

Problems

1. Answers are:

Element	Atomic number	Valence electrons	Lewis dot diagram
Fluorine	9	7	$\cdot\ddot{\text{F}}\cdot$
Oxygen	8	6	$\cdot\ddot{\text{O}}\cdot$
Phosphorus	15	5	$\cdot\ddot{\text{P}}\cdot$
Carbon	6	4	$\cdot\ddot{\text{C}}\cdot$
Beryllium	4	2	$\cdot\ddot{\text{Be}}\cdot$
Nitrogen	7	5	$\cdot\ddot{\text{N}}\cdot$
Sulfur	16	6	$\cdot\ddot{\text{S}}\cdot$
Neon	10	8	$:\ddot{\text{Ne}}:$
Silicon	14	4	$\cdot\ddot{\text{Si}}\cdot$

2. Answers are:

- Covalent; no electronegativity difference.
- Ionic; metal and a nonmetal, opposite sides of periodic table.
- Very little electronegativity difference.
- Covalent; very little electronegativity difference.
- Ionic; metal and nonmetal, opposite sides of periodic table.

3. Answers are:

Element	Number of valence electrons	Electrons gained or lost during ionization	Oxidation number
Potassium	19	1 lost	1+
Aluminum	13	3 lost	3+
Phosphorus	5	3 gained	3-
Krypton	8	0	0

4. Answers are:

- Group 1
 - Group 15
 - Group 14
 - Group 16**
 - Group 2
- c
 - a
 - b
 - b