Lesson 6: Bonding

text: 86-92, 95-103
handouts on web: Common cations, Common anions
what to know:
- valence shell, valence electrons, Lewis dot symbol, cations, anions, ionic bonds, ionic compounds
  salts, octet, oxoanions, §3-3
- writing Lewis dot symbols for elements and predicting the charge on binary ions, §3-3
- naming ions and writing formulas for ionic compounds, §3-3
- covalent bonding, covalent compounds (molecules), Lewis structures, octet rule, lone pairs, double
  bonds triple bonds, resonance structures, §3-4 & §3-5, (omit formal charges)
- how to write Lewis structures for molecules and ions, §3-5
- exceptions to the octet rule

questions:
1. Write Lewis dot symbols for each of the following elements and ions.
   C, H, F, Cl, N, S, Al, Na+, Br-, S2-

2. Write chemical formulas for the ionic compounds formed from:
   calcium and fluorine
   potassium and sulfur
   aluminum and oxygen
   magnesium and bromine
   cesium and sulfate
   hydrogen and nitrogen
   lithium and phosphorus
   sodium and nitrate
   barium and phosphate
   hydrogen and carbonate

3. Write Lewis structures for: H2S, CH4, C2H6, N2H4, N2, C2H2, NH3, NH4+, CS2, SO3, SO2, CO2

4. What is the theoretical basis for the octet rule?

5. How many unshared pairs of electrons are in a molecule of: water? ammonia? methyl
   alcohol (CH3OH)?, carbon dioxide?

6. Write the Lewis structures for the resonance forms of CO32-.