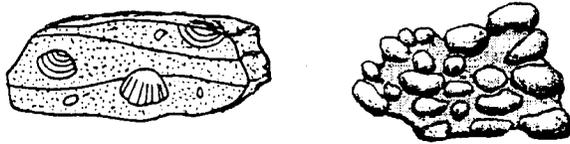


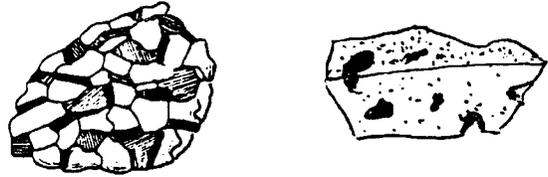
The formation of rocks and minerals usually leaves clues to their origin. Although some rocks and minerals require special laboratory techniques for proper identification, the most common minerals can be identified by their color, texture, and other observable properties.

The system of classification below is a simple one. However, as with other simplified systems, it does not always work. Still, these guidelines are useful for identifying many rocks and minerals.

Most **sedimentary rocks** are composed of rounded fragments cemented in layers. In fine grained rocks, the individual grains may be too small to be readily visible. Rocks made by chemical precipitation are composed of intergrown crystals, although these crystals are relatively soft. A rock containing fossils is almost certainly a sedimentary rock.



Because **igneous rocks** have formed from molten magma or lava, they are composed of intergrown crystals. Rapid cooling, however, can make the crystals too small to be visible. Igneous rocks are usually quite hard and dense, and layering is rare. Gas bubbles may give igneous rocks a frothy texture.



Metamorphic rocks, like igneous rocks, are usually composed of intergrown crystals. But, like sedimentary rocks, they often show layering, banding, or foliation. The layers are often bent or distorted.



Minerals are uniform throughout, except for impurities. This is because minerals are composed of a single substance. If crystals are visible, they will be similar in shape. Minerals are identified by luster, streak, hardness, etc.



Answer the following: **Mineral, Sedimentary, Igneous, or Metamorphic.**

- A. Crystals of different minerals which crystallized from a hot liquid. _____
- B. Composed of rounded grains, deposited in layers. _____
- C. A single large crystal with uniform properties. _____
- D. Usually contains both hard crystals and layering. _____
- E. Formed by deposition of organic remains or chemical precipitation. _____
- F. May show evidence of flow before solidification. _____
- G. This one is found in all of the other three. _____
- H. Heat and pressure have changed this rock, without quite melting it. _____

Directions: For each sample, identify the group (Mineral, Igneous, Metamorphic, or Sedimentary), the mineral or rock name (using your identification charts in the ESRT) and write down at least two characteristics of the rock that you used to make this determination.

Min, Ig, Sedy or Meta	Distinguishing Characteristics
1. _____ _____	1. _____ _____
2. _____ _____	2. _____ _____
3. _____ _____	3. _____ _____
4. _____ _____	4. _____ _____
5. _____ _____	5. _____ _____
6. _____ _____	6. _____ _____
7. _____ _____	7. _____ _____
8. _____ _____	8. _____ _____
9. _____ _____	9. _____ _____
10. _____ _____	10. _____ _____
11. _____ _____	11. _____ _____
12. _____ _____	12. _____ _____

Conclusions: (you will need to use your ESRT)

1. Felsic igneous rocks (those that are rich in **feldspar** and **silica**) tend to be **lighter or darker** in color (circle one).
2. The density of mafic igneous rocks is **lower or higher** (circle one).
3. Intrusive igneous rocks (those that cooled slowly beneath the crust) can be distinguished because they have a **coarse, fine or glassy** texture (circle one). This means that the intergrown crystals that make up the rock are **larger or smaller** (circle one).
4. Give an example of an extrusive igneous rock. _____
This rock has a _____ texture.
5. A rock that is blasted out of a volcano is called **intrusive or extrusive** (circle one).
6. An average sample of granite is made up of about _____% quartz.
7. Heat and pressure are not applied to _____ rocks, therefore, these rocks are much more likely to contain _____.
8. Sedimentary rocks can be further divided into categories based upon their texture. These categories are: _____, _____ or _____.
9. Which common inorganic sedimentary rock has contains sediments with the smallest grain sizes? _____
10. Metamorphic rocks such as gneiss can be distinguished from igneous rocks such as granite because gneiss shows what type of texture? _____
11. Metamorphism of the above rock forms _____.
12. Contact metamorphism occurs when rocks are heated as a result of contact with _____
13. What test could be used to determine the identity of limestone and marble because each contains the mineral calcite? _____
14. Name the distinguishing characteristics that are typical for each of the following:
 - a) Minerals
 - b) Igneous Rocks
 - c) Sedimentary Rocks
 - d) Metamorphic Rocks