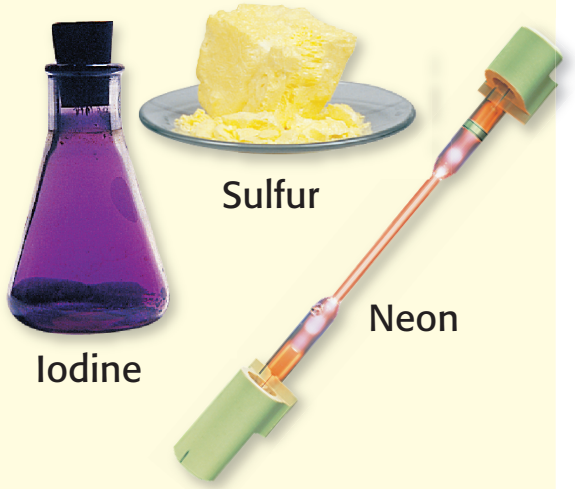
The Three Major Categories of Elements

Metals

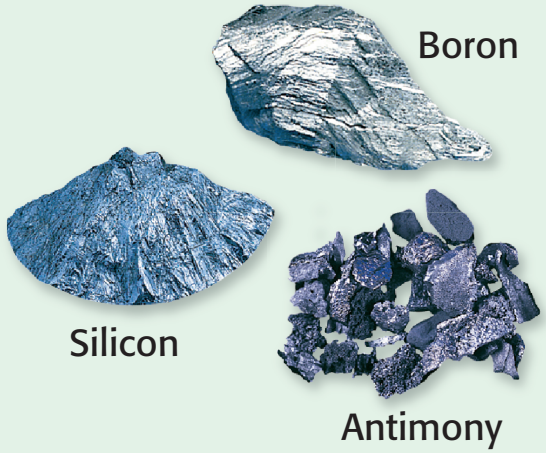
Metals are elements that are shiny and are good conductors of heat and electric current. They are *malleable.* (They can be pounded or rolled into shape.) They are also *ductile.* (They can be drawn into thin wires.)

Nonmetals



Nonmetals are elements that are dull (not shiny) and that are poor conductors of heat and electric current. Solids tend to be brittle and unmalleable. Few familiar objects are made of only nonmetals.

Metalloids

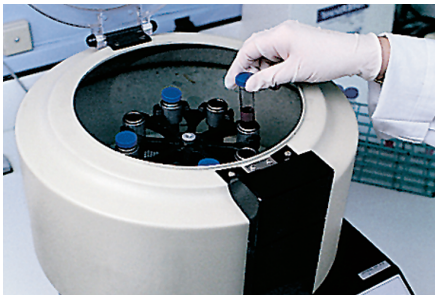


Metalloids are also called *semimetals*. They have properties of both metals and nonmetals. Some metalloids are shiny. Some are dull. Metalloids are somewhat malleable and ductile. Some metalloids conduct heat and electric current.

Common Ways to Separate Mixtures

Distillation (DIS tuh LAY shuhn) is a process that separates a mixture based on the boiling points of the mixture's components. Pure water (flask on the right) is being distilled from salt water (flask on the left). Also, distillation is used to separate crude oil into components, such as gasoline.

A **magnet** can be used to separate a mixture of the elements iron and aluminum. Iron is attracted to the magnet, but aluminum is not.



Blood is separated into its parts by a machine called a **centrifuge** (SEN truh FYOOJ). In the test test of blood at left, a layer of plasma rests atop a layer of red blood cells. A centrifuge separates mixtures by the densities of the components.

Separating a mixture of sodium chloride (table salt) and sulfur takes more than one step.

1 Dissolving In the first step, water is added, and the mixture is stirred. Salt dissolves in water. Sulfur does not.

2 Filtering In the second step, the mixture is poured through a filter. The filter traps the solid sulfur.

3 Evaporating In the third step, the water is evaporated. The sodium chloride is left behind.

Solubility of Different Solids in Water