 **Name: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ Period # \_\_\_\_**

**LAB - A Study of Igneous Rocks**

**Objective:**

To **classify** and **identify** several igneous rocks.

To **compare** the densities of light-colored and dark-colored igneous rocks.

**Background:**

Igneous rocks can be classified on the basis of two separate observable features: color and texture. The overall color of an igneous rock is the result of its mineral composition. In general, igneous rocks are either categorized as either light-colored or dark-colored. The **texture** of an igneous rock is determined by the size of the mineral crystals that make up the rock. Igneous rocks have three basic textures. A **course-grained** igneous rock is composed of crystals that are large to be seen with the unaided eye. Individual minerals that comprise the rock can be identified. A **fine-grained** igneous rock consists of mineral crystals that are too small to be seen with the unaided eye. Its surface is uniform in color. A rock with a **glassy texture** contains no crystals. Although some glassy-textured rocks have smooth surfaces, several are rough and full of bubble holes.

**Materials:**

Igneous rock specimens: basalt, gabbro, granite, obsidian, pumice, rhyolite, diorite, andesite and scoria

**Procedure:**

1. Sort the igneous rocks into two groups: light-colored rocks and dark-colored rocks.
2. Sort the rocks in each colored group into three texture groups: course-grained, fine-grained, and glassy.
3. Place the rocks accordingly on the Data Table, following the descriptions along the top and side of the chart. *Check with the teacher if the placement is correct.*

4. Use the scheme to identify the rocks. Sketch each rock and label it on your page.

**Analysis Questions**: Use your lecture notes, the appendix in your book (pg 920) and your “Scheme for Igneous Rock Identification” to help you answer the following questions. (12 points)

1. Look carefully at the mineral grains in the specimen of granite. What minerals occur in granite? (1pt)
2. What minerals can you identify in the specimen of gabbro? (1pt)
3. Why is obsidian placed in the middle of the chart? (It looks black so why is it in the middle in terms of color?) (1pt)
4. Which rocks were vesicular? Compare the size of the gas pockets. (2pts)
5. What type of lava makes up pumice? Is this type of lava thick or thin? This type of lava has a high concentration of what elements? (2 pts)
6. What type of lava makes up scoria? Is this type of lava thick or thin? This type of lava has a high concentration of what elements? (2pts)
7. Which rock is denser, gabbro or granite? Why do you think this is so? (2 pts)
8. *Discuss* at least two uses of igneous rocks. (1pt)

**Identifying Igneous Rocks – Data Table**

|  |  |  |  |
| --- | --- | --- | --- |
| Texture and origin | Light-Colored Rocks | Medium-Colored Rocks | Dark-Colored Rocks |
|  | Colors: white, tan, gray, pink, red | Colors: gray, green | Colors: dark green, dark grey, black |
|  | With quartz | Without quartz | Without quartz |
| Glassy and/or can be vesicular (gas pockets): cooled quickly at surface of earth |  | Obsidian |  |
| Fine-grained: cooled more slowly at or near surface |  |  |  |
| Coarse-grained: cooled very slowly, usually at great depths. |  |  |  |