Physical Science 3: Chapter 7 notes-

7.1- Using the Periodic Table

The Periodic Table: *The* **periodic table** *is a chart of the elements arranged into rows and columns according to their physical and chemical properties.*

Developing a Periodic Table:

When Mendeleev placed his list of elements into a table, he arranged them in rows of increasing atomic mass. Elements with similar properties were grouped in the same column. The columns in his table are like the piles of sorted objects in your junk drawer. Both contain groups of things with similar properties.

Today's Periodic Table:

Elements

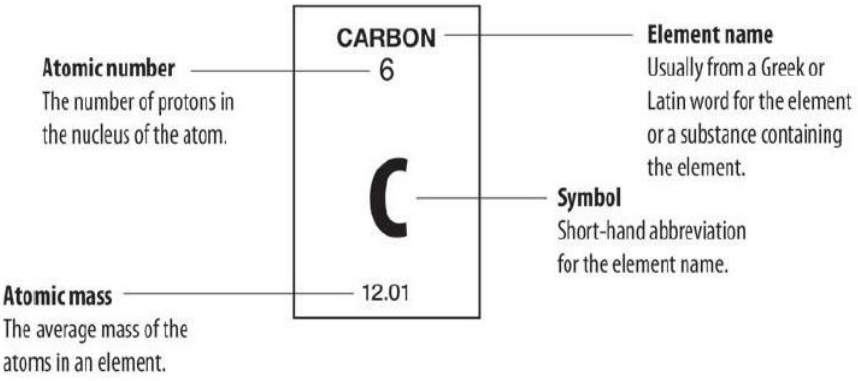
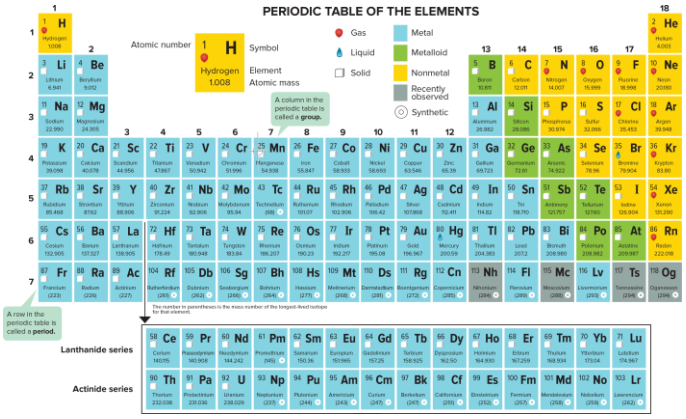


Image Source: Middle School Chemistry.com

Chemical symbols are abbreviations used to represent over 100 known elements. Chemical symbols use one or two letters. The first letter is always capitalized and the second, if there is one, is always lowercase. Usually these are the first two letters of the element's name but this is not always possible, because it would sometimes cause the same letter(s) to be used more than once.



7.2- Metals

Physical Properties of Metals

A **metal** *is an element that is generally shiny. It is easily pulled into wires or hammered into thin sheets. A metal is a good conductor of electricity and thermal energy.*

Group 1: Alkali Metals

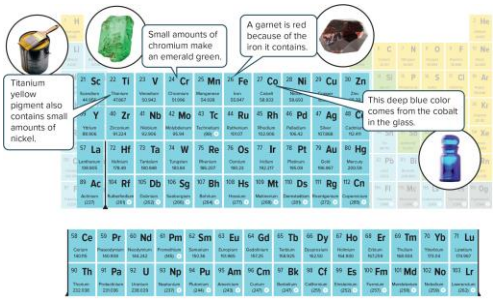
The elements in group 1 are called **alkali** *(AL kuh li)* **metals.** The alkali metals include lithium, sodium, potassium, rubidium, cesium, and francium.

Group 2: Alkaline Earth Metals

The elements in group 2 on the periodic table are called **alkaline** (AL kuh lun) **earth metals.** These metals are beryllium, magnesium, calcium, strontium, barium, and radium.

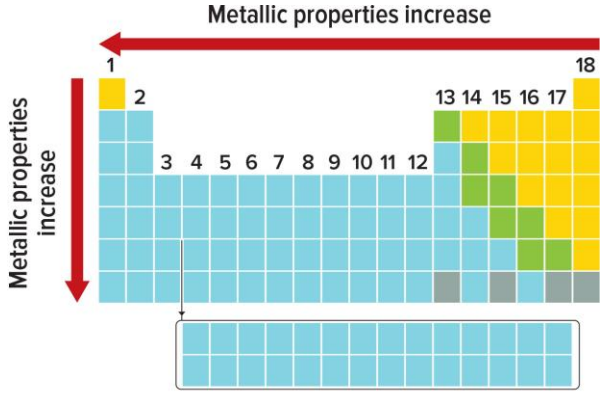
Group 3-12: Transition Elements

The elements in groups 3–12 are called **transition elements.** The transition elements are in two blocks on the periodic table. The main block is in the center of the periodic table. The other block includes the two rows at the bottom of the periodic table.

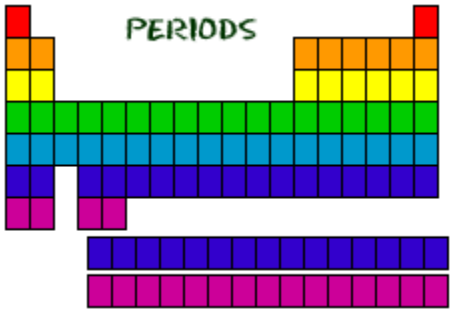


Patterns in Properties of Metals

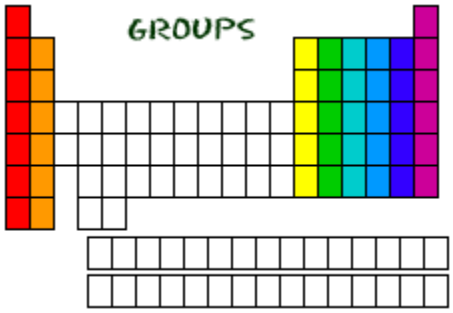
Recall that the properties of elements follow repeating patterns across the periods of the periodic table. In general, elements increase in metallic properties such as luster, malleability, and electrical conductivity from right to left across a period.



Each **element** is placed in a specific location because of its atomic structure. The periodic table has rows (left to right) and columns (up and down). Each row and column has specific characteristics. All of the rows read left to right. Each row is called a **period**. All of the elements in a period have the same number of **atomic orbitals**. For example, every element in the top row (the first period) has one orbital for its **electrons**.



Each column is called a **group or family**. The elements in each group have the same number of electrons in the outer **orbital**. Those outer electrons are also called **valence electrons**. They are the electrons involved in chemical bonds with other elements.



The family name of a group is typically the name of the first element in the column. Elements in each group have similar characteristics.