4. a) $A_2 + B \rightarrow A_2B$

b) $K_c = \frac{[A_2B]}{[A_2][B]}$

c) $\Delta n = \sum n(\text{product}) - \sum n(\text{reactants}) = 1-2 = -1$

d) $K_p = K_c(RT)^{\Delta n}$. If you have a balanced equation, calculate n. Use this to calc. K_p from K_c, or the other way around.

10. a) $K_c = \frac{[AB]^2}{[A_2][B]^2} = \frac{(2)^2}{(1)(1)^2} = 4$

b) A decrease in volume favors the reaction with fewer particles. This reaction has two particles in products and three in reactants, so a decrease in volume favors products. The number of AB (product) molecules will increase.

12. a) Exothermic. In both reation mixtures (orange and blue), [AB] decreases as T increases.

b) In the reaction, there are fewer moles of gas in products than reactants, so greater pressure favors production of products. At any single temperature, [AB] is greater at P = y than at P = x. Since the concentration of the product, AB is greater at P = y, P = y is the greater pressure.

34. $K_c = \frac{[H_2][I_2]}{[HI]^2} = \frac{(4.79 \times 10^{-4})}{(3.53 \times 10^{-3})^2} = 0.0184$

44. a) If the value of Q_c equals the value of K_c, the system is at equilibrium.

b) In the direction of less products (more reactants), to the left.

c) $Q_c = 0$ if the concentration of any product is zero.