

7. Pillow lava occurs when lava is extruded into a/an:

- a) valley
- b) ocean
- c) desert
- d) volcano

8. If a sample of lava is filled with air holes it is said to be:

- a) vesicular
- b) amygdoloidal
- c) massive
- d) inert

9. A PHENOCRYST is:

- a) a large crystal in the cooled magma
- b) large, ropy type of lava
- c) only found in metamorphic rock
- d) is similar to a diamond

10. Igneous rocks are classified by:

- a) chemical composition
- b) crystal size
- c) if they are intrusive or extrusive
- d) all of the above

Answers

- 10. D
- 9. A
- 8. A
- 7. B
- 6. D
- 5. B
- 4. D
- 3. B
- 2. A
- 1. B

The Physical Geography Series

Igneous Rocks

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Glossary

Mineral - A substance that is a unique combination of chemical elements arranged in a special pattern.

Rocks - Aggregates of minerals; a mixture of two or more minerals.

Igneous Rocks - Rocks that are formed from magma.

Sedimentary Rocks - Rocks that are formed by settling out of a medium such as sandstone or limestone.

Metamorphic Rocks - Rocks that are formed from igneous or sedimentary rocks by pressure and/or heat.

Granite - An igneous rock composed of the minerals quartz, hornblende, mica and feldspar.

Diorites - The family of light-colored igneous rocks composed largely of plagioclase and hornblende but no quartz.

Porphyry - An igneous rock with crystals of varying sizes due to irregular cooling.

Suggested Teaching Activities

1. Discuss the major rock types (Sedimentary, Metamorphic and Igneous) and explain the origin of each. If samples are available have the students analyze the various characteristics of each. For example, sedimentary rocks are often composed of smaller pieces or fragments which have been cemented together.

2. If samples are available in your classroom lay out examples of igneous rocks such as LAVA, SCORIA, GRANITE, RHYOLITE, ANDESITE AND DIORITE. Make a list of the general characteristics of the samples such as color, crystal structure, hardness, lustre, etc..

3. Igneous rocks are formed deep in the earth's crust and are the result of melting of the rock and then recrystallization of the magma. Make this cooking analogy to your students. Using flour, sugar, oil and water you can make many kinds of food dishes such as cake, pancakes, cookies and breads. For example, if you use a lot of liquid in your mixture of flour, sugar, water and oil you will have a recipe for a pancake. Reduce the water and increase the sugar and flour and you will have cake batter.

The same thing happens below the surface of the earth. Heat builds up in certain areas and melts the rock underground. The new volcanic rock is the result of the ingredients which were melted in the magma chamber. For example, if the mixture contained quartz, feldspar, hornblende and mica in certain

amounts you will end up with an igneous rock called GRANITE. But if the original mixture had a great deal of plagioclase and hornblende but had no quartz you would end up with the igneous rock DIORITE.

Quiz

- Igneous rocks are associated with:
a) ocean sediments b) volcanoes
c) warm climates d) glaciers
- If an igneous rock is formed below the surface of the earth it is said to be:
a) intrusive b) extrusive
c) lava d) granite
- A rock is:
a) a single mineral
b) a combination of two or more minerals
c) always igneous
d) usually sedimentary
- When magma comes out of a volcanic cone it may be called:
a) lava b) ash
c) bombs d) all the above
- If volcanic ash is very fine-grained it is called:
a) granite b) tuff
c) phenocryst d) andesite
- If an igneous rock contains very large individual crystals, the result of very slow cooling it is called a/an:
a) magma chamber b) lava flow
c) porphyry d) pegmatite