Thermochemical Calculations

Name:\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ Block:\_\_\_\_\_\_\_\_\_\_\_\_\_ Date:\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Specific Heat for ice= 2.09 J/g˚C Specific heat for water vapor= 1.75 J/g˚C

1. **How much heat is required to completely melt 45.0g of ice?**
2. **How much heat is required to boil 35.0g of ammonia? (**ΔHfus= 5.64 kJ/mol ; ΔHvap= 23.4 kJ/mol**)**
3. **How much heat is released when 45.0g of water cools from 80.0˚C to 25.0˚C?**
4. **How much heat is required to heat 25.0g of ice (solid water) from -20.0˚C to 35.0˚C**? *(HINT: you need to use specific heat AND heat of fusion)*
5. **How much energy is released when you cool down 20.0 gwater vapor from 185˚C to water at 67˚C?**
6. **If 11.0kJ of energy are released when 800.0g of oxygen gas is frozen at -219˚C, what is the ΔHfus for O2?**
7. **How much energy, in kilocalories, is needed to boil 30.0g of methanol at 64.7˚C? (**ΔHvap=35.5 kJ/mol)
8. **If it takes 13.5 kJ to boil 30.0g of hydrogen gas, what is the ΔHvap of H2?**
9. **How much energy would be required to heat 15.0g solid ice from -25.0˚C to water vapor at 150.0˚C?**