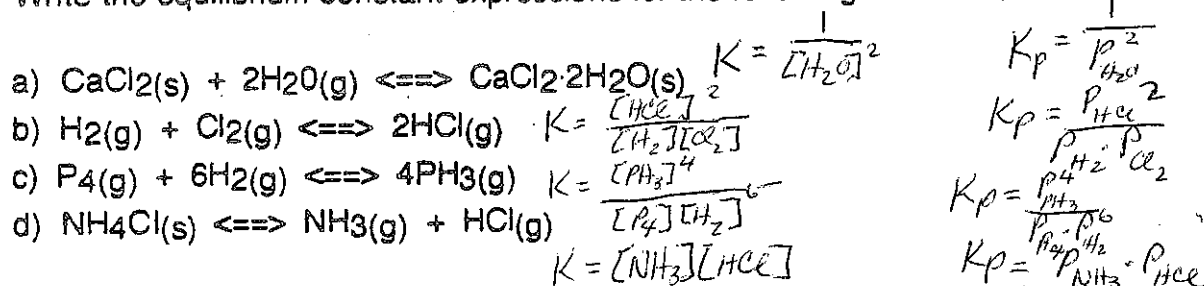


Chemistry II Practice Test

Chapter 13 - Chemical Equilibrium

1. Write the equilibrium constant expressions for the following reactions;



2. For each of the reactions in #1, write the expression for K_p and determine the relationship between K and K_p .

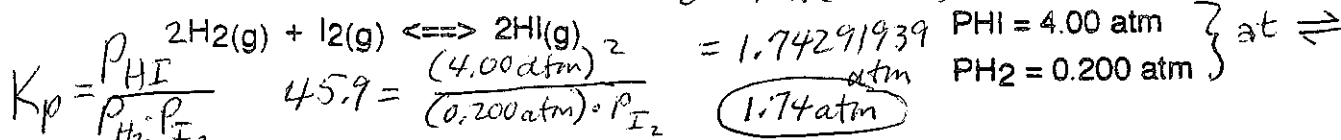
@ $K_p = K(RT)^{-2}$ @ $K_p = K$ @ $K_p = K(RT)^{-3}$ @ $K_p = K(RT)^2$

3. For the reaction; $\text{CO}(\text{g}) + \text{Cl}_2(\text{g}) \rightleftharpoons \text{COCl}_2(\text{g})$, $K = 5.1 \times 10^9$. If enough pure COCl_2 is added to a 1.0 L flask that 0.25 moles of COCl_2 remain at equilibrium, what is the equilibrium concentration of CO ?

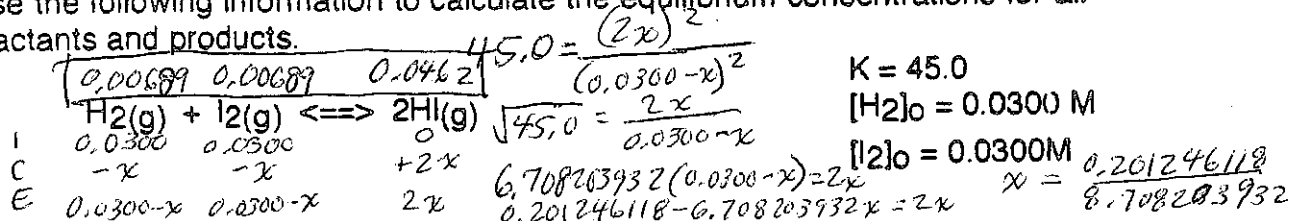
$K = \frac{[\text{COCl}_2]}{[\text{CO}][\text{Cl}_2]}$ $5.1 \times 10^9 = \frac{0.25 \text{ M}}{x^2}$

4. Calculate the partial pressure of I_2 for the following reaction with the given information.

$P_{\text{I}_2} = \frac{(16.00 \text{ atm}^2)}{45.9 (0.200 \text{ atm})} K_p = 45.9$



5. Use the following information to calculate the equilibrium concentrations for all reactants and products.



6. For the reaction; $\text{N}_2(\text{g}) + 3\text{H}_2(\text{g}) \rightleftharpoons 2\text{NH}_3(\text{g}) + 92.94 \text{ KJ}$, in which direction will the equilibrium shift for each of the following changes?

- a) increase in temperature \leftarrow
 b) decrease in temperature \rightarrow
 c) increase in volume \leftarrow
 d) decrease in volume \rightarrow

- e) some NH_3 is removed \rightarrow
 f) more NH_3 is added \leftarrow
 g) some N_2 is removed \leftarrow
 h) more N_2 is added \rightarrow

$x = 0.0231$