

Section 3 The Periodic Table

- A. Elements are organized in the periodic table by increasing atomic number.
1. In the late 1800's, Dmitri Mendeleev devised the first periodic table based on atomic mass.
 2. In 1913, Henry G. J. Moseley arranged the elements by atomic number rather than atomic mass.
- B. Vertical columns in the periodic table are groups of elements with similar properties.
1. Elements in the same group have the same number of electrons in their outer energy level.
 2. Each of the seven energy levels can have a maximum number of electrons.
 - a. Energy level one can contain at most two electrons.
 - b. Energy level two can contain at most eight electrons.
 3. Each row in the periodic table ends when an outer energy level is filled.
 4. Electron dot diagrams use the element symbol and dots to represent outer energy level electrons.
- C. Periods—horizontal rows of elements that contain increasing numbers of protons and electrons.
1. Elements are classified as metals, nonmetals, or metalloids (semimetals).
 2. Elements are synthesized in laboratories all over the world.
- D. The same elements exist all over the universe.
1. Hydrogen and helium are the building blocks of other naturally occurring elements.
 2. Supernovas spread heavier elements throughout the universe.

Discussion Question

What do elements in the same group have in common? The same number of electrons in the outer energy level

END