

Rock Cycle Tour Lab

- Magma—molten rock under the earth's surface
- Lava—molten rock on/above the earth's surface

Station 1- Igneous Rocks

1. Igneous means “Born of FIRE”

2. Formed at earth’s surface:

Scoria/lava rock (1) Basalt (2) Pumice (4)

Crystals are too small to see—cooled quickly.

3. Formed deep underground:

Gabbro (3) Granite (5)

Crystals large enough to see—cooled slowly.

4. Igneous rocks form from cooling and crystallization of magma or lava.

Intrusive vs. Extrusive



Station 2- Physical Weathering

=Breaking rock into smaller pieces by force.

1. Shale starts with sharp edges.
2. Water starts out clear.
3. After shaking, water is cloudy, brown/gray.
4. Rocks have changed two ways:
 1. Edges more rounded.
 2. Rocks slightly smaller.

Before and After

Fresh shale—sharp edges, large pieces



8 year old shale—rounded edges, smaller pieces

Before and After--Real World

Sharp Edges



Rounded Edges

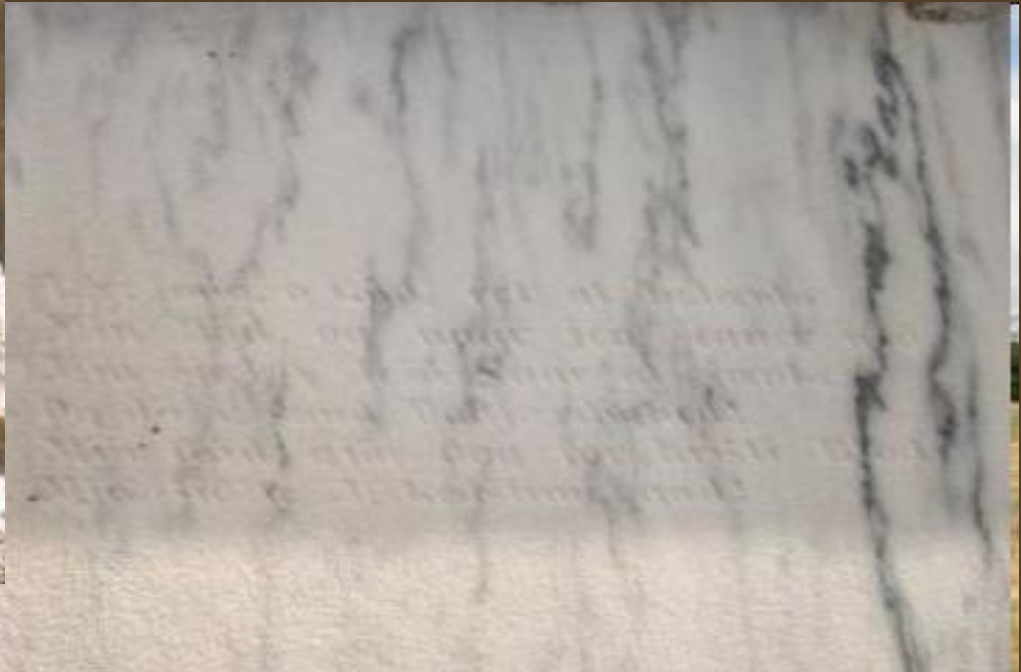


Station 3- Chemical Weathering

--breaking rock into smaller pieces by a chemical reaction

1. HCl causes marble to fizz and dissolve.
2. H₂O causes or soap to dissolve.
3. Effect of acid rain can be seen in caves, also on marble statues and buildings.

Chemical Weathering of Marble



Station 4- Erosion

1. Grand Canyon created by erosion and uplift.
(Also add weathering)
2. Eroded rock ended up in Gulf of California.
3. Earth's crust doesn't weather/erode away because the rock cycle is a cycle...destructive processes counteracted by constructive processes...new rock created in mountain building.
4. Grand Canyon is made from Sedimentary rocks.

Grand Canyon



Sediment goes downhill

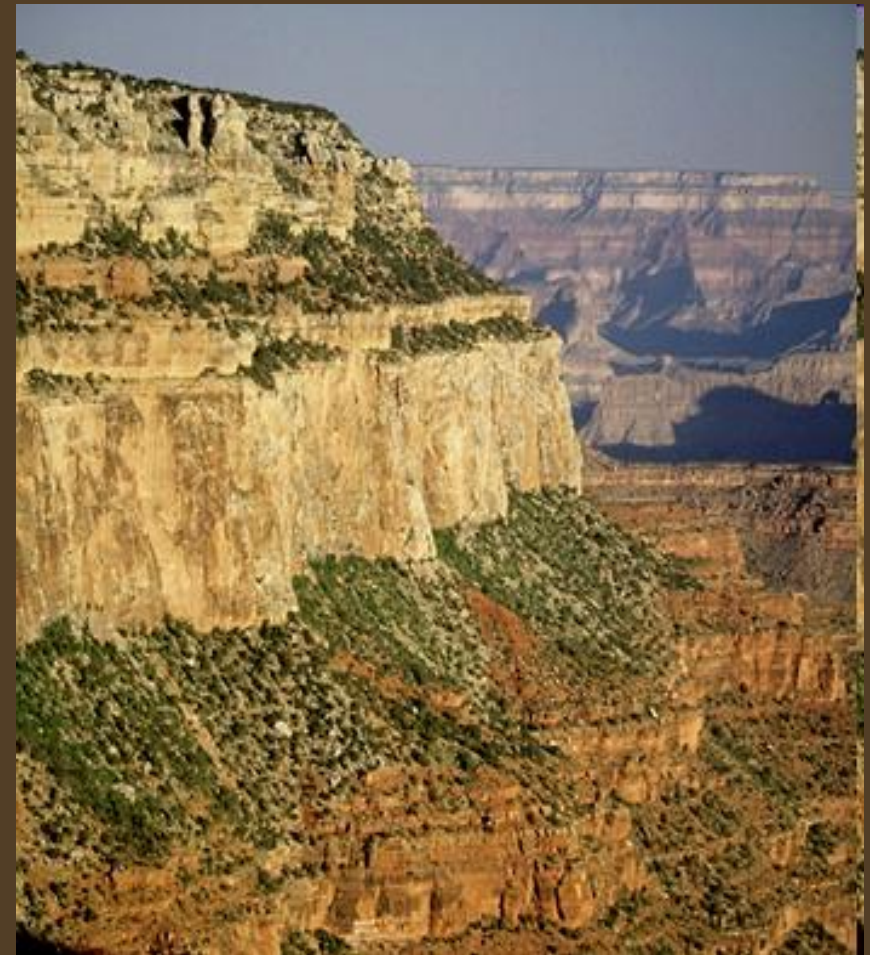


Station 5- Deposition

1. Biggest (red/green) particles reach bottom first.
2. Sketch should show layering.
3. Big particles first then smaller and smallest. Then a new layer of the same.
4. Oldest layers on the bottom in undisturbed rocks...Law of Superposition. (Relative Dating)

Law of Superposition

THE GROWING PILE OF SEDIMENT LAYERS			TIME
Location A	Location B	Location C	
<div style="border: 1px solid black; padding: 5px; text-align: center;"> 5 2 1 </div>	<div style="border: 1px solid black; padding: 5px; text-align: center;"> 5 2 1 </div>	<div style="border: 1px solid black; padding: 5px; text-align: center;"> 5 4 3 2 1 </div>	time 5
<div style="border: 1px solid black; padding: 5px; text-align: center;"> 2 1 </div>	<div style="border: 1px solid black; padding: 5px; text-align: center;"> 2 1 </div>	<div style="border: 1px solid black; padding: 5px; text-align: center;"> 4 3 2 1 </div>	time 4
<div style="border: 1px solid black; padding: 5px; text-align: center;"> 2 1 </div>	<div style="border: 1px solid black; padding: 5px; text-align: center;"> 3 2 1 </div>	<div style="border: 1px solid black; padding: 5px; text-align: center;"> 3 2 1 </div>	time 3
<div style="border: 1px solid black; padding: 5px; text-align: center;"> 2 1 </div>	<div style="border: 1px solid black; padding: 5px; text-align: center;"> 2 1 </div>	<div style="border: 1px solid black; padding: 5px; text-align: center;"> 2 1 </div>	time 2
<div style="border: 1px solid black; padding: 5px; text-align: center;"> 1 </div>	<div style="border: 1px solid black; padding: 5px; text-align: center;"> 1 </div>	<div style="border: 1px solid black; padding: 5px; text-align: center;"> 1 </div>	time 1



Station 6- Sedimentary Rocks

1. Made of?

1. Sand
2. Fine sand
3. Shells/mud
4. Mud
5. Pebbles

2. Formed?

1. desert/beach
2. desert/beach
3. lake/ocean bottom
4. lake/ocean bottom
5. river

3. Sediment turns into sedimentary rock through compaction and cementation. (squishing and gluing)

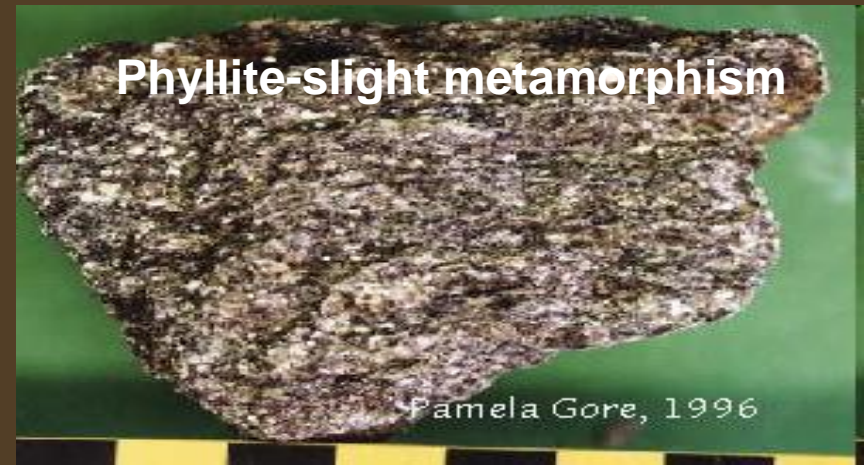
Station 7- Metamorphism

1. Rocks being metamorphosed at D.
2. Heat and pressure change the rocks.
3. Magma (C) is the source of heat.
4. The rocks stacked on top are the source of pressure.

Station 8- Metamorphic Rocks

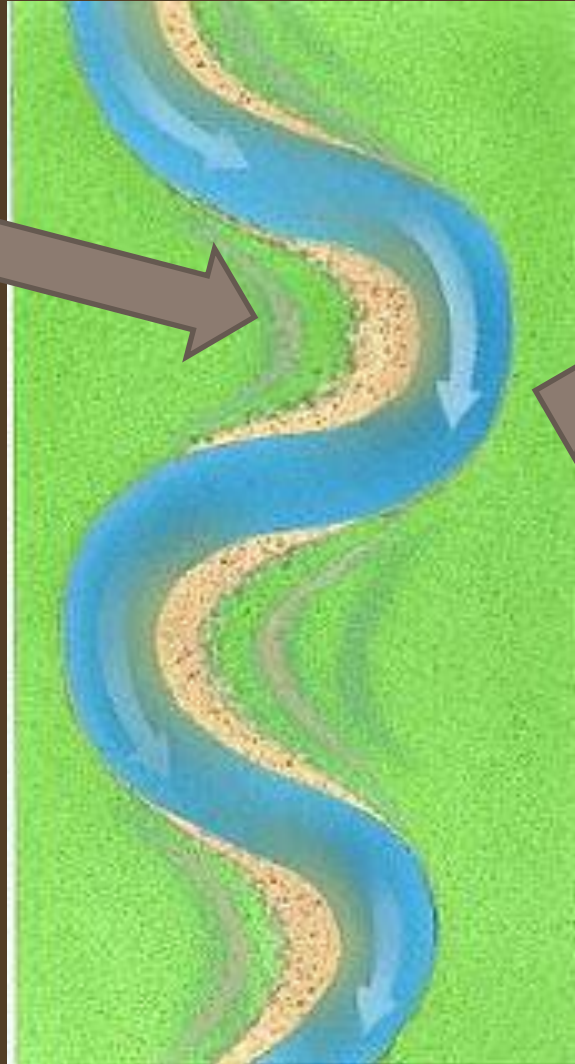
1. Metamorphosis means to change form.
2. Sample 2 (quartzite) used to be made of sandstone.
3. Sample 1 (gneiss) made of same colors (minerals) as granite, but
4. In a different arrangement.
5. Limestone's crystals reform in a more solid way.
6. Sample 1: quartzite
Sample 2: gneiss
Sample 3a: slate 3b: marble

Metamorphism



Stream Erosion

Water slows down, dropping sediment on “inside” of the bend or meander.



Water moves quickly, picking up sediment on “outside” of the bend or meander.

Stream Formation by Erosion and Deposition

