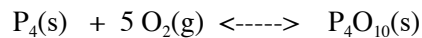
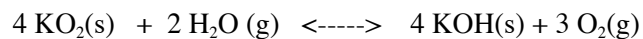


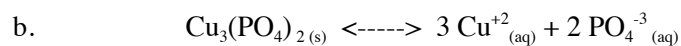
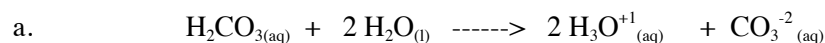
AP Equilibrium Review for the Final Exam!!!



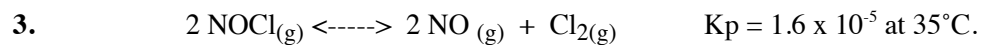
1. a. Write an expression for K_c and for K_p for each equation, above.

b. What quantities and units should be used in K_c calculations? in K_p calculations?

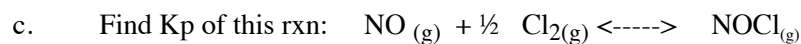
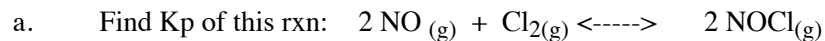
2. Write an expression for K_c for each equation:



The K_c for (b) involves a specific type of K_c called a K_{sp}

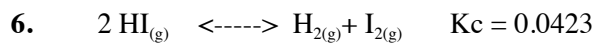


(assume 35°C for this whole problem).

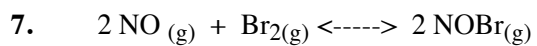


4. $\text{CH}_6\text{N}_2\text{O}_{2(s)} \rightleftharpoons 2 \text{NH}_{3(g)} + \text{CO}_{2(g)}$ $K_p = 0.0029$ at 25°C .
- Calculate the partial pressure of each gas, and the total gas pressure, at equilibrium.
 - Calculate K_c of this rxn at 25°C .

5. $2 \text{HI}_{(g)} \rightleftharpoons \text{H}_{2(g)} + \text{I}_{2(g)}$ $K_p = 0.0218$
- If 3.00 atm of HI are placed into an evacuated flask, and this reaction reaches equilibrium, what will be the partial pressures of each gas at equilibrium?

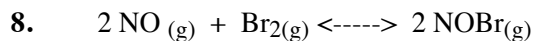


If 3.00 moles of HI are placed into an evacuated flask with a volume of 5.00 liters, and this reaction reaches equilibrium, what will be the molarities of each gas present at equilibrium?



0.512 moles NO, 0.502 moles Br₂, and 0.096 moles of NOBr are placed into a rigid 12.0 liter flask. Once the mixture reaches equilibrium, 0.118 moles of NOBr are present.

Calculate K_c.



The above 3 gases are placed into a rigid flask at the following partial pressures:

$p_{\text{NO}} = 0.1163 \text{ atm}$, $p_{\text{Br}_2} = 0.0478 \text{ atm}$, and $p_{\text{NOBr}} = 0.0132 \text{ atm}$.

Once equilibrium is established, NO is present at a partial pressure of 0.0526 atm.

Calculate K_p .

9. PbI_2 has a K_{sp} of 1.4×10^{-8} .

a. Find the molar solubility of lead iodide into water, and also calculate the concentrations of lead (II) and iodide ion in solution at equilibrium.

b. Find the molar solubility of lead iodide into a solution of 0.20 M KI, and also calculate the concentrations of lead (II) and iodide ion in solution at equilibrium.

9c. 100. mL of 0.40 M $\text{Pb}(\text{NO}_3)_2$ are mixed with 80. mL of 0.60 M KI.
Calculate the concentrations of lead II and iodide ions once the reaction has occurred, and equilibrium has been established.

10. Ag_3PO_4 has a solubility of 0.00196 grams per liter.

a. Convert this to a molar solubility.

b. Calculate K_{sp} for this compound.

c. If 200. mL of 0.300 M AgNO_3 are mixed with 100. mL of 0.400 M Na_3PO_4 , calculate the concentration of silver ion and phosphate ion after the reaction has occurred and equilibrium has been established.

Ag_3PO_4 has a K_{sp} of 1.3×10^{-20} .