Homework #4: Due April 14th, 2009

Textbook Problems: Chapter 4
2, 10, 11, 23, 28, 30ab, 34, 36, 38ab, 41, 42, 49

Extra Activities/Problems:
These are adaptations of problems from the book. Where needed, the original problems are noted in parentheses at the end.

A. For each reaction below, 1. Re-write the reaction with Lewis structures. 2. Note which bonds (and how many) are broken and which bonds (and how many) are formed during the reaction. 3. Note the phase (gas, liquid, or solid) of each molecules in the reaction. 4. Use the bond energies in Table 4.2 to calculate the energy change for the reaction. 5. Determine whether the reaction is endothermic or exothermic. (These reactions are taken from #12 and #13 from the book).
    a. $N_2(g) + 3H_2\ (g) \rightarrow 2NH_3\ (g)$
    b. $2\ C_5H_{12}\ (g) + 11\ O_2\ (g) \rightarrow 10\ CO\ (g) + 12\ H_2O\ (l)$
    c. $H_2\ (g) + Cl_2\ (g) \rightarrow 2HCl\ (g)$
    d. $2H_2\ (g) + CO\ (g) \rightarrow CH_3OH\ (g)$
    e. $H_2\ (g) + O_2\ (g) \rightarrow H_2O_2\ (g)$
    f. $2\ BrCl\ (g) \rightarrow Br_2\ (g) + Cl_2\ (g)$
B. Complete #19 from the textbook and then answer the questions: Which of these would not be a good fuel for vehicles? Why?