**Heat in Changes of State**  Name :\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

1. Calculate the enthalpy change for the melting of a 30.0 g ice cube.
2. A reference gives a value of +39.23 kJ/mol for the molar enthalpy of vaporization for methanol (CH3OH). What enthalpy change occurs in the evaporation of 10.0g methanol?
3. An experiment produces evidence that the evaporation of 4.00 g of liquid butane C4H8 (l) requires a gain in enthalpy of 1.67 kJ. Find the molar enthalpy of vaporization for butane from this evidence.
4. Calculate the amount of heat absorbed to liquefy 15.0 g of methanol (CH3OH) at its melting point. The molar heat of fusion for methanol is 3.16 kJ/mol.
5. How much heat (in kJ) is released when 50.0g of NH4NO3 (s) 0.510 moles are dissolved in water? Δ H soln = – 25.7 kJ/mol