**Relating Kp and Kc.**

**You can calculate Kp or Kc using the following:**

**Kp = Kc (RT) n**

**Kp = partial pressure constant**

**Kc = equilibrium constant**

**R (gas constant from Kw) = .08206 (L x atm) / (k x mol).**

**T = temperature in Kelvin.**

**n = the number of gaseous products minus the number of moles of gaseous reactants (from coefficients).**

**Example:**

**Hydrogen is produced industrially by the Steam – Hydrocarbon process:**

**H2O (g) + CH4 (g) CO (g) + 3 H2**

1. **If kc = 3.8 x 10-3 at 1000K, what is the value of Kp at the same temperature?**

**n = (1+3) – (1+1) = 2**

**Coef. Of products. Coef. Of reactants.**

**Kp = (3.8 x 10-2)[(.08206)(1000)]2 = 26**

1. **If Kp = 6.1 x 104 at 1125 C. what is the value of Kc at 1125 C?**

**Rearrange Kp = Kc (RT)2 to Kc = Kp /(RT)2 (remember the exponent is calculated from the coefficients.**

**Kc = 6.1 x 104 / [(.08206)(1398)]2 = 4.6**

**Temp in Kelvin: 1125 + 273 = 1398**