Name _____ Date _____ Period _____

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7.5 Magnitude of the Equilibrium Constant

AP Chemistry

K > 1: products favored. K < 1: reactants favored. K close to 1: similar amounts. Justify with "Because K is ___ than 1, ..."

1. For each K, are reactants or products favored? Justify each answer.

(a) $K = 3.4 \times 10^{12}$

(b) $K = 0.95$

(c) $K = 6.1 \times 10^{-9}$

2. For $N_2(g) + O_2(g) \rightleftharpoons 2NO(g)$, $K = 1.0 \times 10^{-30}$ at 25 °C. Air is mostly N_2 and O_2. Does air at 25 °C contain much NO? Explain.

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3. For $A \rightleftharpoons B$, $K = 0.25$. At equilibrium $[A] = 0.40$ M. Find $[B]$.

4. For $A \rightleftharpoons B$, $K = 1.0$. A flask starts with 2.0 M A. Find $[A]$ and $[B]$ at equilibrium.

5. Three reactions have the form $X \rightleftharpoons Y$: $K_1 = 2.0 \times 10^{-4}$, $K_2 = 15$, $K_3 = 8.0 \times 10^{5}$. Rank them from smallest to largest $[Y]/[X]$ at equilibrium.

6. A student says a reaction with $K = 5.0 \times 10^{-4}$ must be very slow. Is that correct?

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