

Rock Cycle

Presented by Kesler Science

Rock Cycle

Reflect on the Essential Questions before you dive in...

1. If you were quizzed today, what would you know the answers to already?
2. What parts would you need to learn more about to answer confidently?



Essential Question:
What processes are involved in the formation and classification of metamorphic, sedimentary, and igneous rocks?

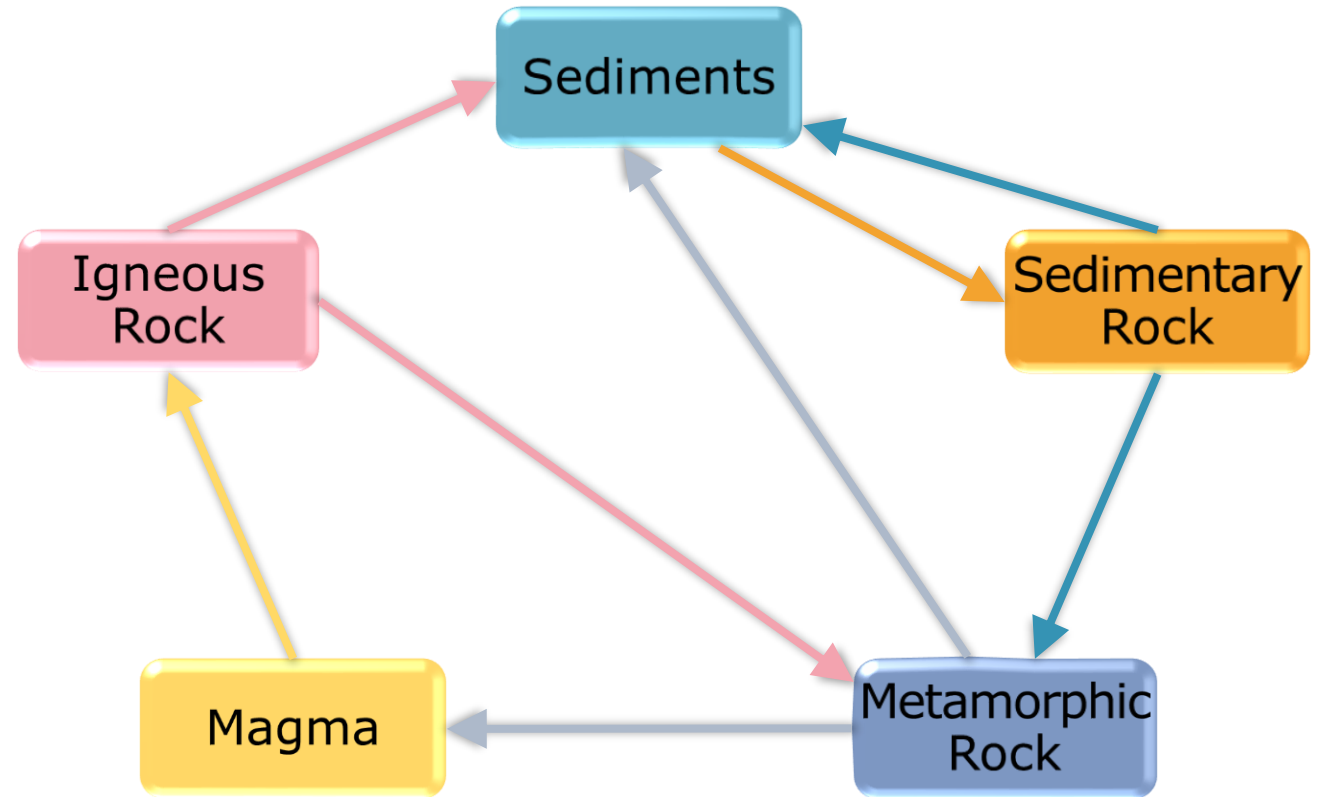


Rock Cycle

A model that describes the formation, breakdown, and reformation of a **rock**.

What do you notice about the image on the right?

Rock Cycle

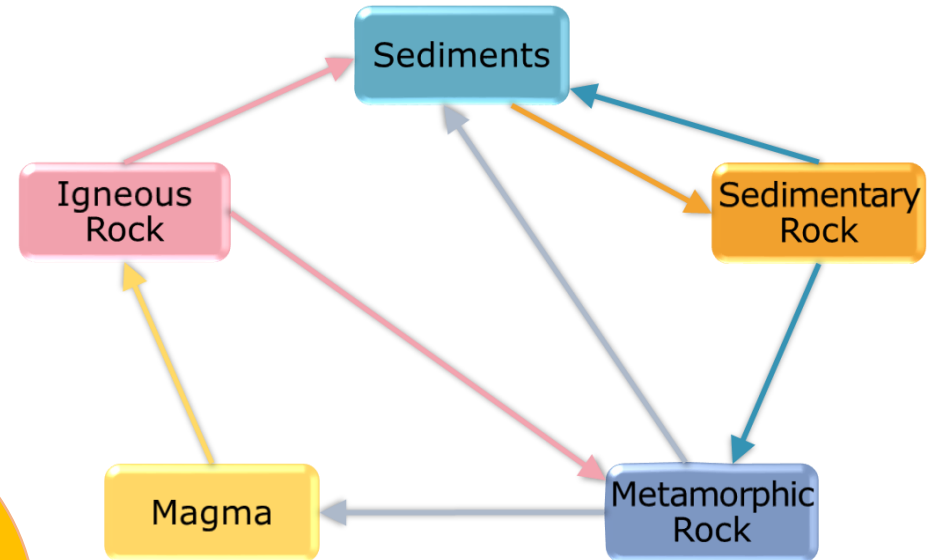




Think About It

Use the Rock Cycle pattern to predict a scenario where the material that makes up a sedimentary rock can become an igneous rock. Clearly explain what is happening to the rock as it changes from igneous to sedimentary.

Bonus:
What scientific law is illustrated in the rock cycle?



Rock Cycle



Sedimentary Rock

- Formed when sediments accumulate and compact and cement together.
- Often deposited in layers and contain sand, pebbles, and frequently fossils.
- Examples: sandstone, limestone

Rock Cycle

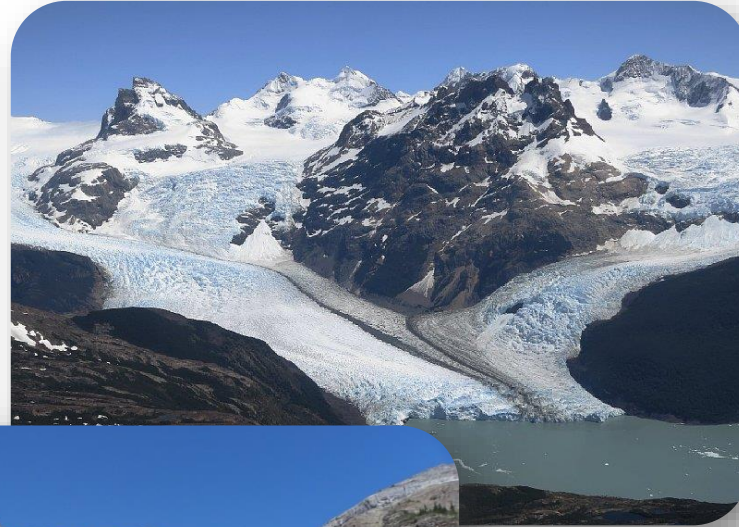


Physical properties of Sedimentary Rock

- Sand, pebble, and even boulder size particles
- Some may contain fossils

How is sedimentary rock formed?

Rock Cycle



By what process are sedimentary rocks broken down?

- Weathering
- By weather (rain, ice, wind), chemical changes, and living things (plant).
- Creates loose material called sediments.

Rock Cycle



How are sediments moved?

- Deposition - They are deposited in layers
- Erosion
- Wind
- Water
- Gravity
- Ice

Describe how these images show sediments being moved.

Rock Cycle



Compaction

Sediments are deeply buried, placing them under pressure because of the weight of overlying layers.

Rock Cycle



Cementation

- New minerals stick the sediment together just like cement.
- This holds the grains together tightly.

Using compaction and cementation, explain why sedimentary rocks are not just a loose pile of sand and rocks.

Think About It

Think about the Rock Cycle and properties of sedimentary rocks.

Use your knowledge to explain how sedimentary rocks might provide data for scientists to analyze.

What data might be found?

How could that information be used?



Rock Cycle

Metamorphic Rock

- Formed by heat and pressure while buried deep below Earth's surface.
- Have a layered or banded (ribbon like) appearance or may have crystals.
- Examples:
Gneiss, Marble, Slate



Physical Properties of Metamorphic Rock

- Layers look like ribbons
- Crystals

How does the appearance of metamorphic rock differ from sedimentary rock?

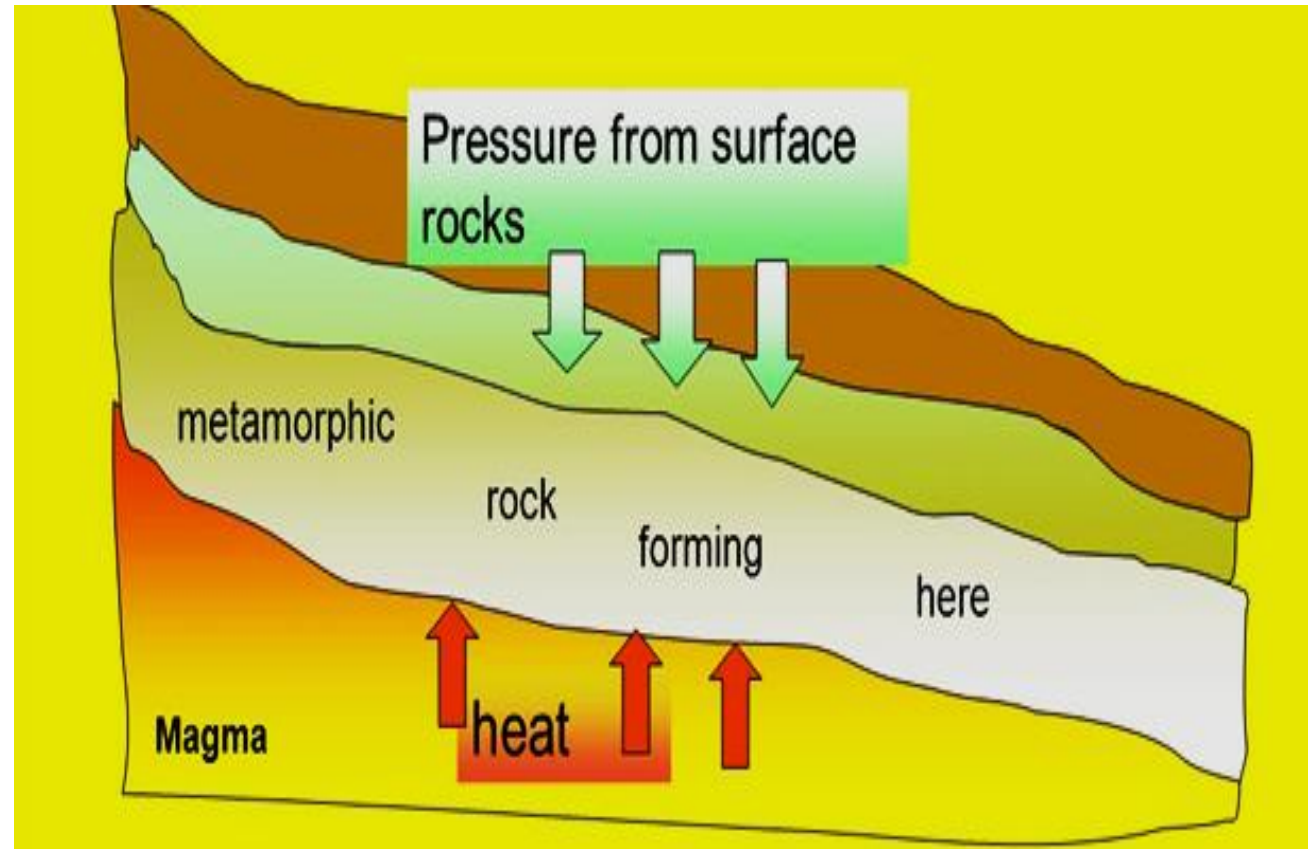
Rock Cycle



What are the processes that form metamorphic rock?

- **Heat** (caused by magma)
- Temperatures high enough to change its structure but not to melt it.
- Heat can change sedimentary, igneous, or another older metamorphic rock.

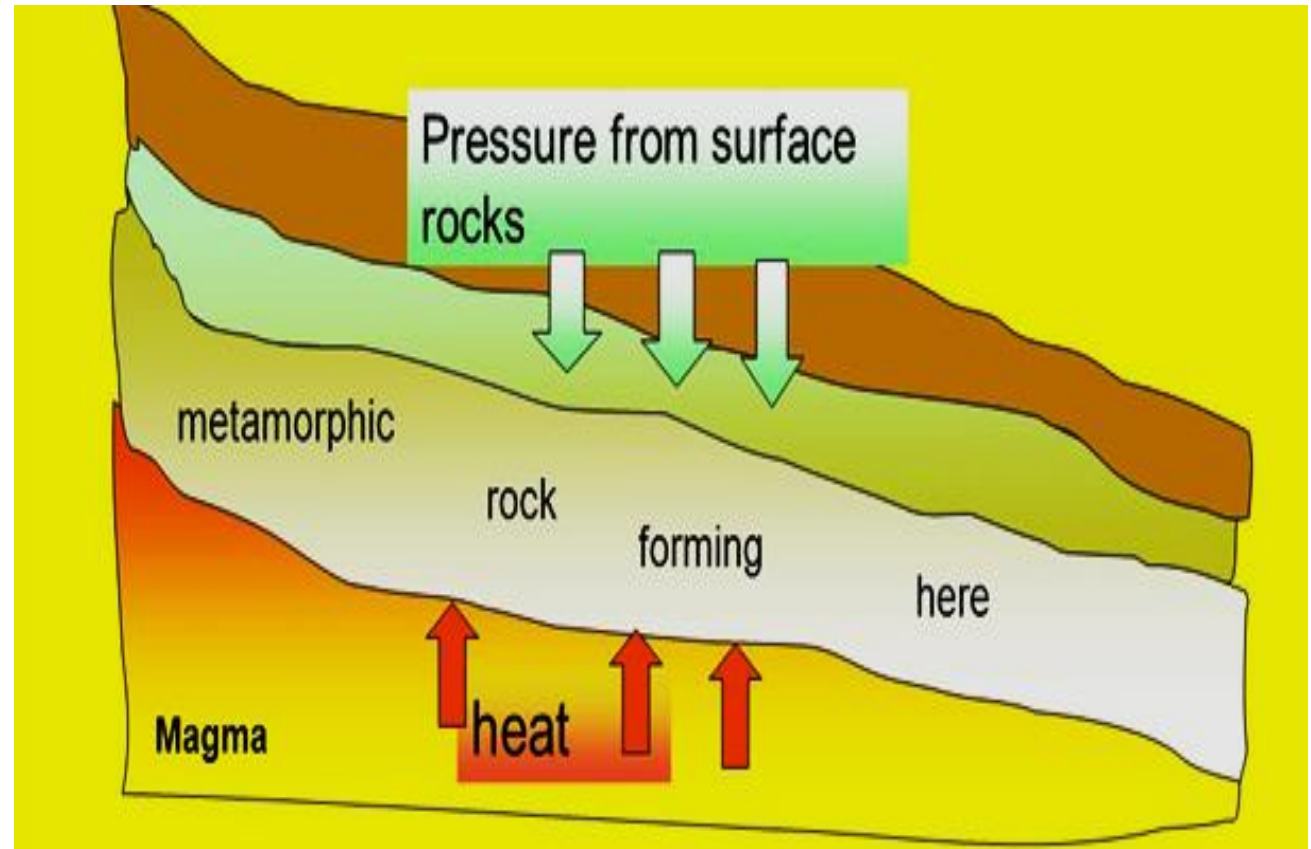
Rock Cycle



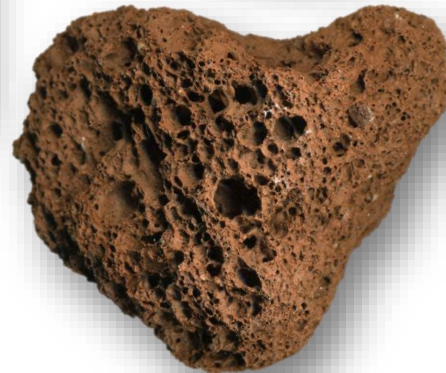
What are the processes that form metamorphic rock?

- **Pressure** - Caused by intense collisions and friction of tectonic plates and pressure from overlying rock layers.
- Deep under the Earth's surface.
- Pressure can change sedimentary, igneous or another older metamorphic rock.

Rock Cycle



Rock Cycle



Igneous Rock

- Formed when lava or magma harden.
- Found near volcanoes or fissures
- Examples:
Basalt, Obsidian, Granite

Rock Cycle



Physical Properties of Igneous rock

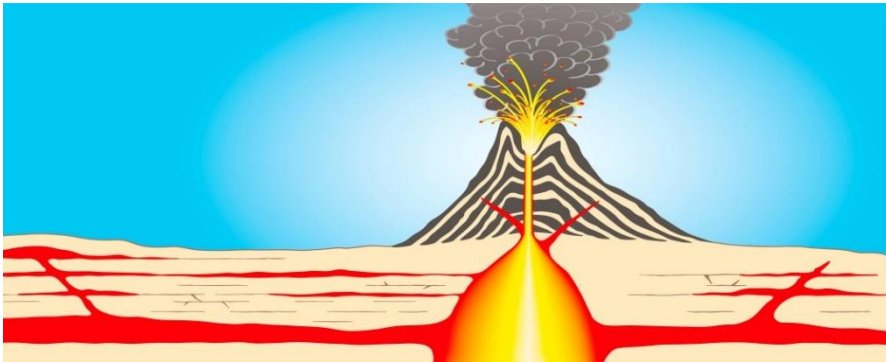
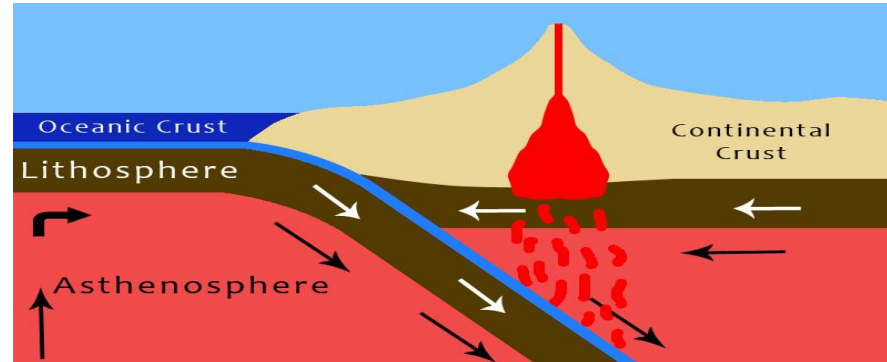
- Fast Cooling
- Slow Cooling
- Glassy
- Large crystals
- Holes where gas was trapped
- Many colors

How does the appearance of igneous rock differ from sedimentary or metamorphic?

Rock Cycle

Lava – molten rock material on Earth's surface.

Magma – molten rock material under Earth's surface.



What is the difference between lava and magma?

What are the processes that form Igneous rock?

- Melting
- Caused by increase in temperature in rock deep below the surface of Earth
- Caused by friction between crustal plates

Rock Cycle

- Slow cooling happens below Earth's surface as magma cools forming large crystals.
- Example: granite
- Fast cooling happens on the Earth's surface as lava cools forming small crystals.
- Examples: obsidian, basalt, pumice



What are the processes that form igneous rock?

- Cooling and Hardening
- Melted rock turns solid.



Think About It

What data might be used in analyzing rock samples to determine the rock type? What could it tell you about how the rock was formed? (Hint: data is numbers, something that can be measured or counted)





Check for Understanding

Give your best answer to...

1. Identify the processes involved in the formation and classification of igneous, sedimentary and metamorphic rocks.



**Still have
questions?**

Which essential questions do you still need help to understand?