Name: KEY Period: _____ Date: _____

3A.6 Supplement: Chemical Bonding

Answer the following questions using your knowledge of electron shells.

1. What is the maximum number of electrons that can occupy the first electron shell surrounding the nucleus of an atom?

   2

2. What is the maximum number of electrons that can occupy the second electron shell surrounding the nucleus of an atom?

   8

Using your periodic table, complete the table below.

Name	Symbol	Atomic Number	Number of Electrons in Outermost Energy Level	Electron Dot Formula
3. Hydrogen	H	1	1	H•
4. Carbon	C	6	4	·Ċ·
5. Oxygen	O	8	6	·Ö:
6. Nitrogen	N	7	5	·N·
7. Fluorine	F	9	7	:F·
8. Calcium	Ca	20	2	Ca:
9. Sulfur	S	16	6	·S:
10. Argon	Ar	18	8	:Ar:
11. Phosphorus	P	15	5	·P·
12. Helium	He	2	2	He:

13. Based on the electron-dot formula for the fluorine atom, how many additional electrons are necessary for the fluorine atom to achieve a filled shell?

    1

14. In compounds composed of nonmetal elements, how do atoms achieve filled electron shells?

    by sharing electrons

15. Using the electron-dot formulas, show how two fluorine atoms come together to form a fluorine molecule.

    dots → :F:F: 14 total e⁻

    2 × 7e⁻

    molecular formula = F_2

    structural formula

    F-F