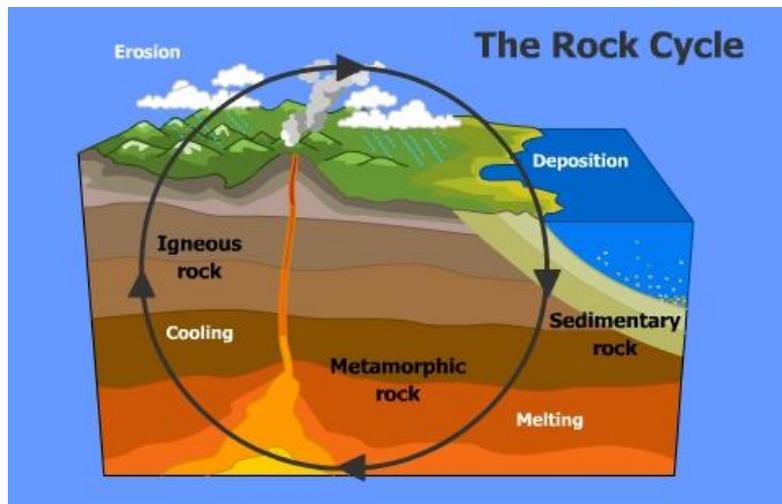


Unit E: Planet Earth

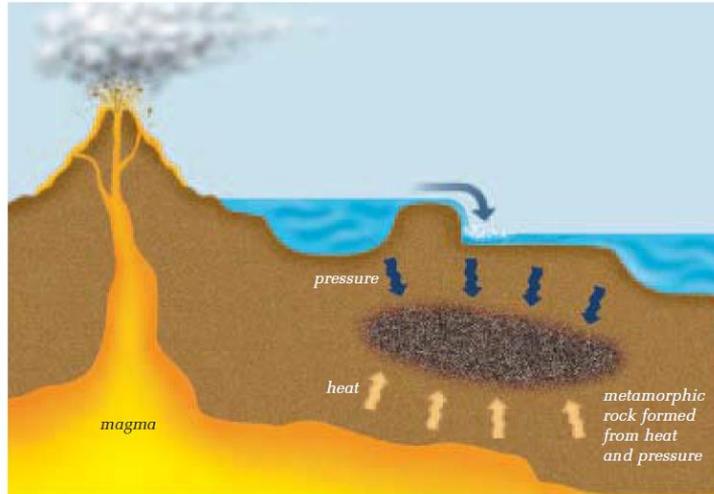


Topic 2: The Rock Cycle and Characteristics of Rocks



2.1 - Three Classes of Rocks: Igneous, Sedimentary, and Metamorphic

A. How Rocks Are Formed



B. Types of Rock

1. All rocks can be organized into _____ major families according to how they are formed:

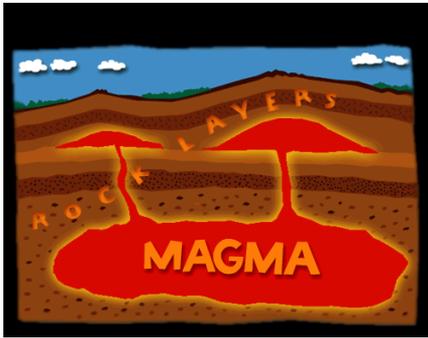
- a) _____
- b) _____
- c) _____



C. Igneous Rocks

1. Comes from the Latin word "_____", meaning fire
2. Formed from hot, molten rock called _____



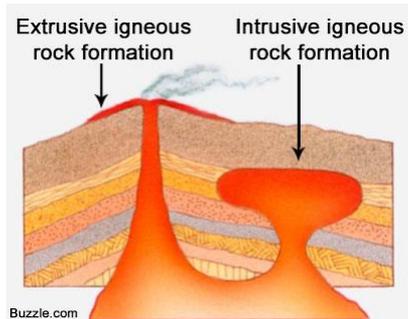


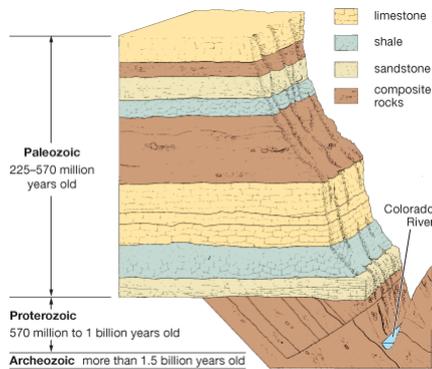
3. Magma may cool deep _____ the earth
4. When magma flows to the surface of Earth either on land or beneath the ocean, it's called _____
5. Igneous rock is _____ into two groups:
 - a) Intrusive rock - rock formed from magma that cooled and hardened _____ the surface

b) Extrusive rock - rock formed from lava cooling on the _____

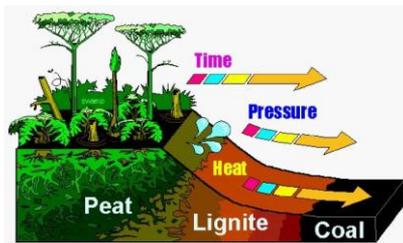
D. Sedimentary Rocks

1. Sedimentary rocks are rocks that have _____ in them
2. They form when small pieces of rock are carried by water or wind and _____ or sink down onto the rocks blow them





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3. As more sediments pile up, the ones on the bottom are _____ by the _____ by the weight of the ones above
 - a) Overtime, this causes the sediments to turn into _____
4. Sedimentary rocks form from rocks, shells, salts and _____ material
 - a) Coal is a common example of this, coming from the _____ of plant matter

E. Metamorphic Rocks

1. Rocks that have been _____
2. They started out as _____, _____ or other metamorphic rocks
3. Intense heat and pressure deep below Earth's surface changed their _____
4. Over long periods of time, rocks are _____ undergoing changes



Shale is a sedimentary rock that changes to slate if it is exposed to strong heat and pressure. Slate is harder than shale. If slate is exposed to more heat and pressure, the different kinds of mineral grains in it become larger and separate from each other. The rock is then called schist.

F. Geology Tools and Techniques

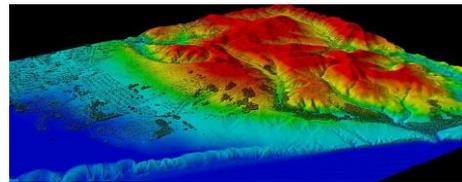
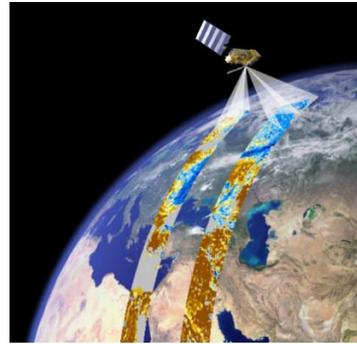
1. Remote Sensing

a) Mapping Earth's

 from aircraft and
 satellites

b) By examining soil types and vegetation from

 images, geologists can
 infer possible locations
 of valuable mineral
 deposits hidden below
 the surface



2. Geophysical Prospecting

a) Using _____
 instruments to detect
 mineral deposits hidden
 deep underground

b) For example some
 minerals like iron and
 copper are _____



3. Geochemical Prospecting

a) Making chemical analysis
 of samples taken from
 the _____,
 looking for evidence of
 traces of metals in an
 area

Topic 2.1 Review

1. Using your own words, complete the following sentences:
 - a) Igneous rocks form when ...
 - b) Sedimentary rocks form when ...
 - c) Metamorphic rocks form when ...
2. Lava always forms igneous rock, but not all igneous rocks are formed from lava.
 - a) What is lava?
 - b) If an igneous rock didn't form from lava, from what did it form?
3. What are some of the methods geologists use to locate valuable mineral deposits?

2.2 - The Rock Cycle

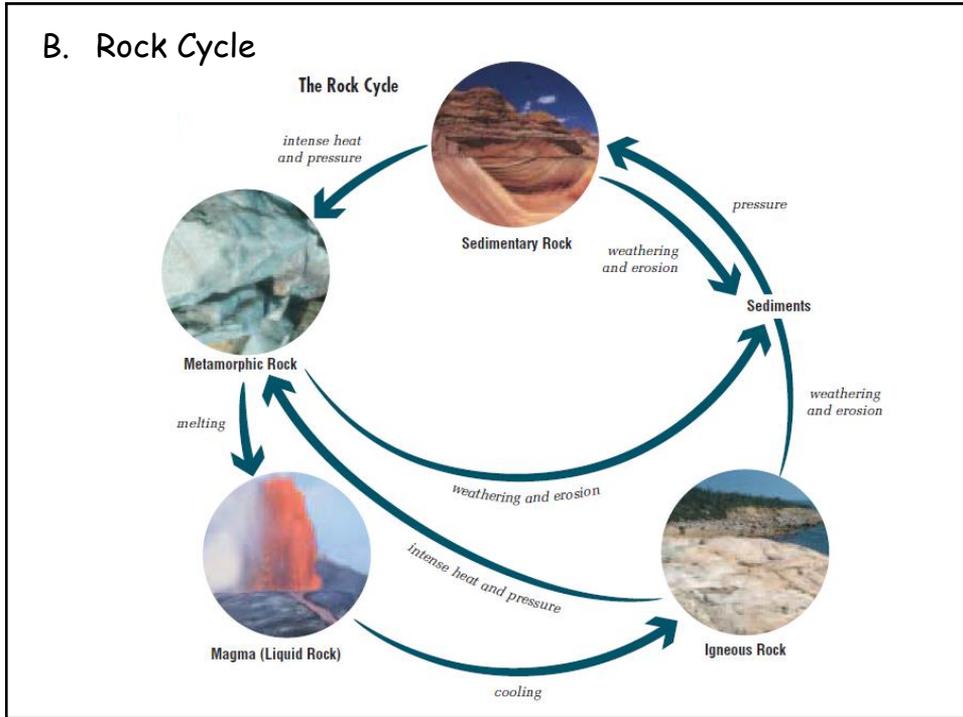
A. Earth Recycles Rock

1. Any rock _____ may melt into magma and later form igneous rock
2. Any rock that is exposed on Earth's surface may be _____ down into sediments and later become sedimentary rock
3. The _____ environment determines what type of rock is formed

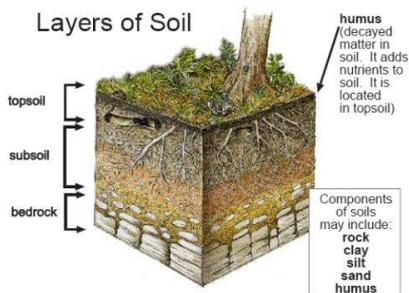


When this house was built, it had a fresh coat of paint and sparkling windows. A family moved in and grew up there. Children played in the yard. Flowers grew in the front. Vegetables grew in the back. Fifty years later, it looks like this. What happened to it?

B. Rock Cycle



C. Investigating the Rock Cycle



1. It takes nearly 1,000 years for just 5 mm of _____ to form
2. Soil is composed of two materials: rock and _____
 organic matter
3. Rock - stones, gravel, sand, silt, and _____
4. Organic Matter - plants and _____

D. The Alberta Story: Investigating the Changing Earth

1. In Alberta, the first _____ of soil (called overburden) is mostly sand, gravel, stones, and boulders
2. The rocks below this layer were laid in layers over _____ of millions of years
 - a) The oldest layer, the _____ Shield, is at the bottom. This layer is made of igneous and metamorphic rocks formed 544 to 4,500 millions ago. This covers 3% of Alberta (northeast)
 - b) The _____ Plain covers 87%. It is a wedge-shaped piece of land, sandwiched between the Canadian Shield and the Rocky Mountains. It is 1.5 to 544 million years old

Topic 2.2 Review

1. What does the rock cycle tell us about how rocks are formed?
2. The picture below shows the footprint left behind by one of the astronauts who landed on the moon about 40 years ago. This footprint looks exactly the same today as it did when it was made. What does this tell you about the rock cycle on the moon?

