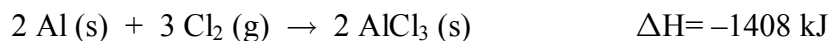


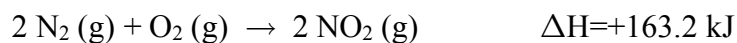
REVIEW QUESTIONS

## Chapter 6

1. How many kJ of heat is produced when 5.00 g of Al reacts with excess chlorine, as shown below:

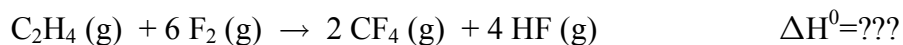


2. Consider the following reaction:

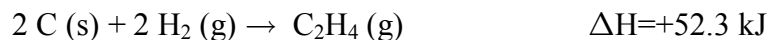
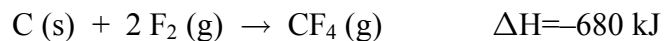


- a) How many grams of  $\text{N}_2$  must react to produce an enthalpy change of 5.00 kJ?
- b) How much heat is transferred when 25.0 g of  $\text{NO}_2$  is produced in this reaction?
3. When 6.50 g of solid NaOH is dissolved in 100.0 g of water in a calorimeter, the temperature rises from 21.6 °C to 37.8 °C. Calculate the change in enthalpy of solution in kJ/mol of NaOH. Assume specific heat of solution is the same as water.

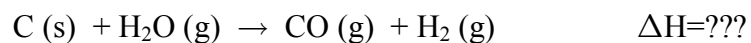
4. Calculate the enthalpy change for the reaction below:



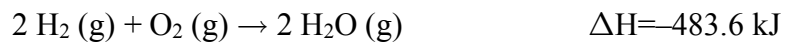
based on the following reactions:



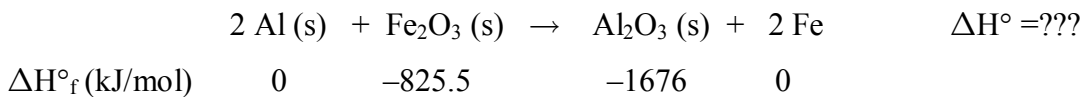
5. Determine the enthalpy change for the reaction below:



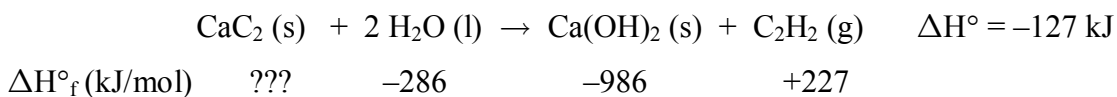
based on the following reactions:



6. Use enthalpies of formation given to determine the standard enthalpy of reaction for the following:



7. Use the enthalpies of formation and the enthalpy of reaction given below to determine the enthalpy of formation for solid  $\text{CaC}_2$ .



8. The heat of vaporization of a liquid ( $\Delta H_{\text{vap}}$ ) is the heat required to vaporize 1.00 g of a liquid. In one experiment, 60.0 g of liquid nitrogen (b.p.  $-196^\circ\text{C}$ ) are poured into a Styrofoam cup containing 200. g of water at  $55.3^\circ\text{C}$ . Calculate the molar heat of vaporization of liquid nitrogen if the final temperature of the water is  $41.0^\circ\text{C}$ .

9. Ice at  $0\text{ }^{\circ}\text{C}$  is placed in a Styrofoam cup containing 361 g of a soft drink at  $23.0\text{ }^{\circ}\text{C}$ . Some ice remains after the ice and the soft drink reach an equilibrium temperature of  $0\text{ }^{\circ}\text{C}$ . Determine the mass of the ice that has melted. Assume the specific heat of the drink to be the same as pure water. It requires 334 J of heat to melt 1 g of ice at  $0\text{ }^{\circ}\text{C}$ .
10. A quantity of 200. mL of 0.862 M HCl is mixed with 200. mL of 0.431 M  $\text{Ba}(\text{OH})_2$  in a Styrofoam cup. The initial temperature of both solutions is  $20.48\text{ }^{\circ}\text{C}$ . Calculate the heat of neutralization in kJ/mol if the final temperature of the solution is  $26.30\text{ }^{\circ}\text{C}$ . Assume specific heat and density of solution to be the same as water.