Name: _____ Date: _____

Homework: Heat and the Conservation of Energy

Convert between the temperature scales below.

75°C = _____ K 295 K = _____ °C 22°C = _____ K

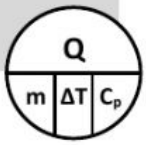
0°C = _____ K 250 K = _____ °C 600°C = _____ K

Answer the following questions about heat, mass, temperature change and specific heat.

1. A sample of copper with a mass of 50.0 grams goes from an initial temperature of 22.0°C to a final temperature of 41.6°C. Calculate the change in thermal energy, and state whether it was *gained* or *lost*.

Substance	Specific Heat [J/(g×°C)]
Water	4.184
Wood	1.760
Carbon (graphite)	0.710
Glass	0.664
Iron	0.450
Copper	0.385
Brass	0.380
Aluminum	0.897

2. A sample of graphite with a mass of 15.0 grams drops from an initial temperature of 22°C to a final temperature of 12°C. Calculate how much heat was transferred, and state whether it was *gained* or *lost* based on the sign of your answer.



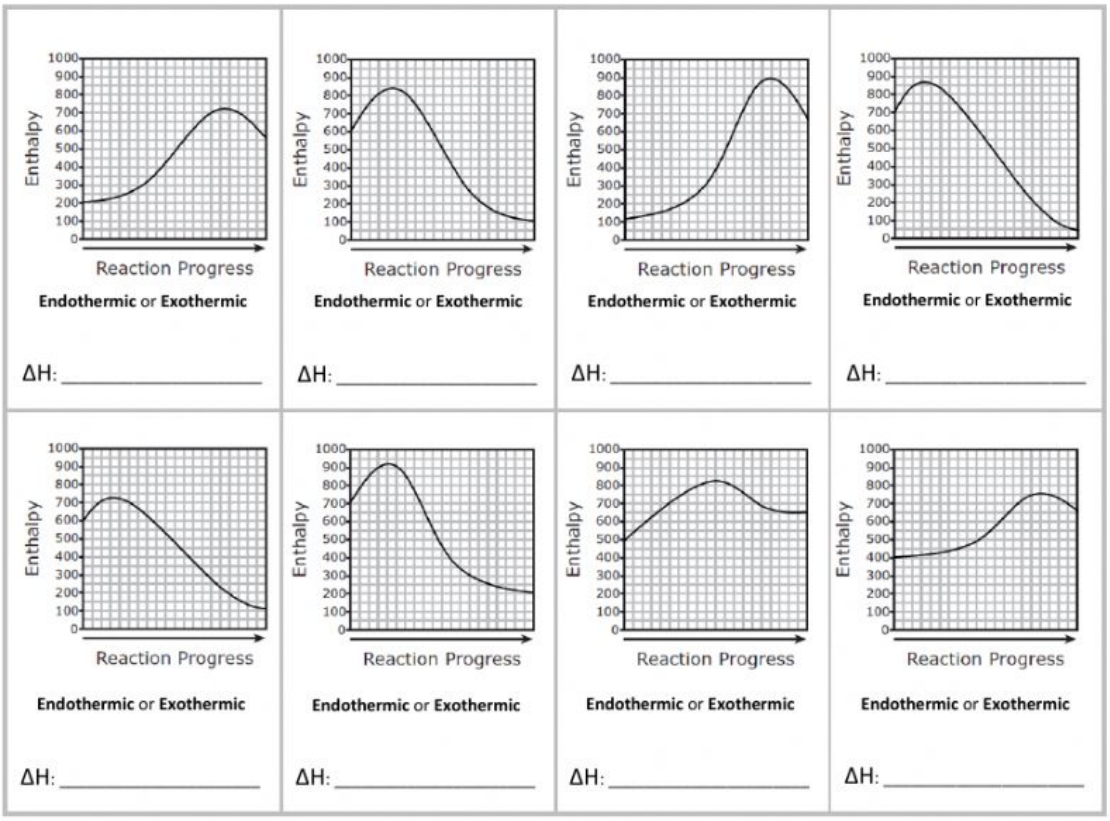
1. Heat travels *through* a **solid** by what process? _____

2. Heat travels *through* a **fluid** by what process? _____

3. How is heat transferred *between* objects that are touching? _____

4. How is heat transferred *between* objects that are **not** touching? _____

For each of the graphs below, circle whether the change in enthalpy shown is exothermic or endothermic, then calculate how many kilojoules of heat were absorbed or released (final – initial). Be sure to use the proper sign: **-** or **+**.



$4Fe + 3O_2 \rightarrow 2Fe_2O_3 + heat$

5. What type of reaction is shown above: *endothermic* or *exothermic*? _____

$2NH_3 + heat \rightarrow N_2 + 3H_2$

6. What type of reaction is shown above: *endothermic* or *exothermic*? _____