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THE PERIODIC TABLE

In the mid-1800's Dmitri Mendeleev discovered patterns in the 63 elements already known. He found certain elements have the same characteristics. Mendeleev designed a **table** where the elements were arranged by their atomic mass. As he made the **table**, he left blank spaces and made predictions on the new elements not yet discovered. Mendeleev's **table** was based on mass and similar characteristics.

The modern **periodic table** is based on a new discovery. Henry Moseley, a British scientist, discovered the atomic number of elements. The atomic number is the number of protons in the nucleus of an atom. The elements were arranged by increasing atomic number and they fell into place perfectly. (See picture, "**Periodic Table** of Elements.")

The chart is split by a black line between metals and nonmetals. Metals are to the left of the black line and nonmetals are on the right of the black line. Metals are shiny, good conductors of heat and have high melting points. 88 elements are metals. Nonmetals are poor conductors of heat, have low melting points and dull surfaces. The elements near the line are called metalloids and have characteristics of metals and nonmetals.

Each column in the **table** is called a group or family. All elements in this column have similar properties. Each family has a number and letter. Each row in the **table** is numbered. As you start from left to right, like in row 5, you start with an active metal and end with an inactive gas.

THE PERIODIC TABLE HAS EIGHT FAMILIES.

The **periodic table** tells you important information about an element. The number on the top tells you its atomic number or how many neutrons it has. In the center is the symbol for the element. The name of the element is next, and the bottom number is the atomic mass of the element.

These are identified by a number and the letter A. On the left-hand side is the family IA, also called alkali metals. These metals are the most reactive elements on the chart. In nature, they are always found in combination with other elements. In their pure form they are stored in oil to keep them from reacting to the oxygen and vapor in the air. These metals are softer and less dense than other metals. They can be cut with a knife.

Next to the alkali metals are the alkaline earth metals in family IIA. Like the alkali metals, these elements are also reactive and not found freely in nature.

On the right side of the chart under IIIA is the Boron family. IVA is the Carbon family. The nitrogen family is VA and the oxygen family is VIA. All of the elements in these families near the line have properties of both metals and nonmetals. Elements in VIIA are the halogens. These elements are the most reactive nonmetals. The last column in the **table**, VIIIA, are the noble gases. These elements are extremely unreactive, called inert.

On the bottom of the chart are the rare-earth elements. These 30 elements are similar to one another and are separated to make the chart easier to read. The first row is the lanthanoid series. These elements are soft and malleable. The second row is the actinoid series. All of these elements are radioactive.

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