# Sedimentary Rock

You are walking down a highway and look up to see where the road builders blasted away the hill, leaving behind layers of rock that are light gray and dull in appearance. When you inspect some of the rocks lying beneath it, you see a mold fossil of a shell. The rock is very fine grained and appears to have few if any crystals in it. You decide it is a sedimentary rock. Why?

Engage in argument from evidence to show that the rock sample is a sedimentary rock.

- Your answer should provide **evidence** for the **process** that formed the rock.
- Your answer should contain at least 5 vocabulary terms.

*sediment, cementation, erosion, weathering, fossils, chemical, organic, deposition, grain structure, clastic*

# Metamorphic Rock

You are walking down a trail in the Smokey Mountains. You see this cliff face on the side of a hill. It has wavy stripes of darker and lighter colors and when you take a closer look, it has a fine-grained crystalline sparkle. You decide it is a metamorphic rock. Why?

Engage in argument from evidence to show that the rock sample is a metamorphic rock.

- Your answer should provide **evidence** for the **process** that formed the rock.
- Your answer should contain at least 5 vocabulary terms.

*Foliated, grain structure, heat, pressure, strain, convergent plate boundary, metamorphosis*

# Igneous Rock

You are in go to a restaurant and notice a counter-top that is made of a polished stone of multiple colors. The rock is coarse-grained with many mineral crystals. The rock appears to have the same composition throughout, with small dark crystals and large pink crystals. You decide it is an igneous rock. Why?

Engage in argument from evidence to show that the rock sample is an igneous rock.

- Your answer should provide **evidence** for the **processes** that formed the rock.
- Your answer should contain at least 5 vocabulary terms.

*intrusive, extrusive, magma, molten, cooling, grain structure, solidify, uniform*

# Sedimentary Rock

Weathering, erosion

Deposition

Compaction

Cementation

Precipitation – crystals form from water

Evaporite- minerals left behind when water evaporates.

- Clastic
  - *Formed from mud, clay, sediment, silt, sand, or pebbles that have cemented together.*
- Organic
  - *Formed from calcium deposits from shells of ancient sea life*
  - *Often contains fossils*
  - *Formed from carbon remains of plants and animals – example is coal*
- Chemical
  - *Solids precipitate out of water and crystallize.*

# Metamorphic Rock

Very Strong Rocks

Heat and pressure

Strain

Crystallization

- Foliated
  - *Formed when rocks are under extreme heat and high pressure, forming layers with crystals that orient in one direction*
  - *Can form in wavy lines or stripes due to strain*
  - *Strain* occurs because of twisting or perpendicular forces in the rock layers causing warping
- Non-foliated
  - Formed from heat and recrystallization but low pressure, or when pressure is equal in all directions.
  - Crystals are not in any particular alignment.

# Metamorphic Rock

Very Strong Rocks

Heat and pressure

Strain

Crystallization

- Regional Metamorphism
  - Heat
  - Pressure
  - Strain
- Contact Metamorphism
  - Igneous intrusions into sedimentary rock heat up the rocks around them.
  - Lava on the surface can also cause contact metamorphism.

# Igneous Rock

Intrusive/Plutonic rocks are dense and strong

Extrusive can be very light and soft

Crystals can be microscopic

Crystals can be large and interlocked

Uniform (same) throughout

- Intrusive/Plutonic
  - Cool below the surface
  - Plutonic rocks are deeper, cool slower, form large crystals
  - Intrusive rocks are closer to surface, have smaller crystals than plutonic
  - Both very dense rocks
  - Granite, Gabbro,
- Extrusive
  - Forms when lava on the surface cools rapidly.
  - Only very small or microscopic crystals may form.
  - May have no crystals at all and have a glassy appearance.
  - May contain pits or holes from air bubbles that were trapped in the lava.