

Before 1700 - 14 elements were known, by 1800 - 33 elements, by 1869 (Mendeleev's time) 62 elements, by 1908 - 85 elements (Mendeleev's death) and since 1908 at least 31 elements have been discovered or synthesized. That gives us 114 at this time (1/2007) although only 111 had been authenticated by the IUPAC as of 9/2003.

Johann Döbereiner (1829) was the first to recognize certain patterns in triads of similar elements when they were arranged according to atomic mass. Based on his observations he proposed the law of triads. John Newlands (1865) noticed repeating patterns every eight elements when arranged by atomic mass; this was called the law of octaves.

Dmitri Mendeleev developed a periodic chart of the known elements in 1869 while teaching chemistry at the University of St. Petersburg in Russia. He simply wanted an easier way for his students to learn the known elements and their properties. He did this by making flashcards of all the known elements that listed the known properties of each. He then arranged these, first by increasing atomic mass. As he did this he noticed some repeating patterns (trends) of many properties. He then further organized the elements into **groups** (columns) of similar properties and **periods** (rows) of trends of properties. In addition Mendeleev left empty spaces where he felt elements that had yet to be discovered should be located. This was a true scientific application of his chart and gives him credit for the first true "periodic" table of the elements. Julius Meyer independently developed a similar table within months of Mendeleev's.

Henry Moseley developed what is considered the **Modern Periodic Table** by arranging the elements according to the atomic number, which he had discovered. When this arrangement is used the periodic arrangement of the elements is a natural result. This is known as the **periodic law**: when elements are arranged in order of increasing atomic number, certain properties of the elements repeat in a regularly repeating pattern.

Glenn Seaborg (1940's) is responsible for the lanthanide and actinide series being below the main body of the table. The **valence electrons** for these elements reside in the **f** sub-level. **Groups IA and IIA**: valence e^- located in the **s** sub-level, **Groups IIIA-VIIIA**: valence e^- located in the **p** sub-level, **transition metals**: valence e^- located in the **d** sub-level.

Valence electrons are the electrons in the outermost energy level. You can determine the # of valence electrons many elements have by which group it is in: IA-VIIIA the group # is the # of valence electrons. The transition metals are less consistent; memorization or a reference chart is the way to go.

The **period number** on the periodic table tells you the number of energy levels an atom contains.

There are different versions of element charts organized according to different properties and usefulness of information.

Element Symbols for which you are expected to know the names:

Na	Ni	S
Cs	Mo	Fe
Fr	Ge	At
H	W	Br
K	C	U
Li	Si	I
Rb	Sn	F
Zn	Pb	Cl
Ti	Pt	Ac
Ra	Zr	Rn
Mg	Bi	He
Ca	N	Ar
Sr	P	Ne
Be	As	Xe
Hg	Pu	Kr
Ba	Sb	Cd
Ga	Mn	Cu
In	Po	Sc
Cr	La	Co
V	O	Au
B	Y	Tc
Al	Te	Es
Tl	Se	Md