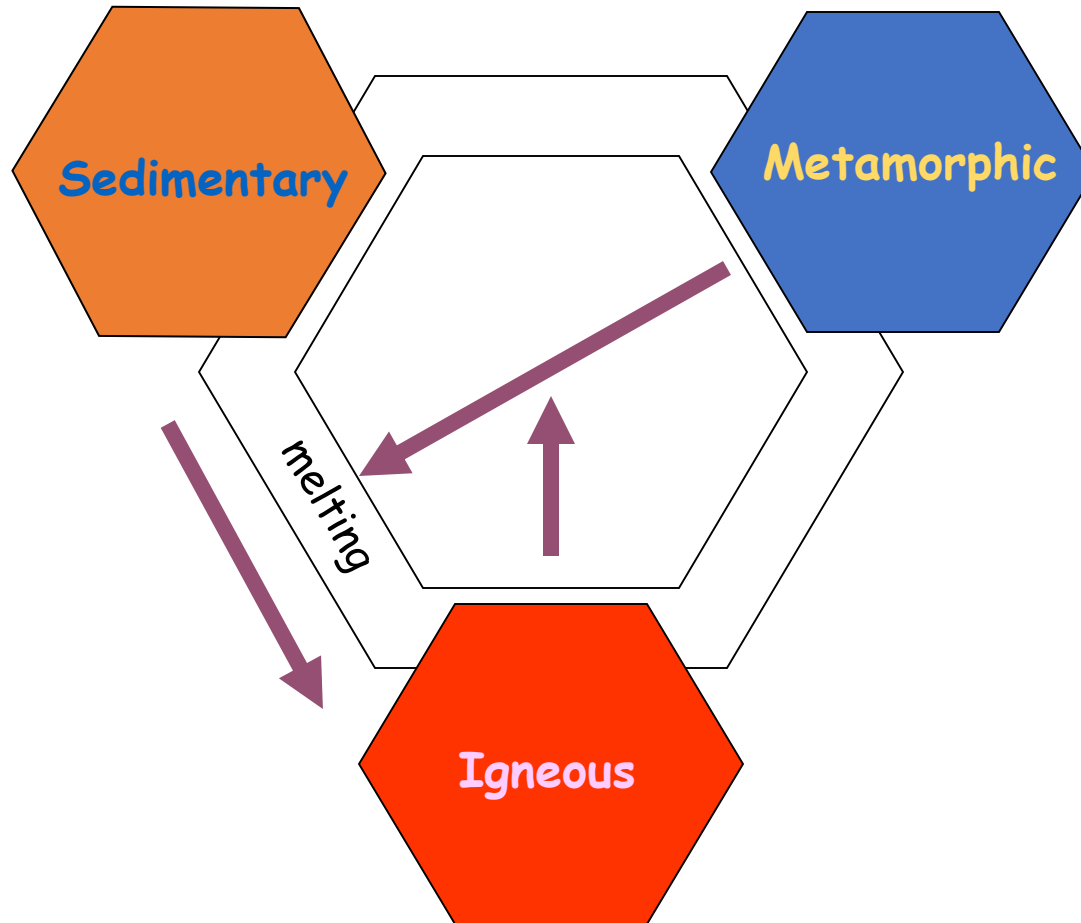
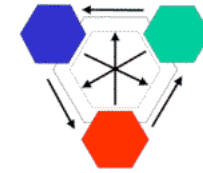


Igneous and Metamorphic Rock Formation

The Rock Cycle



Igneous Rocks

form due to the melting and cooling of preexisting rock.



Molten means liquified due to high heat. Molten rock is melted rocks and minerals. The rock has been melted due to geothermal energy.

As it cools, the molten material becomes a hardened, solidified rock.



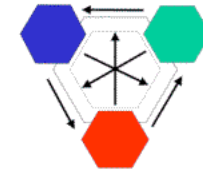
**MOLTEN ROCK THAT IS STILL INSIDE
THE EARTH IS CALLED **MAGMA.****



MOLTEN ROCK THAT HAS **EXITED
A VOLCANO IS CALLED LAVA.**



Becoming an **IGNEOUS ROCK** ...



Any existing rock - **igneous**, **metamorphic** or **sedimentary** - can be subjected to enough geothermal energy to cause it to melt.

This melted rock is referred to as **Molten**.

When molten rock cools to a solid it becomes an igneous rock.

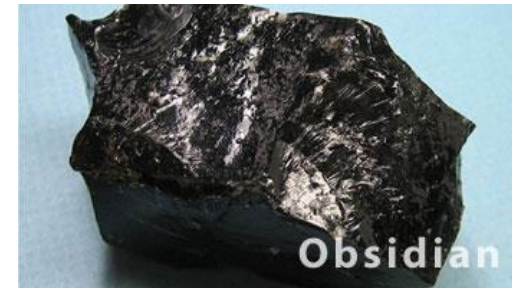
The kind of **igneous rock** formed depends on what was melted and where it cooled.

Igneous rocks are classified based on the location of their formation.

If the magma cools underneath the surface, this is called **INTRUSIVE IGNEOUS** Rock. Rocks formed in this way have a much coarser texture.



If the magma reaches the surface, it is called lava and forms **EXTRUSIVE IGNEOUS** Rock. Rocks formed in this way often have a smooth, shiny, “glass-like” appearance.



Characteristics of Igneous Rock

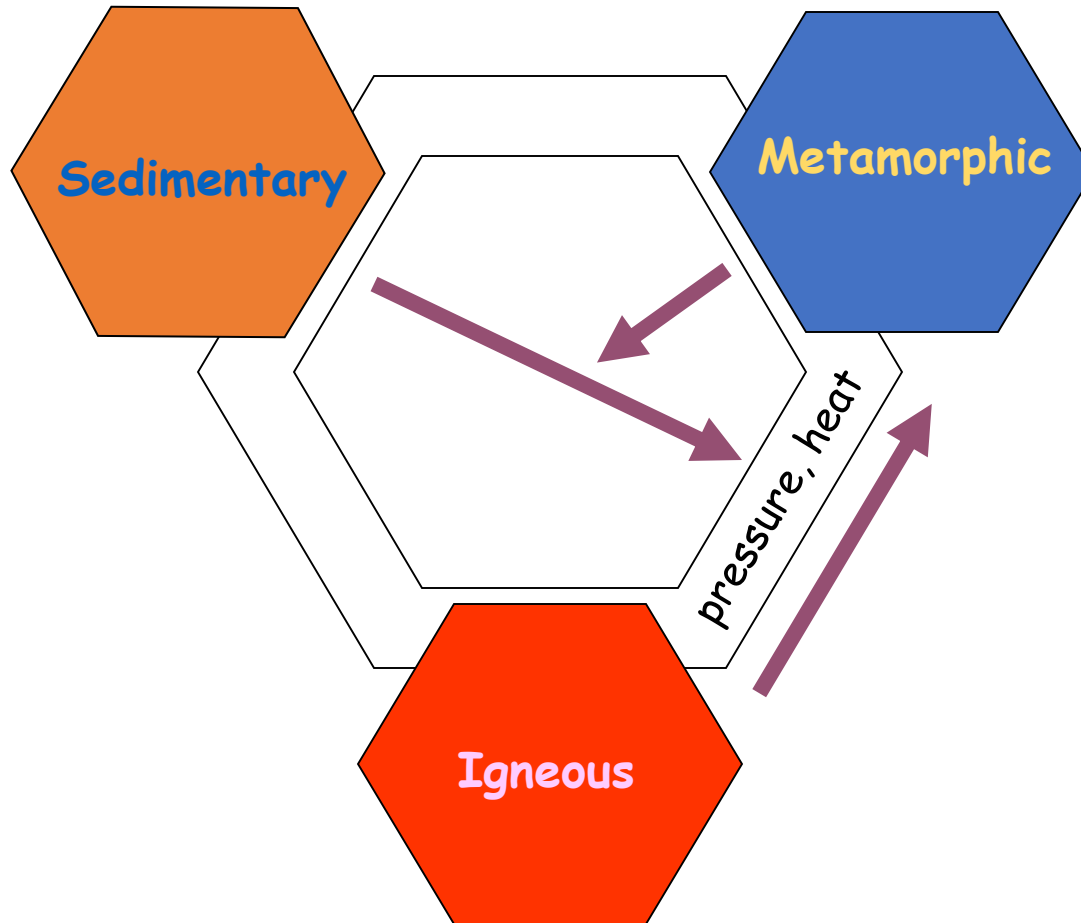
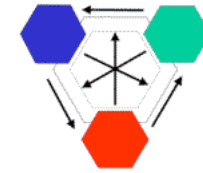
- Igneous Rocks often have visible bubbles formed by air pockets in the molten rock.
- Intrusive Igneous rocks have a rough texture characterized by small crystals
- Extrusive Igneous rocks have a smooth texture characterized by larger crystals
- Igneous rocks have a shiny appearance and look as though they contain shards of glass.





Up close, igneous rock looks like it contains tiny pieces of glass. These are actually crystals formed by cooling minerals.

The Rock Cycle

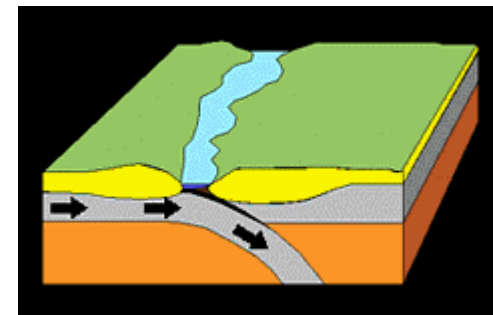
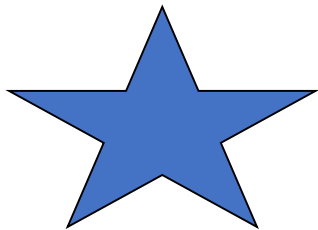


Metamorphic Rocks are formed when preexisting rocks or sediments are exposed to extreme **Pressure and Heat**.

Where does the Heat and Pressure come from?

Geothermal energy is the source of the heat needed for metamorphism.

The pressure can come from plate tectonics which also cause earthquakes and volcanos to occur.



Metamorphic Rock Becoming a METAMORPHIC ROCK



Changing Form

- Metamorphic rock is exposed to extreme amounts of pressure and heat causing obvious physical changes within the rock and not-so obvious chemical changes. One of these changes is the process of **crystallization**.
- **Crystallization** requires new compounds to be made causing the appearance of rock to become shinier than before.

Characteristics of Metamorphic rocks

- Formed underground
- Hardest Rock
- Visible evidence of past rock. (Conglomerates and/or mineral swirls such as in marble)

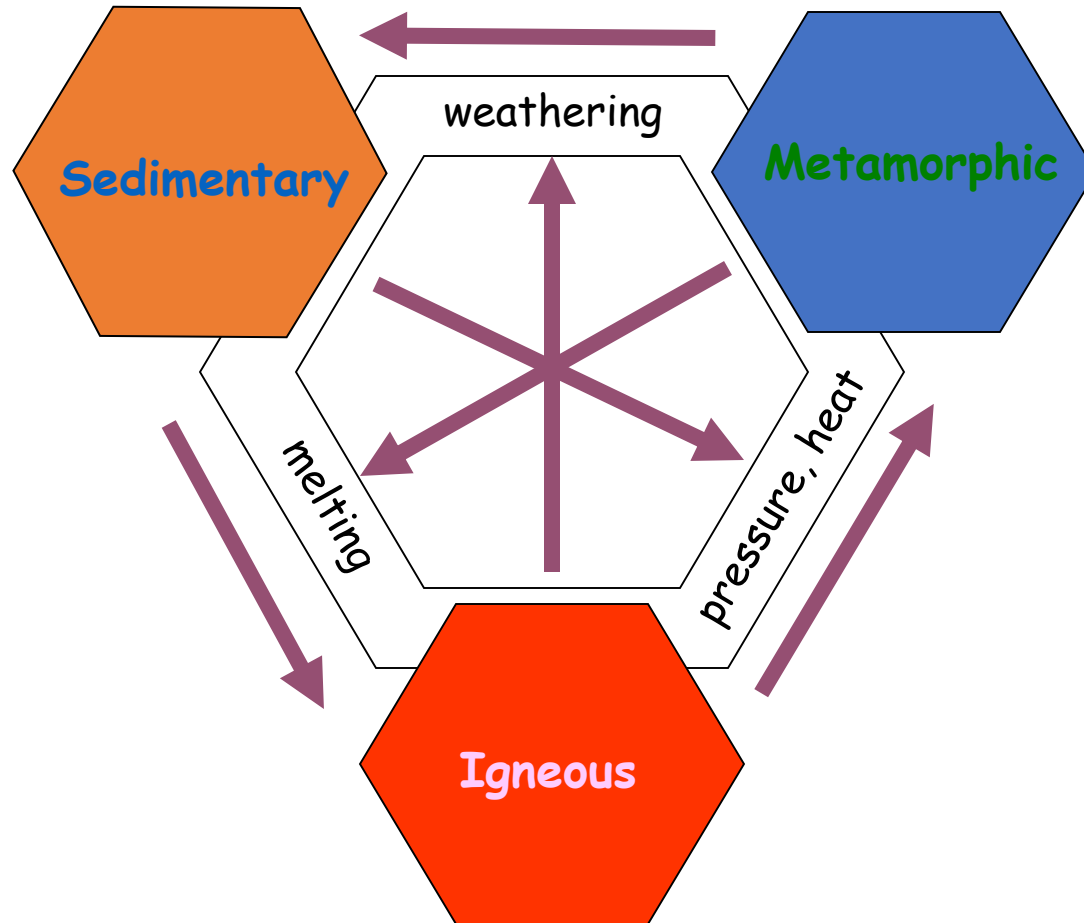
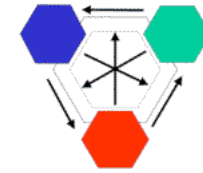


Conglomerate



Mineral Swirls

The Rock Cycle



The **Rock Cycle** does not move in any particular direction. Any given rock can go through any part of the cycle any number of times.