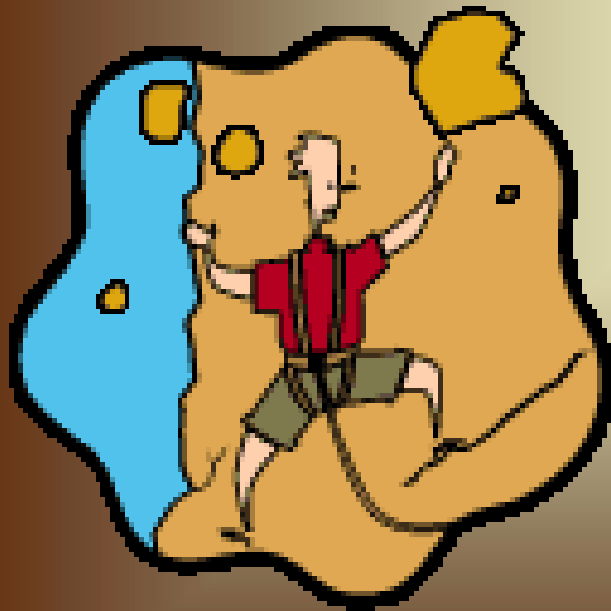




ROCKS AND THE ROCK CYCLE

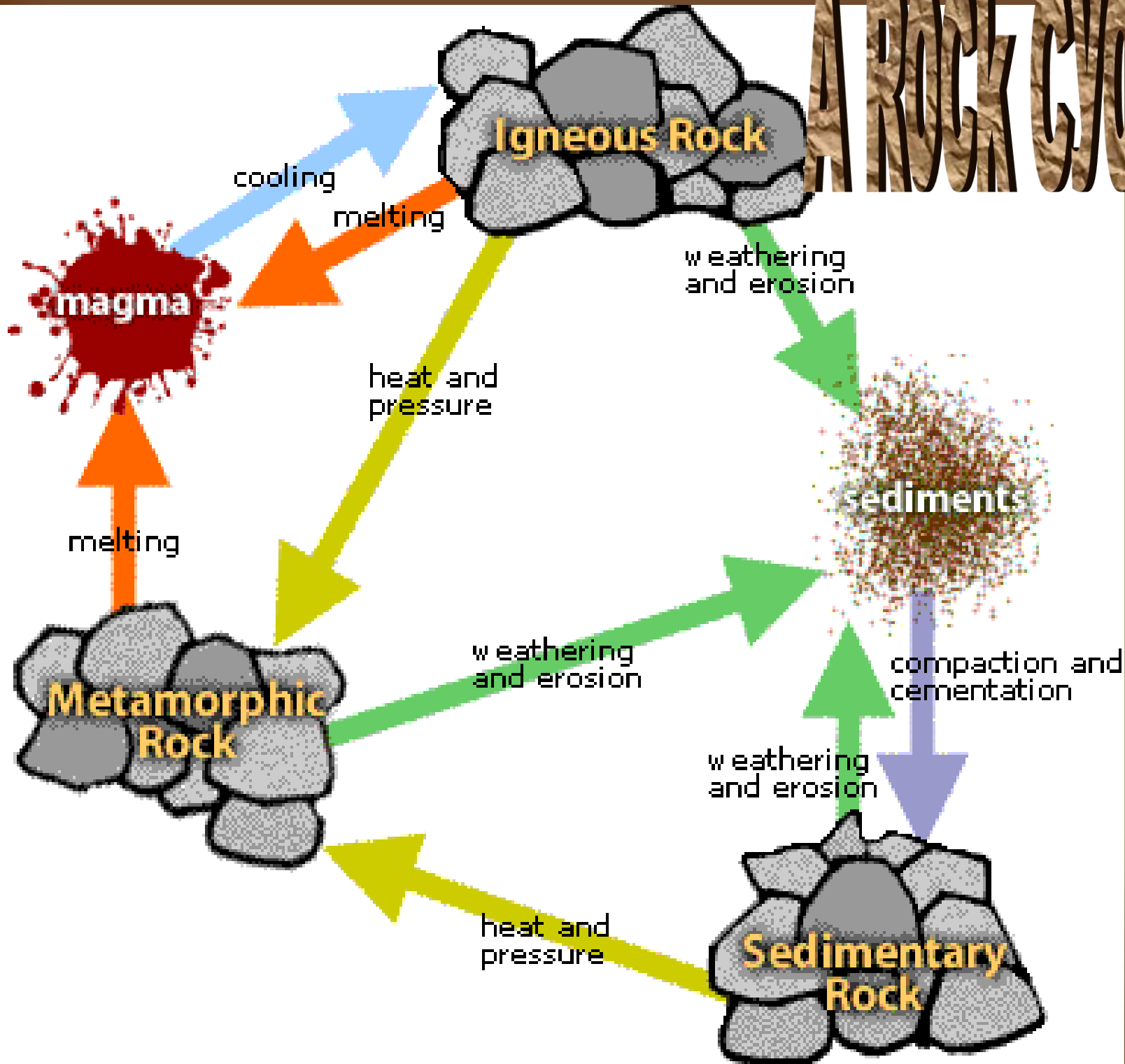


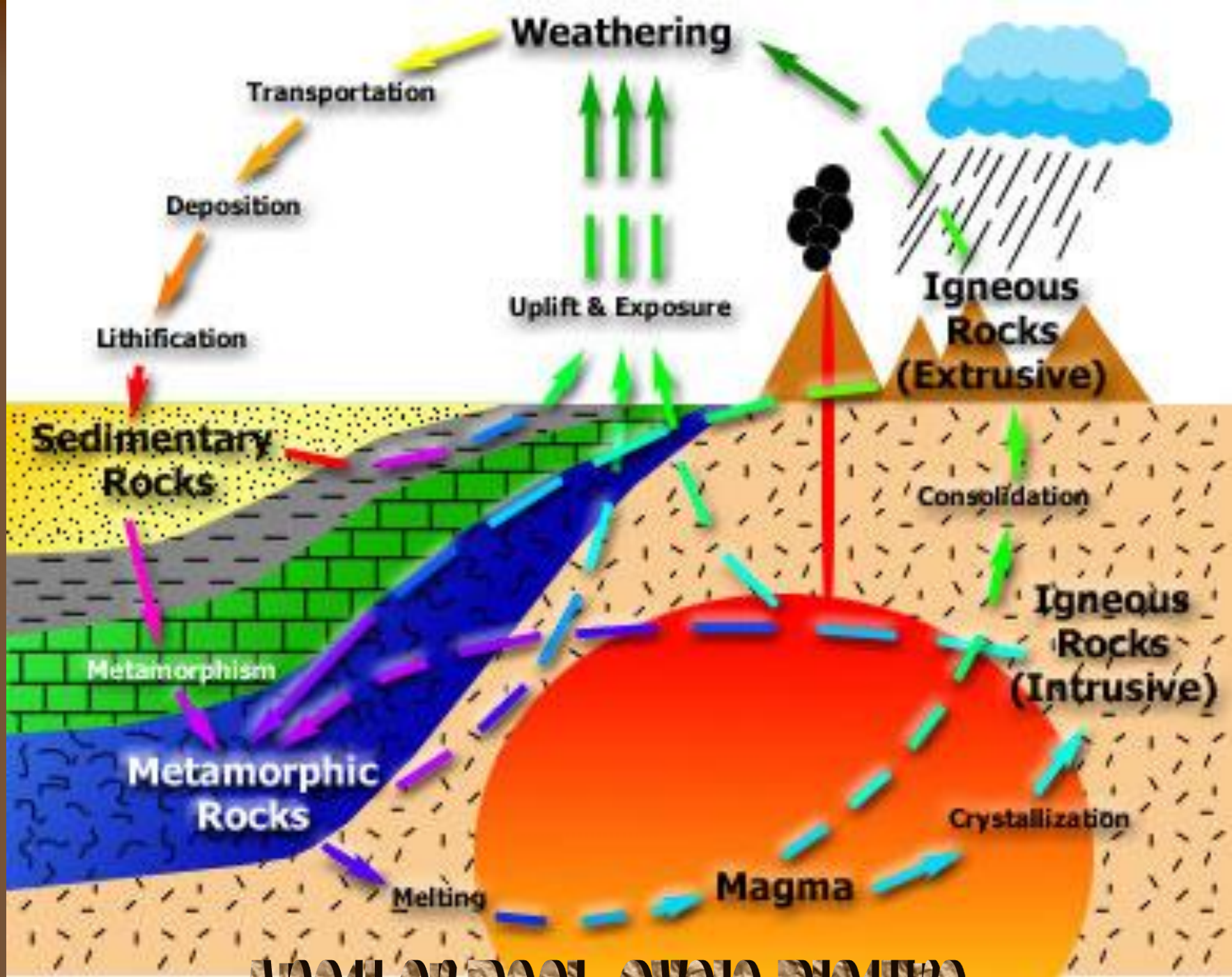
Eliza C.

&

Elizabeth F.


A ROCK CYCLE PICTURE








ANOTHER ROCK CYCLE PICTURE


THE ROCK CYCLE

 The Rock Cycle is a group of changes, this change does not necessarily have to be a chemical change.

 Igneous rock can change into sedimentary rock or into metamorphic rock.

 Sedimentary rock can change into metamorphic rock or into igneous rock.

 Metamorphic rock can change into igneous or sedimentary rock.


 Almost all of rock today that we have on earth is made up of all the same stuff as the rocks that dinosaurs and other ancient life forms walked, crawled, or swam over


 While the stuff that rocks are made of has stayed the same, the rocks themselves, have not


 Over time rocks are recycled into other rocks

 Moving tectonic plates are responsible for destroying and forming many types of rocks

The Rock Divisions


 Rock divisions occur in three major families based on how they formed: igneous, sedimentary, and metamorphic.


 Each group contains a collection of rock types that differ from each other on the basis of the size, shape, and arrangement of mineral grains.

 Just remember 3 types of rocks=3 divisions. (igneous, sedimentary, and metamorphic)



CLASSIFYING ROCKS

 When classifying a rock sample geologists observe the rock's color and texture and determine its mineral composition.

 Texture: the size, shape, and pattern of the rock's grain.

 Color: the apparent color of the rock, on the inside and the outside.

 Mineral composition: The minerals that make up the different parts of a rock.

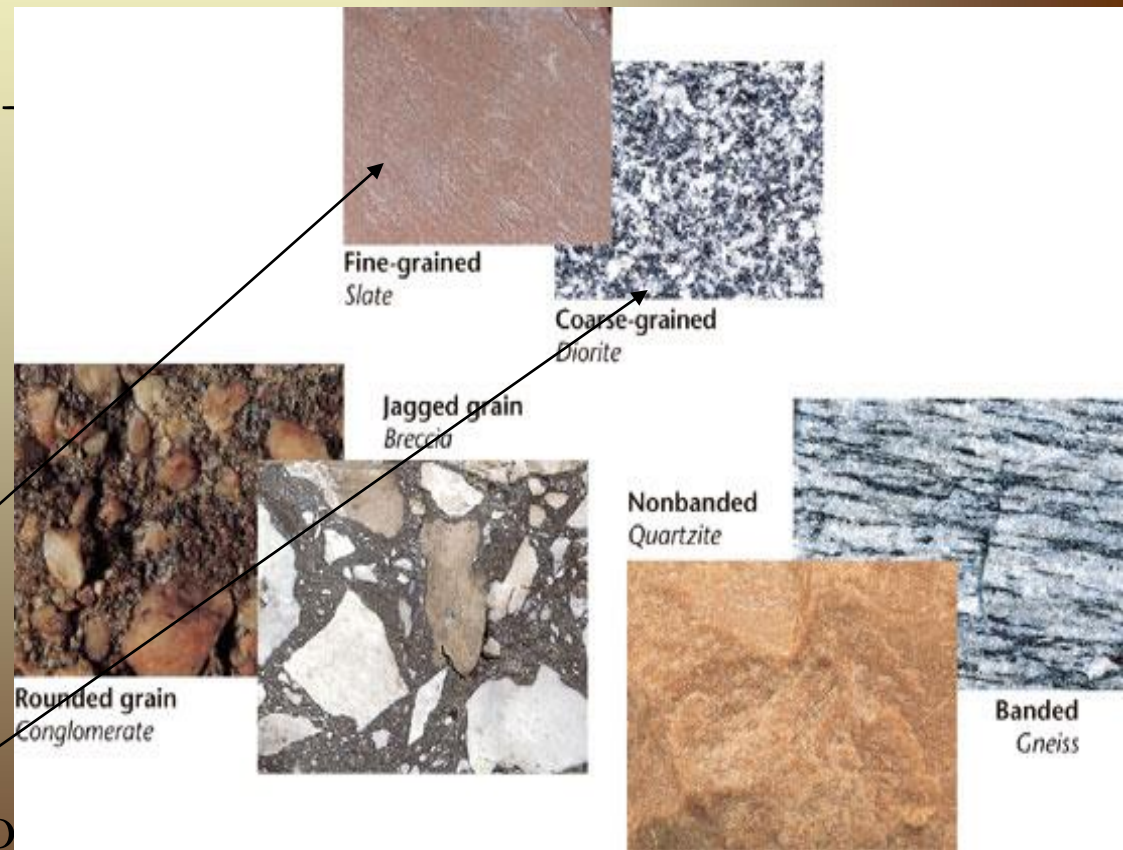
Texture: Grain Size

Often, the grains in a rock are large and easy to see.

Such rocks are said to be coarse-grained. In other rocks, the grains are so small that they can only be seen with a microscope.

These rocks are said to be fine-grained.

Notice the difference in texture between the fine-grained slate and the coarse-grained diorite to the right.



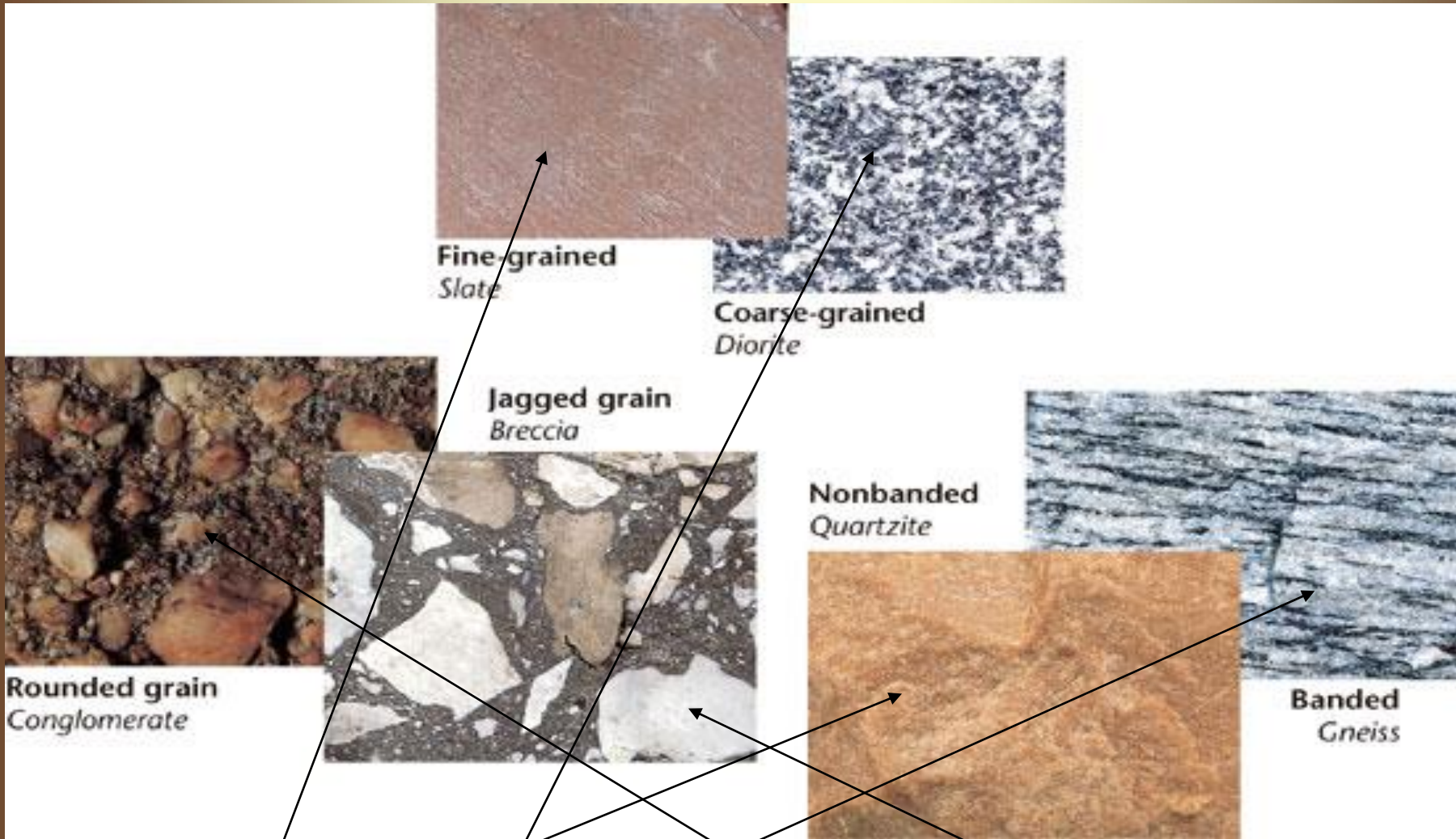
Texture: Grain Shape

- The grains in a rock vary widely in shape
- Some grains look like tiny particles of fine sand
- Others look like small seeds or exploding stars
- In some rocks, such as granite, the grain results from the shapes of the crystals that form the rock
- In other rocks, the grain shape results from fragments of other rock
- These fragments can be smooth and rounded, like the fragments in conglomerate, or they can be jagged, like the fragments in breccia
- You can compare conglomerate and breccia one the next slide

Texture : Grain Pattern

- The grains in a rock often form patterns. Some grains lie in flat layers that look like a stack of pancakes.
- Other grains form wavy, swirling patterns. Some rocks have grains that look like rows of multicolored beads, as in the sample of gneiss shown above.
- Other rocks, in contrast, have grains that occur randomly throughout the rock.


Different Types of Texture





Fine-Grained, Coarse-Grained, Rounded Grain, Jagged Grain, Nonbanded, Banded

IGNEOUS ROCKS

"Fire Rock"

 Igneous rock forms when magma cools and makes crystals.

 Magma is a hot liquid made of melted minerals. When magma pours onto the earth's surface it is called lava. The minerals can form crystals when they cool.

 Igneous rock can form underground, where the magma cools slowly. Or, igneous rock can form above ground, where the magma cools quickly.

 The crystals grow together and form one igneous rocks.



2 Types of Igneous Rocks





INTRUSIVE IGNEOUS ROCKS – When igneous rocks are formed by magma that cools **BENEATH** Earth's surface, they are called intrusive igneous rocks




EXTUSIVE IGNEOUS ROCKS – When igneous rocks are formed by **LAVA ON** Earth's surface, they are called extrusive igneous rocks

Sedimentary Rocks

 Sedimentary rocks form from particles deposited by water and wind

 If you have ever walked along a beach (which I am sure you have) you may have noticed tiny sand grains, mud, and pebbles.

 These are some sediments that eventually form into sedimentary rocks

 Sedimentary Rocks can form in 4 ways by:

 Erosion

 Deposition

 Compaction


 Cementation





Lithification

- The process by which sediment becomes sedimentary rock
 - 1st step : erosion
 - 2nd step : deposition
 - 3rd step : compaction
 - 4th step : cementation

Sedimentary Rocks : Erosion


 Destructive forces are constantly breaking up and wearing away all the rocks on Earth's surface


 The forces include heat and cold, rain, waves, and grinding ice


 Erosion occurs when running water or wind loosens and carry away the fragments of rock.





Sedimentary Rocks: Deposition


 Eventually, the moving water or wind slows and deposits the sediment.

 If water is carrying the sediment, rock fragments and other materials sink to the bottom of a lake or ocean.

 Deposition is the process by which sediment settles out of the water or wind carrying it.


 After sediment has been deposited, the processes of compaction and cementation change the sediment into sedimentary rock.


 In addition to particles of rock, sediment may include shells, bones, leaves, stems, and other remains of living things.

 Over time, any remains of living things in the sediment may slowly harden and change into fossils trapped in the rock.




Sedimentary Rocks: Compaction


 At first the sediments fit together loosely. But gradually, over millions of years, thick layers of sediment build up.


 These layers are heavy and press down on the layers beneath them.

 Then compaction occurs.

 Compaction is the process that presses sediments together.





 Year after year more sediment falls on top, creating new layers.

 The weight of the layers further compacts the sediments, squeezing them tightly together.

 The layers often remain visible in the sedimentary rock.

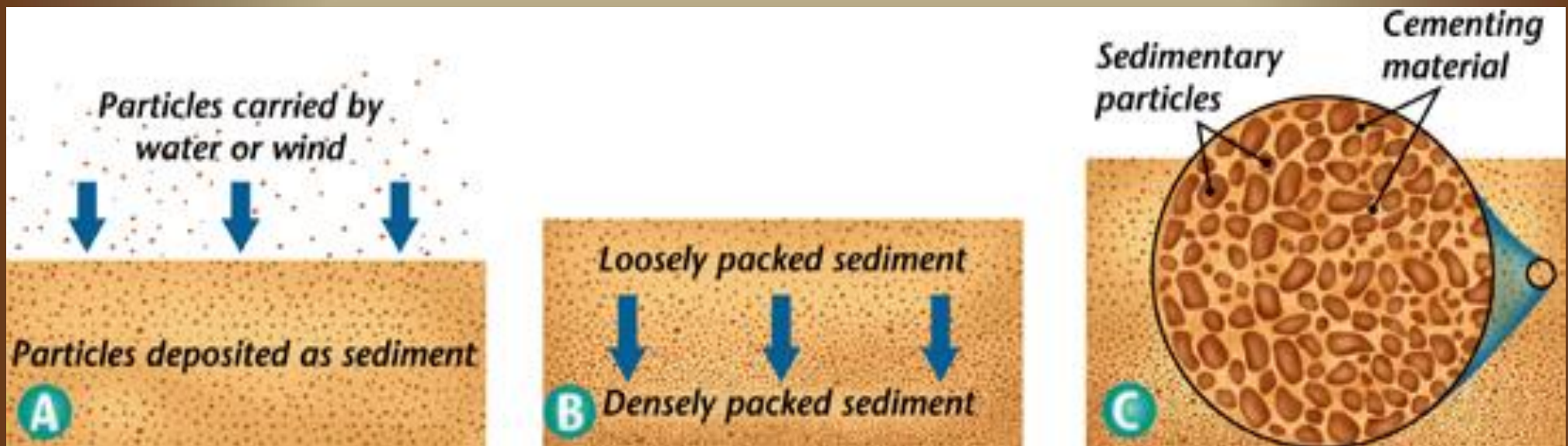


Sedimentary Rocks: Cementation

-  While compaction is taking place, the minerals in the rock slowly dissolve in the water.
-  The dissolved minerals seep into the spaces between particles of sediment.
-  Cementation is the process in which dissolved minerals crystallize and glue particles of sediment together.
-  It often takes millions of years for compaction and cementation to transform loose sediments into solid sedimentary rock.

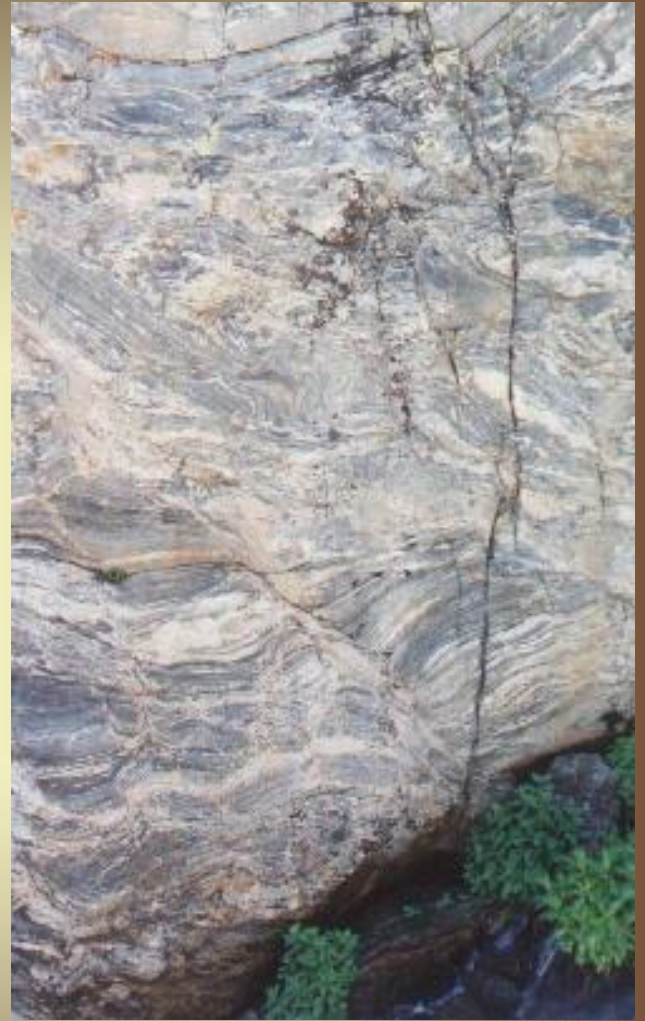
Sedimentary Transformations

- 🌿 Point A: water or wind deposits sediments
- 🌿 Point B: The heavy sediments press down on the layers beneath
- 🌿 Point C: Dissolved minerals flow between the particles and cement them together

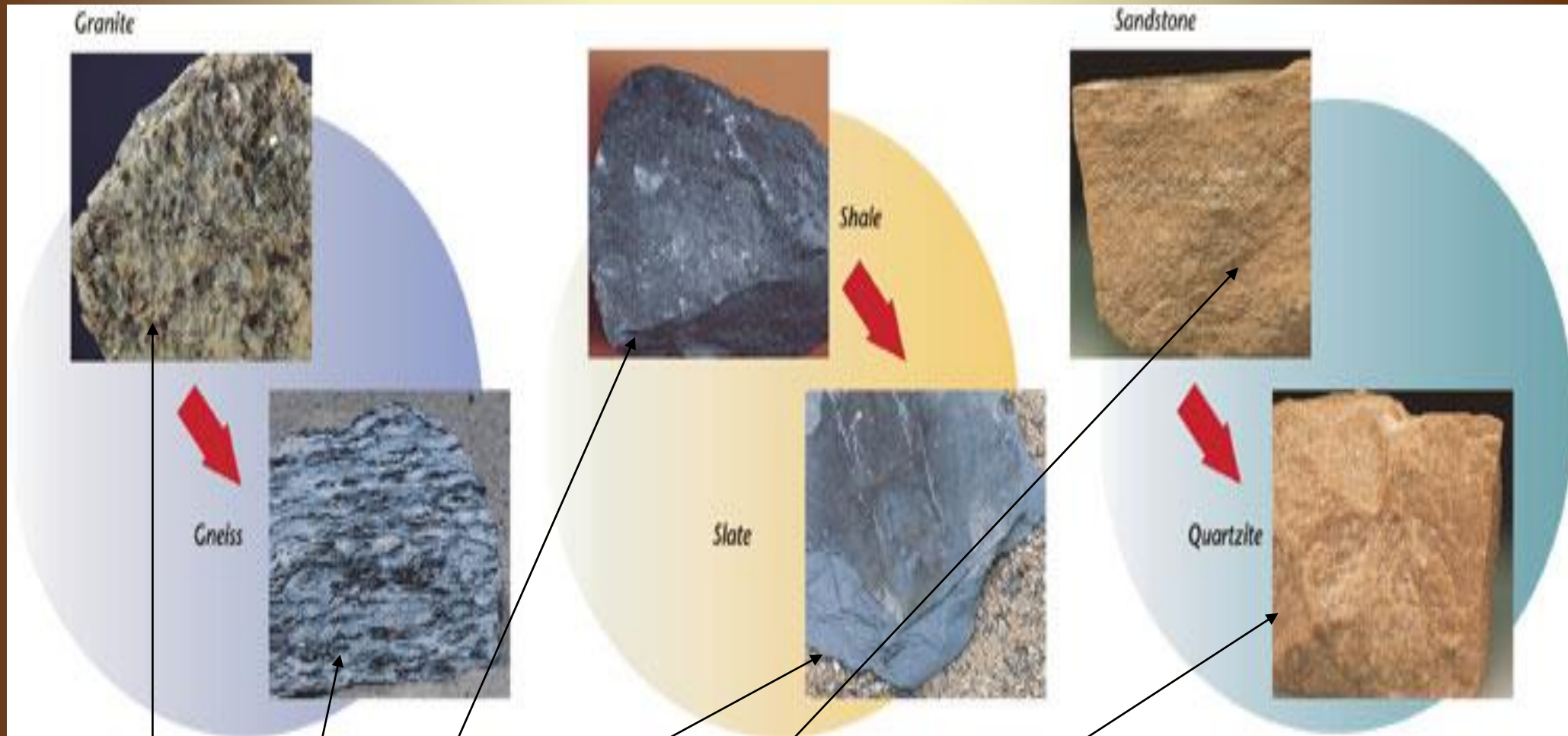


Metamorphic Rocks

- Metamorphic rocks are rocks that have "morphed" into another kind of rock.
- These rocks were once igneous or sedimentary rocks.
- How do sedimentary and igneous rocks change?
- The rocks are under tons and tons of pressure, which fosters heat build up, and this causes them to change.
- If you exam metamorphic rock samples closely, you'll discover how flattened some of the grains in the rock are.



Metamorphic Rock Pictures



Granite, Gneiss, Shale, Slate, Sandstone, and Quartzite are good examples of metamorphic rocks.


ANSWERS!!!!

1. Igneous, Sedimentary, and Metamorphic
2. Igneous
3. Texture, Color, and Mineral Composition
4. Erosion, Deposition, Compaction, Cementation
5. Morphed
6. Lithification
7. “ignis” means fire

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 **Google Images (I KNOW THIS DOESN'T COUNT
IM JUST TELLING YOU!!)**

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