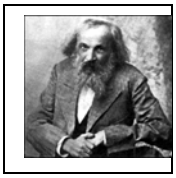
Periodic Table



The periodic table you see is the work of almost 200 years. The modern periodic table has roots in the first periodic table designed by the Russian Chemist, Dmitri Mendeleev (1834-1907). By the way, his picture on the left is taken from wikipedi (http://en.wikipedia.org/wiki/Dmitri_Mendeleev). In his time, only 65 elements were known and he was the first one to systemtically arrange these elements in the form of a table. There are two very important aspect of his table:

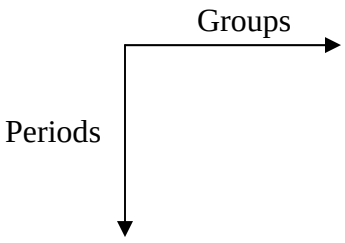
- When the elements were arranged in order of increasing mass, certain properties recur periodically. This is known as the **periodic law** or **periodicity**.

- He left some empty spaces in the table for the elements yet to be disciverd. In fact, these elements were discovered later and filled the empty spaces.

First of all, the periodic table is a two-dimensional chart. It is a systematic arrangement of elements in order of increasing atomic number as well as atomic mass (do not get confused this terminology with mass number). What does it mean? It means that when we move on from one element to next element, the atomic number as well as atomic mass increases. However, there are few exceptions here and there in the periodic table in terms of atomic mass, it decreases instead of increases, for example $_{27}$Co (mass= 58.93) and $_{28}$Ni (mass = 58.69). There is a great periodic table that is available from American Chemical Society. Click on the link to view it. And also, click on any box, to see the data on that element. When elements are arranged in this fashion, the elements falling in the same column exhibit similar chemical properties. This is the **periodicity.**

The periodic table is dissected in various ways and these dissected pieces have the following special name

- **Periods:** The horizontal rows (run from top to bottom).
- **Groups or families**: Vertical columns (run from left to right).



Elements are classified as either A group elements or B group elements:

- **Representative elements:** A group elements (these are on either side of the table).
- **Transition elements:** B group elements (these are in the middle of the table).

Elements can be divided into three categories:

- **Metals:** These are located in the left side and the middle of the periodic table.

  Metals are hard, have lustrous (shinny surface), malleability (hammer or roll into thin sheets), and ductility (draw into wires) properties. They are good conductors of heat and electricity. Most importantly, they donate electron(s).

- **Nonmetals:** These are located on the right side of the periodic table.

  Nonmetals are brittle and have dull surface. Do not have either malleable or ductile properties. They are poor conductors of heat and electricity. Most importantly, they accept electrons.

- **Metalloids:** Elements lie along the zigzag diagonal line that separates metals and nonmetals. The properties of these elements are intermediate between those of metals and nonmetals.

In addition, there are also some special names:

- **Alkali metals:** 1A group elements.
- **Alkaline earth metals:** 2A elements.
- **Halogens:** 7A group elements.
- **Noble gases or rare gases:** 8A column elements.

Example

Match the column I with column II.

Column I	**Column II**
Alkali metals	8A elements
Alkaline earth metals	A group elements
Halogens	2A group elements
Noble gases	1A group elements
Representative elements	B group elements
Transition elements	7 A group elements

Answer

Column I	Column II
Alkali metals	1A elements
Alkaline earth metals	2 A group elements
Halogens	7A group elements
Noble gases	8A group elements
Representative elements	A group elements
Transition elements	B group elements
