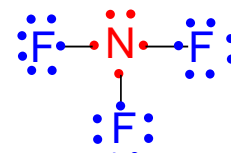


CONCEPT: OCTET RULE

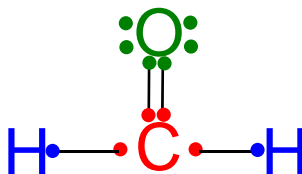
- The tendency of most Main Group Elements in achieving _____ octet electrons by way of chemical bonding.
 - They do so to have the same number of octet electrons as a _____ gas.
 - Each covalent bond = sharing of _____ valence electrons between elements.
 - **Valence Electrons:** Electrons an element possesses based on _____.
 - **Shared Electrons:** Electrons an element _____ through a chemical bond.
 - _____ Electrons = _____ Electrons + _____ Electrons

EXAMPLE: Which of the following statements is true in terms of the following compound:



- a) Nitrogen possesses 5 octet electrons: 5 valence and 0 shared electrons.
- b) Nitrogen possesses 8 octet electrons: 5 valence and 3 shared electrons.
- c) Nitrogen possesses 8 octet electrons: 8 valence and 0 shared electrons.
- d) Nitrogen possesses 24 octet electrons: 5 valence and 19 shared electrons.

PRACTICE: How many shared electrons are around the oxygen atom?



- a) 4
- b) 2
- c) 6
- d) 10
- e) 8

PRACTICE: Which of the following atoms has the most valence electrons?

- a) O
- b) Be
- c) He
- d) N
- e) Si

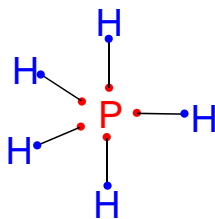
CONCEPT: OCTET RULE

Incomplete Octet vs. Expanded Octet

- Some elements are stable with a non-octet number of electrons.
 - Incomplete Octet:** Able to maintain its stability when having _____ octet electrons around it.
 - Expanded Octet:** Able to maintain its stability when having _____ octet electrons around it.
- Their non-octet number of electrons is _____ their group number.
 - Group 2A = _____, Group 3A = _____, Group 5A = _____, Group 6A = _____, Group 7A = _____, Group 8A = _____.

	1A (1)	2A (2)							3A (13)	4A (14)	5A (15)	6A (16)	7A (17)	8A (18)
1	H Hydrogen													He Helium
2		Be Beryllium							B Boron					
3									Al Aluminum		P Phosphorus	S Sulfur	Cl Chlorine	
4									Ga Gallium		As Arsenic	Se Selenium	Br Bromine	Kr Krypton
5									In Indium			Te Tellurium	I Iodine	Xe Xenon
6														Rn Radon
7														

EXAMPLE: How many octet electrons are around the phosphorus atom in the following compound?



- a) 5 b) 10 c) 7 d) 8 e) 6

PRACTICE: Which of the following contains an atom that may have an incomplete octet?

- a) CCl_4 b) NCl_3 c) OCl_2 d) SeCl_6 e) BCl_3