

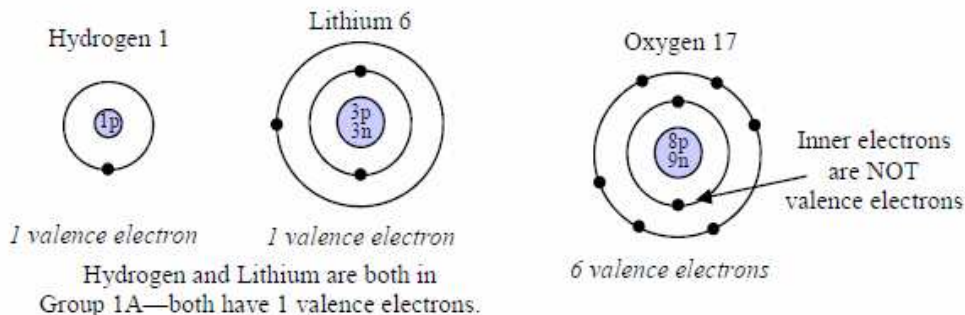
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**Metals, Non-Metals and Valence Electrons**

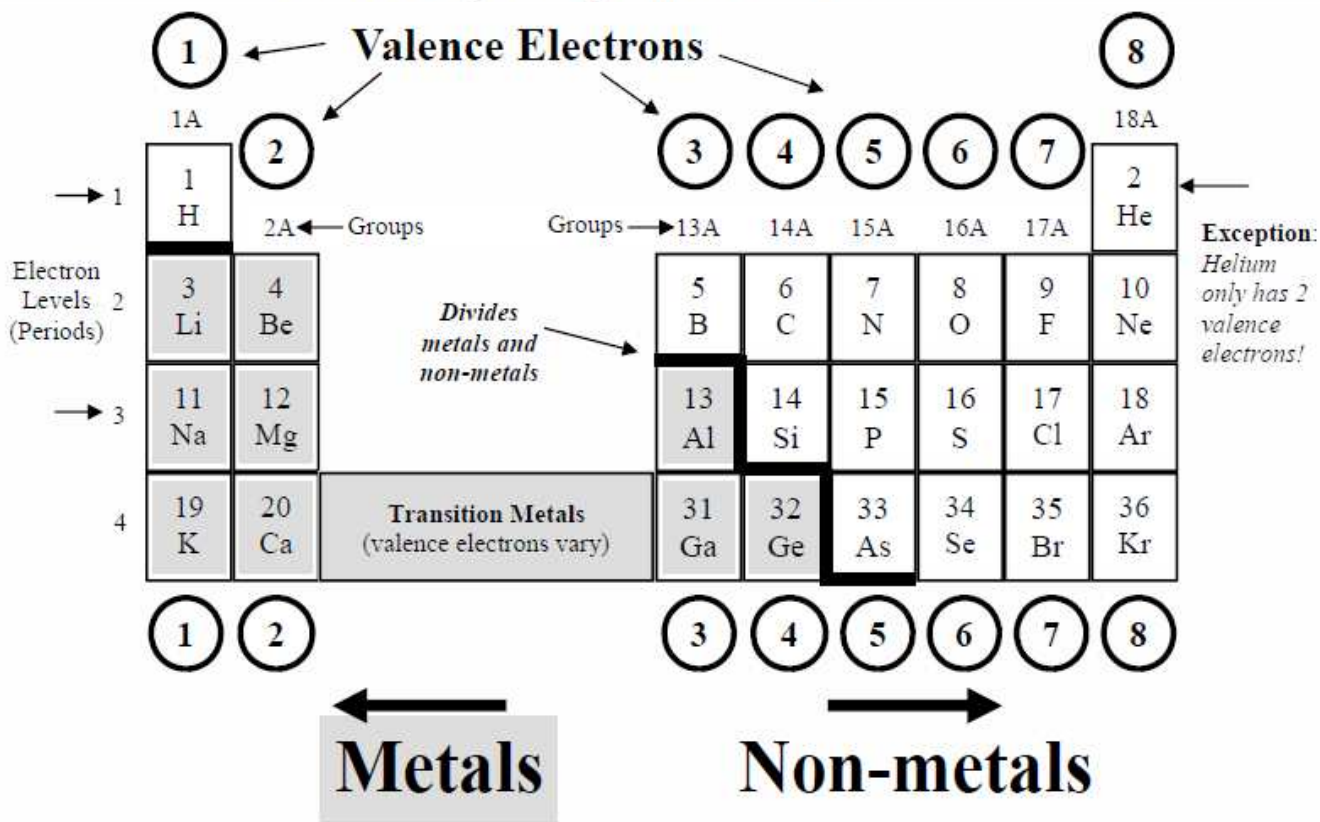
**Valence Electrons**

Valence Electrons are the *outermost* electrons in an atom. Each group (column) has the same number of valence electrons. Only valence electrons are involved in chemical bonding.

**Octet Rule** – Atoms are more stable that have a full shell of electrons. For most atoms 8 valence electrons is full (octet = 8). For H and He this number is 2. Atoms want to have 8 valence electrons. "If I 8, I full." Only elements in Group 18A have a full octet (8 valence electrons) naturally. All other elements will lose, gain, or share to reach 8 electrons.



*Elements with the same valence electrons have similar reactivity, so they tend to react the same.*



**Metals and Nonmetals**

Metals are on the left side of the periodic table. Non-metals are on the right side. Metals and non-metals have different properties and bond differently, making different kinds of compounds.

**Metals or Non-metal?**

Calcium (Ca): metal (left side)

Bromine (Br): non-metal (right side)

**Going Farther**

Along the separation line are the *semimetals* or *metalloids*: Boron (B), Silicon (Si), Germanium (Ge), Arsenic (As), Antimony (Sb). These have properties of both metals and non-metals.

