# Name: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ Date: \_\_\_\_\_\_\_\_\_\_ Score: \_\_\_\_\_\_\_\_

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In a thermochemical equation the enthalpy (∆H) is listed as a part of the equation. You should treat a balanced thermochemical equation just like a regular equation and solve by doing a stoichiometry problem. Use kJ to mol ratio (based on coefficients from the balanced equation) to convert to energy.

1. The standard molar heat of vaporization is 40.79 kJ/mol for water. How much energy would be needed to vaporize:

A) 45.0 g H2O

B) 5.00 mol H2O

2. The molar heat of fusion for water is 6.008 kJ/mol. How much energy would be required to melt 500. grams of ice?

3. Calculate the molar heat of vaporization of a substance given that 0.433 mol of the substance absorbs 36.5 kJ of energy when it is vaporized.

4. A substance has a molar mass of 259.0 g/mol. If 71.8 grams of the substance absorbs 4.307 kJ when it melts, calculate the molar heat of fusion.

5. Calculate the total energy required to melt 500. grams of ice that is initially at a temperature of –10oC and heat it completely to steam at 121oC.

# qrcode.ice to steam.pngHINT: molar heat of fusion = 6.008 kJ/mol

**molar heat of vaporization = 40.79 kJ/mol**

**specific heat of ice = 2.902 J/g•Co**

**specific heat of liquid water = 4.184 J/g•Co**

**specific heat of steam = 2.013 J/g•Co**

**q = m cp ΔT**