

**There at 70 days and
15 hours until Christmas**

Warm-Up!

What is the electron configuration of Ca and S?

$$C_9 - 1s^2 2s^2 2p^6 3s^2 3p^6 4s^2$$

$$S - 1s^2 2s^2 2p^6 3s^2 3p^4$$

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Chemical Bonding

Valence electrons

electrons in the highest occupied energy level of an element's atoms.

- determines the chemical properties of an element
- only electrons used in chemical bonds
- for a representative element, the number of valence electrons corresponds to the group number

Electron dot structure

diagrams showing the valence electrons as dots

Table 7.1



Table 7.1**Electron Dot Structure of Some Group A Elements**

| Period | Group | | | | | | | |
|--------|-------|-----|------|------|------|------|------|------|
| | 1A | 2A | 3A | 4A | 5A | 6A | 7A | 8A |
| 1 | H· | | | | | | | He· |
| 2 | Li· | Be· | ·B· | ·C· | ·N· | ·O· | ·F· | ·Ne· |
| 3 | Na· | Mg· | ·Al· | ·Si· | ·P· | ·S· | ·Cl· | ·Ar· |
| 4 | K· | Ca· | ·Ga· | ·Ge· | ·As· | ·Se· | ·Br· | ·Kr· |

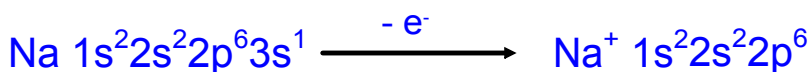
Octet Rule

To form compounds, atoms usually achieve the electron configuration of a noble gas.

At the highest occupied energy level: $ns^2 np^6$

Formation of Cations

Cations lose valence electrons to form positively charged ions

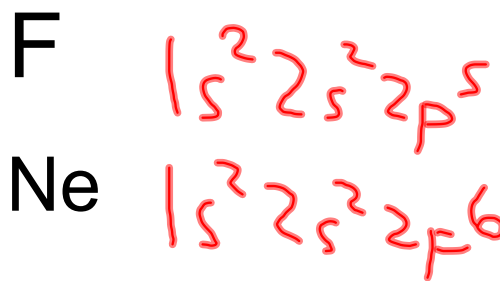
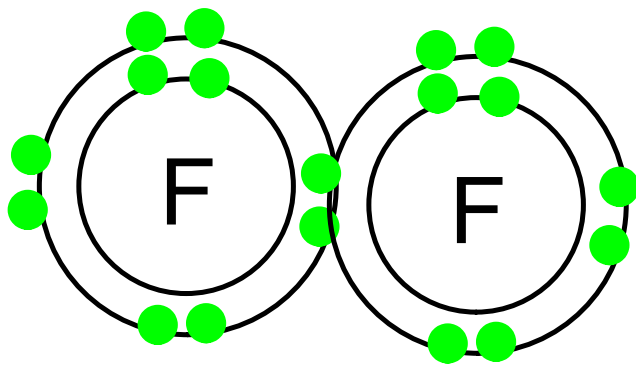


Ionization:



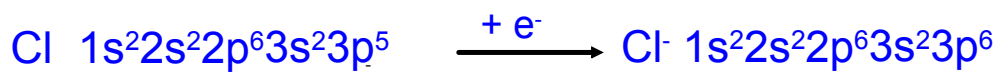
Transition Metals will attempt to form a pseudo noble-gas configuration.



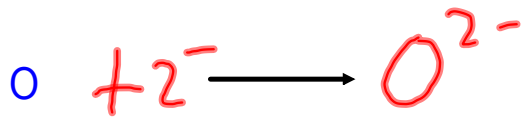
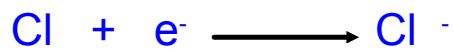


Formation of Anions

Anions gain electrons to produce a negatively charged ion.



Ionization:



Homework

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