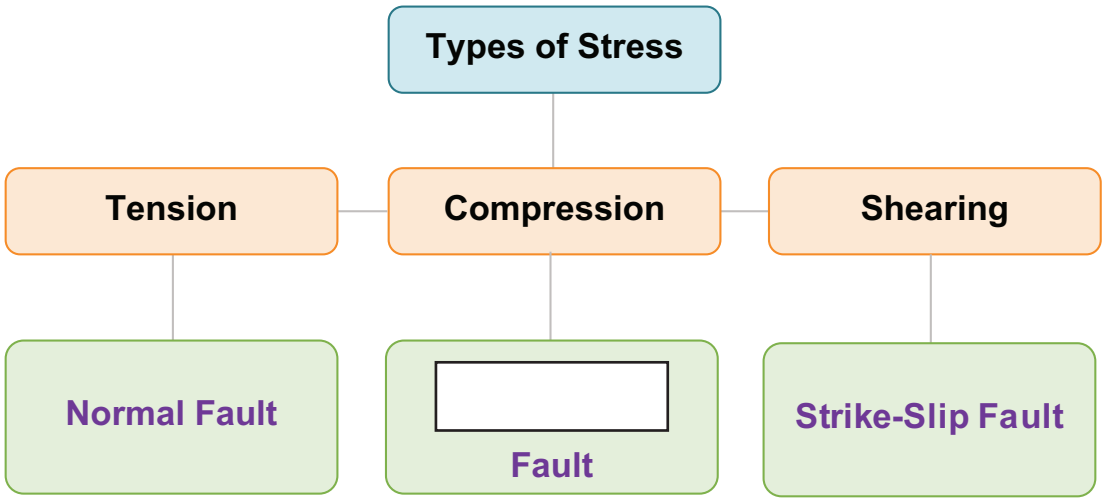
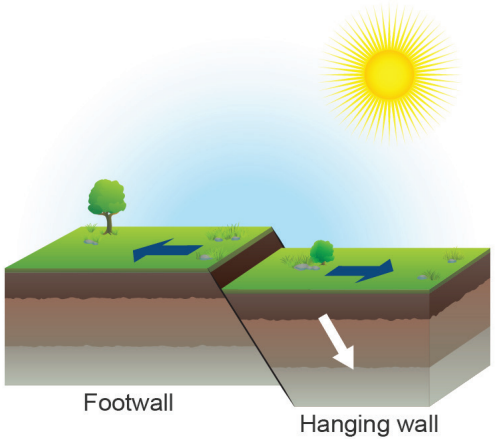
## Types of Faults




## Normal Faults

A normal fault is caused by _____.

- The plates are moving away from the fault.
- The hanging wall lies above the fault.
- The footwall lies below the fault.
- The hanging wall moves _____ at a normal fault.

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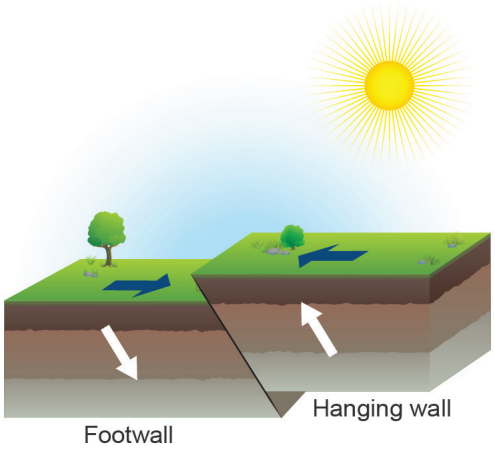
## Reverse Faults

A reverse fault is caused by _____.

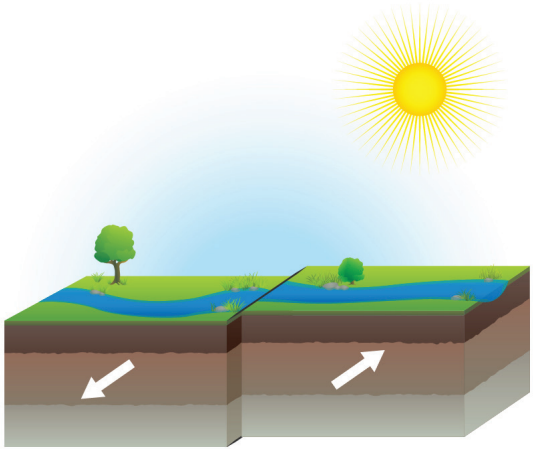
- The plates are moving toward the fault, _____ into each other.
- The hanging wall moves up, sliding over the _____.




## Strike-Slip Faults

A strike-slip fault occurs in areas of _____.

- _____ slide past each other in opposite directions.
- Plates have very little or no _____ movement.



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## Sedimentary Basins

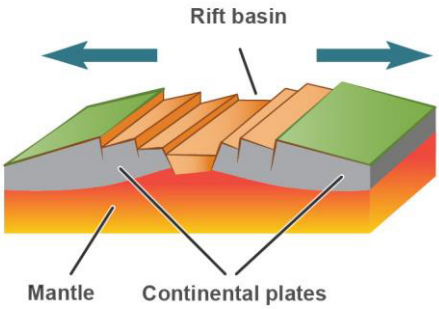
Forces in Earth's crust can form sedimentary [ ], which are:



- depressed or low areas in Earth's crust.
- areas where sediments are deposited.
- formed through the movement of tectonic [ ].

## Basins at Divergent Boundaries

Tectonic activity at divergent boundaries form [ ] basins.




- As two plates separate, Earth's [ ] is stretched.
- Weaker crust moves [ ] at normal faults.

Sediments are deposited until it forms a rift basin.

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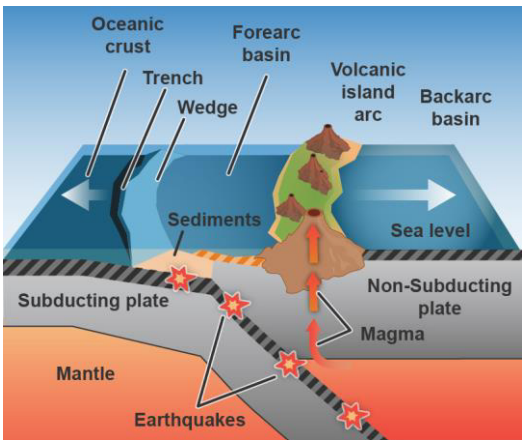
Tectonic activity at convergent boundaries form _____ and arc basins.

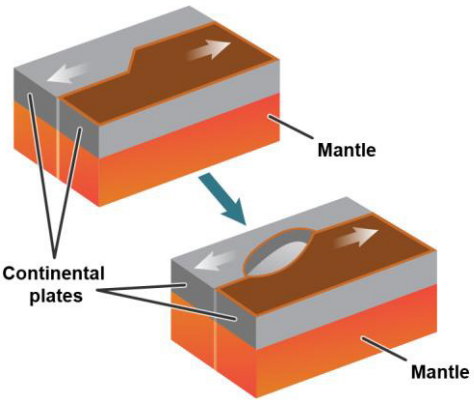
- Where the two plates collide, a wedge is formed at reverse faults.
  - _____ are deposited on the wedge.
- The meeting of the plates compresses the oceanic crust, forming a volcanic island arc.
  - _____ can be formed at the forearc and backarc regions.




## Basins at Transform Boundaries

Tectonic activity at transform boundaries form strike-slip basins.

- When _____ or curved plates move past each other, a depression is formed.
- Sediments are deposited in the _____.

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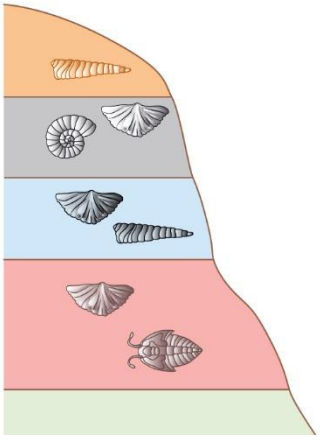
## Importance of Sedimentary Basins

Information and products are contained in sedimentary rocks.



- Sedimentary rocks tell us about Earth's _____.
- Sedimentary rocks contain valuable resources such as:
  - gemstones.
  - precious _____.
  - _____ fuel.

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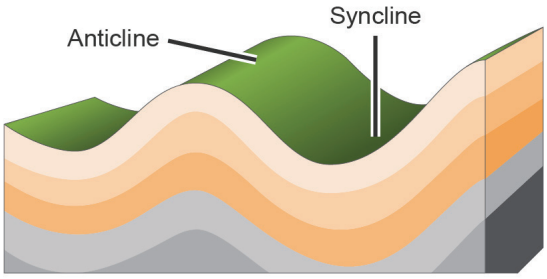
## Folding of the Crust

Folds form when compression squeezes _____ together.

The compression causes rocks to bend without _____.




- _____ is a fold in rock that bends upward in an arch.
- _____ is a fold in rock that bends downward.

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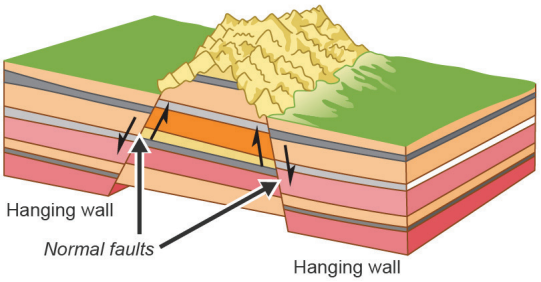
## Stretching of the Crust

The crust stretches due to tension .

- This stress causes normal faults.
- Parallel normal faults can create **fault-block** _____ .
- Created when the hanging walls from parallel _____ slip down




## Uplifting of the Crust

Some stresses on the crust force the uplifting of rocks.

- When a large, flat block of rock is pushed upward, a _____ forms.
- A plateau contains many flat layers and is wider than it is _____ .

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## Surface Formations Created by Stress

Different types of stress lead to the formation of different features on Earth's surface.



_____

Himalayas, Asia



**Fault-block mountains**

Wheeler Peak, Nevada



_____

Mt. Roraima, South America

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# Summary | Forces in Earth's Crust

**Lesson Question**

How does stress in Earth's crust change Earth's surface?

**Answer**

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## Review: Key Concepts

- Earth's plates pull apart, crash into each other, or slide past each other.
- This causes stress in the [ ].
- Each type of stress is connected to a type of fault.
  - Tension – normal faults
  - Compression – reverse faults
  - Shearing – [ ]-slip faults
- [ ] develop based on the type of stress experienced in the crust.
  - Anticlines, synclines, fault-block mountains, and plateaus

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

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