Advanced Chemistry   NAME: _____PER: _____
Enthalpies in Reactions WS

*Instructions: Complete the following problems. SHOW ALL WORK in the empty space below the questions.
Remembers the units. Round to the correct number of significant figures.*

1. Using the following equation: 2Mg(s) + O$_2$(g) → 2MgO(s)   ΔH = -1204 kJ

   a) Is this reaction exothermic or endothermic?

   b) Calculate the amount of heat transferred when 3.55 g of Mg(s) reacts at a constant pressure.

   c) How many grams of MgO are produced during an enthalpy change of -890.0 kJ

   d) How many kilojoules of heat are absorbed when 40.3 g of MgO(s) is decomposed into Mg(s) and O$_2$(g) at constant pressure?

2. Using the following equation: $2CH_3OH(g) \rightarrow 2CH_4(g) + O_2(g)$ $\Delta H = +252.8$ kJ

a) Is this reaction exothermic or endothermic?

b) Calculate the amount of heat transferred when 24.0 g of $CH_3OH(g)$ is decomposed by this reaction at constant pressure.

c) For a given sample of CH_3OH, the enthalpy change during the reaction is 82.1 kJ. How many grams of methane gas (CH_4) are produced?

d) How many kilojoules of heat are released when 38.5 g of $CH_4(g)$ reacts completely with $O_2(g)$ to form $CH_3OH(g)$ at constant pressure?