Rock Cycle and Layers

Introduction for Parts 1 & 2

South Carolina Aquarium

Teacher slide!

- Part 1
  - **Rock Types**
  - **Rock Cycle**

Slides 1-13

- Part 2
  - **Rock Layers**

Slides 14-17

South Carolina Aquarium


Rocks

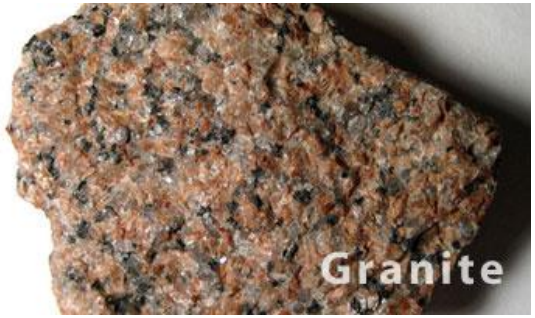
Types of Rocks

- There are 3 types of rock:
  - **Igneous**
  - **Metamorphic**
  - **Sedimentary**

South Carolina Aquarium

Igneous Rocks

- Formed from magma or lava from a volcano
  - **Intrusive igneous rocks – formed from magma cooling slowly within the Earth**
  - **Extrusive igneous rocks – formed from lava cooling quickly on the Earth's surface**



Intrusive

Extrusive

Metamorphic Rocks

- Formed as one rock type changes into another due to high pressure and heat
  - **Foliated metamorphic rock – have layers or bands**
  - **Non-foliated metamorphic rock – no layers or bands**

Foliated

Non-foliated

Sedimentary Rocks

- Form from the compaction of sediments such as rock pieces, mineral grains and shell fragments

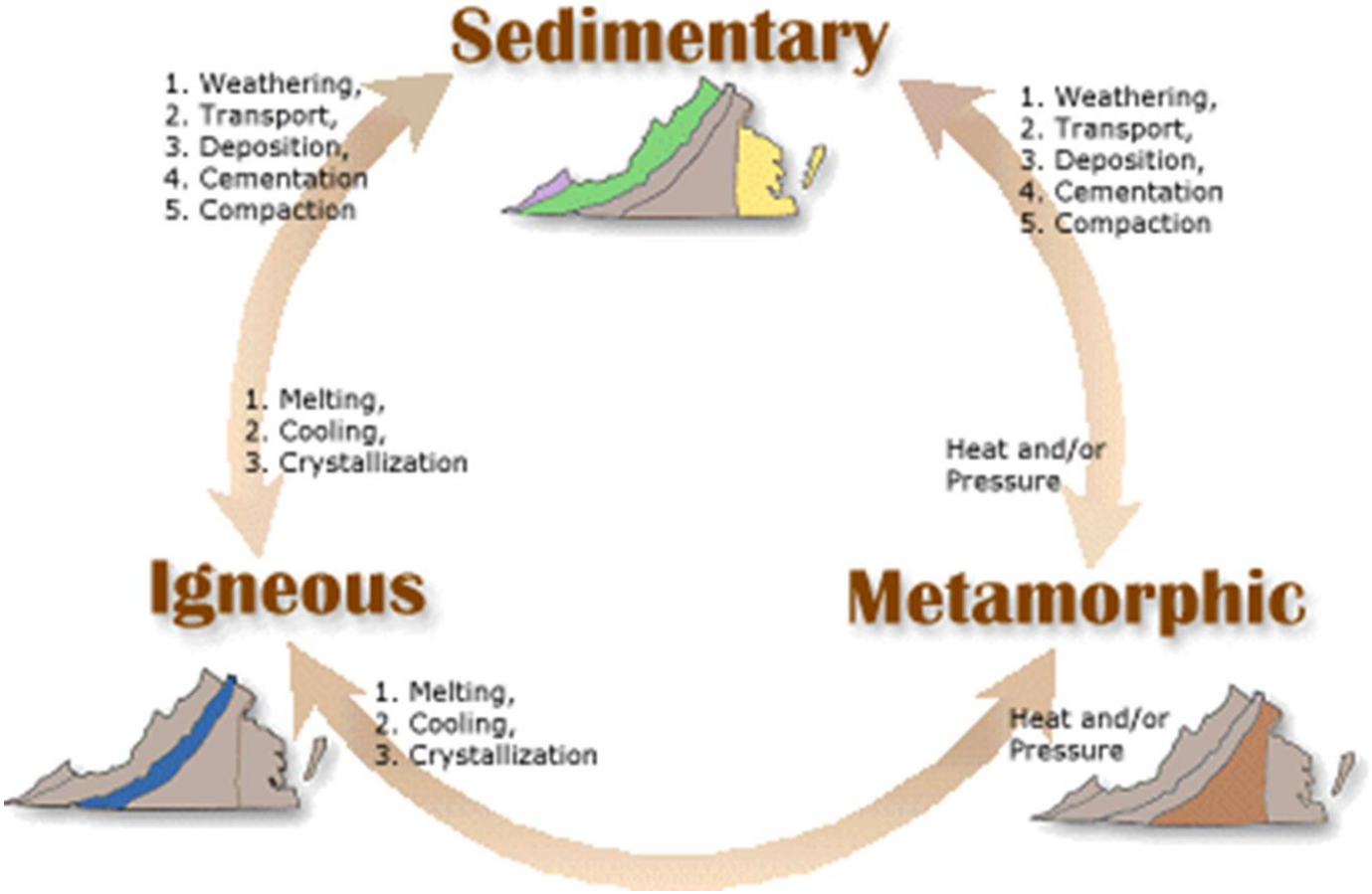
Rock Cycle

- Rocks constantly change over time and become another type of rock
- The rocks on the Earth today are the same as they have ever been, but have changed over geologic time
- Rocks change due to weathering, transport, deposition, cementation, compaction, melting, cooling, crystallization, heat or pressure

The Reasons Rocks Change

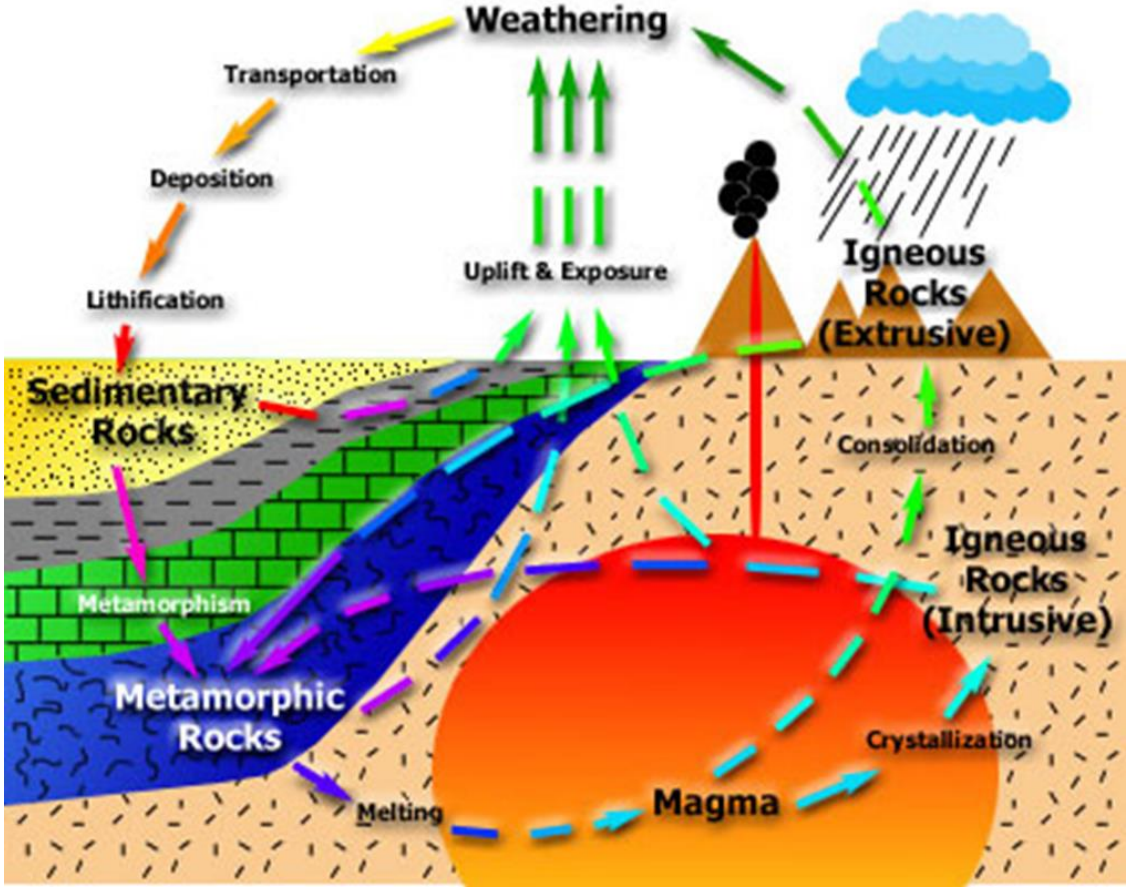
- Weathering/erosion – loosening and moving of sediment by water, ice, wind and gravity
- Transport – moving of materials
- Deposition – settling of materials
- Cementation – small particles settling between sediments binding them together
- Compaction – packing together
- Crystallization – liquid or gas forming a solid state
- Melting – solid to liquid
- Cooling – decrease in temperature
- Heat – increase in temperature
- Pressure – force exerted upon something

Rock Cycle



South Carolina Aquarium

Rock Cycle

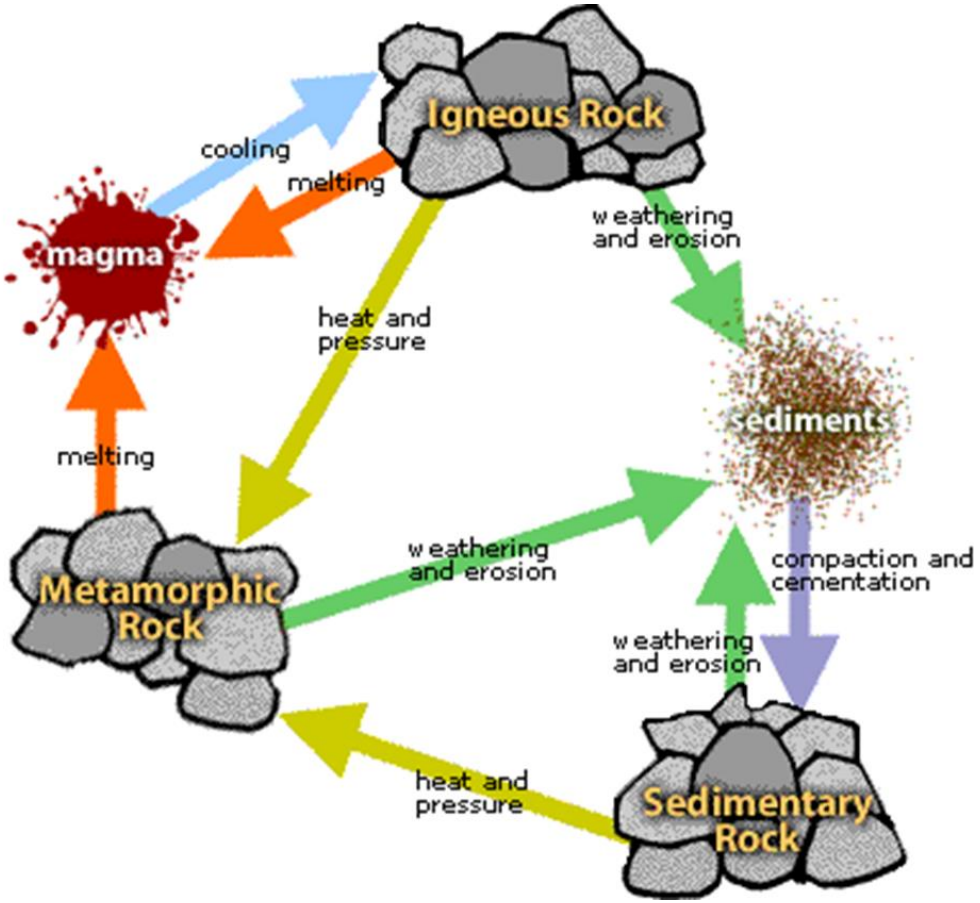


South Carolina Aquarium

Examples of Rock Changes

- Sedimentary rocks get pushed deeper into the Earth over time and melt into magma where they eventually become igneous rocks
- Weathering of a metamorphic rock releases tiny particles that eventually join with other sediments and become sedimentary rocks
- Igneous basaltic oceanic crust subduct at a plate boundary and due to pressure and heat become metamorphic rocks

Rock Cycle Examples



South Carolina Aquarium

Rock Layers

- Sediment of many kinds (gravel, sand, mud,…) will settle out and form a layer
- This layer becomes sedimentary rock and will include dead plants and animals of that time
- Over long periods of time, sediment continues to settle and many layers form → Rock layers

Law of Superposition

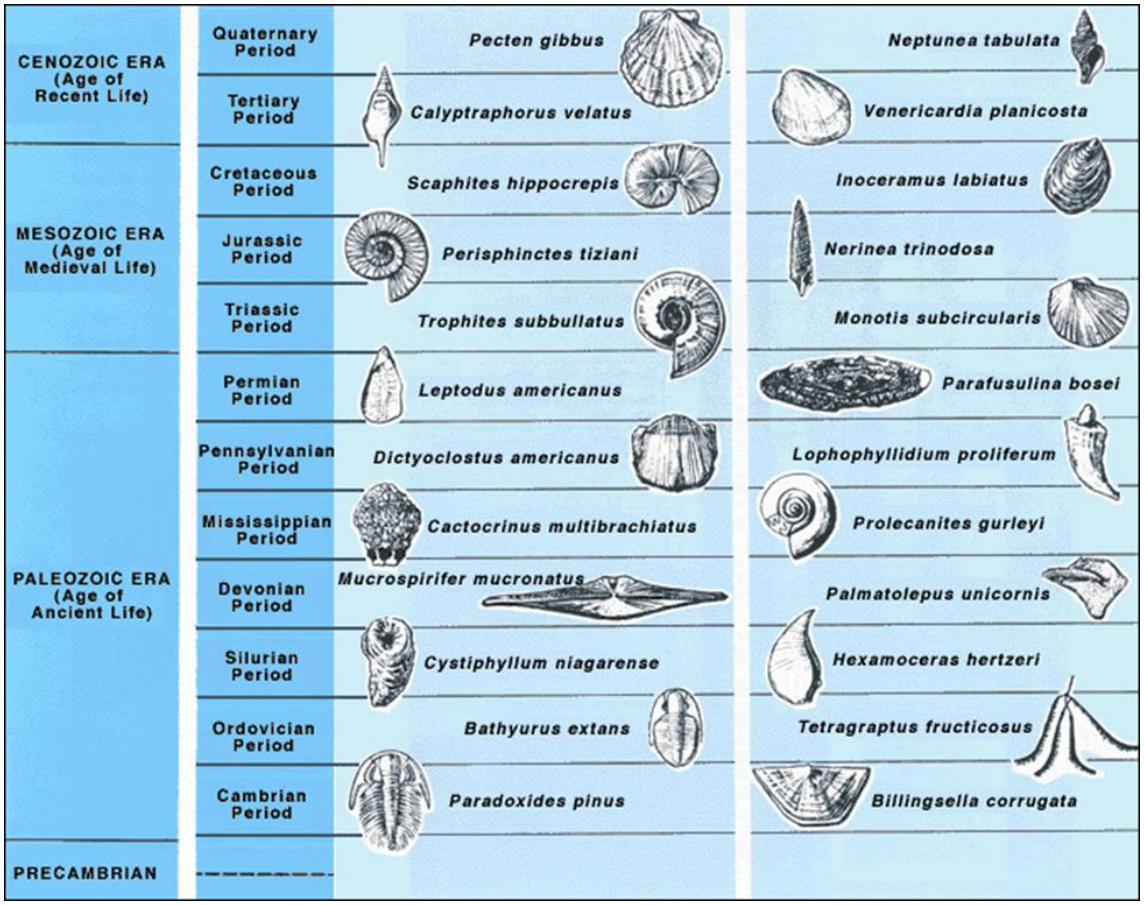
- The oldest rock layer is the deepest layer
- As layers are formed, the top layer is the most recent

South Carolina Aquarium

Index Fossils and Rock Layers

- Fossils are the remains of living things from the past
- Index fossils are fossils that can be found within a "short" amount of geologic time in a wide spread area
- Index fossils are special fossils that help to identify the relative age of other organisms found within the same rock layer
- Relative age is the geologic age of a fossil in terms of what age range it can be found within
  - **Index fossil example: Trilobites lived 542-488.3 million years ago (MYA) during the Cambrian Period**

Index Fossils



South Carolina Aquarium