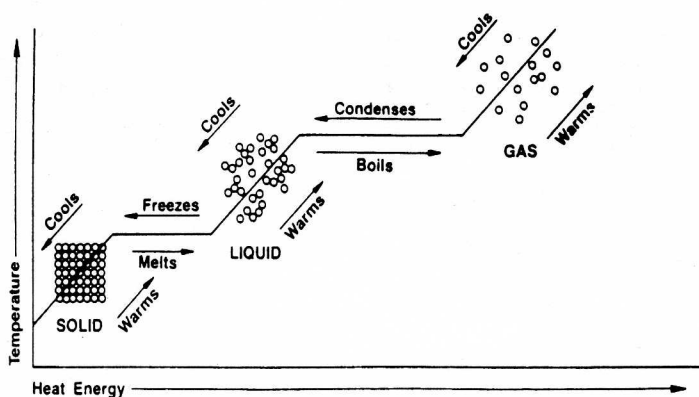# Heat of Fusion, Heat of Vaporization, Heat of Condensation and Heat of Solidification

Name_____ Date _____Period ____

Show all of your work!!

1. How much heat is required when 6.0 grams of water is vaporized at its boiling point? (Use Table 11.5 on page 308 of your text)

    Endothermic or Exothermic (circle one)

    _____

2. How much heat is required when 6.0 grams of water is melted at its melting point? (Use Table 11.5 or page 308 of your text)

    Endothermic or Exothermic (circle one)

    _____

4. A 3.0 gram sample of Al (l) is heated up to its boiling point. This temperature is maintained and 32.6 k. are added to boil away the Al. Determine the molar heat of vaporization (KJ/mole).

    Endothermic or Exothermic (circle one)

    _____

5. How many grams of Cu can be changed from solid to liquid at its melting point by 6.27 kJ/mole of energy? Heat of Fusion of Cu is 13.0 kJ/mole.

    Endothermic or Exothermic (circle one)

    _____

6. How much heat is required to change 14.5 g of mercury as a gas to a liquid? (Use the values found o the back of this worksheet for mercury)

    Endothermic or Exothermic (circle one)

Physical properties of H_2O :

Melting Point. = 0.0°C

Heat of fusion = $6.01 \frac{kJ}{mol}$

Heat of vaporization = $40.7 \frac{kJ}{mol}$

Specific heat (C_p) = $4.18 \frac{J}{1g*1°C}$

Boiling Point 100.°C

Heat of solidification = $-6.01 \frac{kJ}{mol}$

Heat of condensation = $-40.7 \frac{kJ}{mol}$ ts   boili

1. Using the physical properties of water listed above, calculate the heat required to convert 20.0 g of H_2O (s) at its freezing point to H_2O (l).

   Endothermic or Exothermic (circle one)

   _____

2. Using the physical properties of water listed above, calculate the number of calories required to convert 95.0g H_2O (g) to H_2O (l).

   Endothermic or Exothermic (circle one)

   _____

Physical properties of Hg:

Melting Point. = -39°C

Heat of fusion = $2.34 \frac{kJ}{mol}$

Heat of vaporization = $59.37 \frac{kJ}{mol}$

Specific heat (C_p) = $1.25 \frac{J}{1g*1°C}$

Boiling Point 357°C

Heat of solidification = $-2.34 \frac{kJ}{mol}$

Heat of condensation = $-59.37 \frac{kJ}{mol}$

3. Using the physical properties of mercury (Hg) listed above, calculate the number of calories required to convert 40.0 g of Hg (l) to Hg (g) at its boiling point.

   Endothermic or Exothermic (circle one)

   _____

4. Calculate the amount of heat needed to convert 5.0 g of Hg (l) to Hg (s).

   Endothermic or Exothermic (circle one)