Chapter 5 Section Review Answer Key

Assignments:

- Section Review questions 1-13 on page 165
- Section Review questions 1-11 on page 175
- Section Review questions 1-8 on page 180

Section Review 1 Assignment

1. Filled outer energy levels
2. The outer most shell
3. A cation has a positive charge while an anion has a negative charge.
4. The octet rule is the tendency of atoms to have either empty valence shells or full valence shells of EIGHT electrons.
5. The ions are more stable
6. one valence electron
7. The group to which an element belongs - i.e. Group I elements have only one valence electron, while Group XVII elements have seven.
8. Metals tend to lose electrons - as a result they end up with a positive charge.
9. The two oxygen atoms each get two electrons from the other - achieving the noble gas configuration.
10.
    a. iodine = gain one electron
    b. strontium = lose 2 electrons
    c. nitrogen = gain three electrons
    d. krypton = non-reactive
11.
    a. $1s^2 2s^2 2p^6$
    b. $[Ar]4s^2 4p^6 3d^{10}$
    c. $[Ne]3s^2 3p^6$
    d. $[Ar]4s^2 4p^6 3d^{10}$
12. same number of protons and neutrons
13. Easier to gain three electrons, than lose five

Section Review 2 Assignment

1. The force of attraction between the +1 of the sodium and the -1 of the chloride.
2. An ionic bond forms when an atom (or atoms) gives up valence electron(s) to the other atom(s).
3. The bonds are very strong - like opposing magnets.
4. The strong bonds and the captured, not shared, electrons.
5. It is the energy given off when oppositely charged ions come together.
6. The ions in liquid and gas are able to move as opposed to the ions in the solid phase.
7. The chloride ion is much larger than the fluoride ion.

8.
    a. they are both anions
    b. helium is a noble gas
    c. they are both cations
9. Calcium sulfide - the higher lattice energy means a higher melting point
10. The additional electron will fill the outer valence shell
11. Answers will vary, but must include that the calcium would bond with two chlorides instead of just one like the sodium.

Section 3 Review Assignment

1. Polyatomic ions are like simple ions in that they have charges, however they are different in that they are made up of more than one ion.
2. To indicate the charge for an element that might have multiple charges possible.
3. *-ite* indicates less oxygen, while *-ate* indicates more oxygen.
4. 3 calcium ions and 2 phosphate polyatomic ions
5.
    a. calcium nitrite
    b. iron (III) hydroxide
    c. ammonium chromate
    d. copper (I) acetate
6.
    a. Na_2O
    b. $Mg_3(PO_4)_2$
    c. Ag_2S
    d. $NbCl_5$
7.
    a. rubidium oxide
    b. iron (II) fluoride
    c. potassium nitride
8.
    a. $HgSO_4$
    b. $Li_2S_2O_3$
    c. $(NH_4)_3PO_4$
    d. $KMnO_4$