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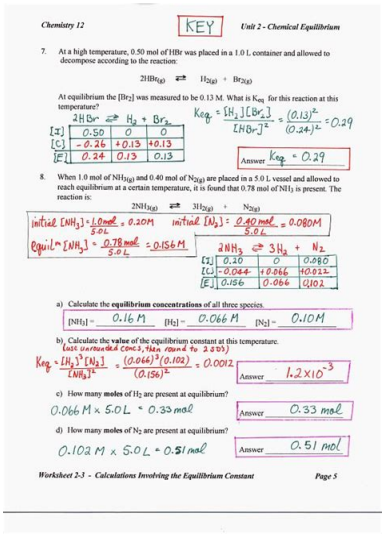
so many fake sites. this is the first one which worked! Many thanks



Chemistry 12 KEY Unit 2 - Chemical Equilibrium

7. At a high temperature, 0.50 mol of HBr was placed in a 1.0 L container and allowed to decompose according to the reaction:

$2HBr_{(g)} \rightleftarrows H_{2(g)} + Br_{2(g)}$

At equilibrium the $[Br_2]$ was measured to be 0.13 M. What is K_{eq} for this reaction at this temperature?

$K_{eq} = \frac{[H_2][Br_2]}{[HBr]^2} = \frac{(0.13)^2}{(0.24)^2} = 0.29$

	$2HBr$	$\rightleftarrows H_2$	$+ Br_2$
[I]	0.50	0	0
[C]	-0.26	+0.13	+0.13
[E]	0.24	0.13	0.13

Answer $K_{eq} = 0.29$

8. When 1.0 mol of $NH_{3(g)}$ and 0.40 mol of $N_{2(g)}$ are placed in a 5.0 L vessel and allowed to reach equilibrium at a certain temperature, it is found that 0.78 mol of NH_3 is present. The reaction is:

$2NH_{3(g)} \rightleftarrows 3H_{2(g)} + N_{2(g)}$

initial $[NH_3] = \frac{1.0\,mol}{5.0\,L} = 0.20M$ initial $[N_2] = \frac{0.40\,mol}{5.0\,L} = 0.080M$

equil $[NH_3] = \frac{0.78\,mol}{5.0\,L} = 0.156\,M$

	$2NH_3$	$\rightleftarrows 3H_2$	$+ N_2$
[I]	0.20	0	0.080
[C]	-0.044	+0.066	+0.022
[E]	0.156	0.066	0.102

a) Calculate the **equilibrium concentrations** of all three species.

$[NH_3] =$ 0.16 M $[H_2] =$ 0.066 M $[N_2] =$ 0.10M

b) Calculate the **value** of the equilibrium constant at this temperature. (use unrounded conc's, then round to 2 sig)

$K_{eq} = \frac{[H_2]^3[N_2]}{[NH_3]^2} = \frac{(0.066)^3(0.102)}{(0.156)^2} = 0.0012$

Answer 1.2×10^{-3}

c) How many **moles** of H_2 are present at equilibrium?

$0.066\,M \times 5.0\,L = 0.33\,mol$

Answer 0.33 mol

d) How many **moles** of N_2 are present at equilibrium?

$0.102\,M \times 5.0\,L = 0.51\,mol$

Answer 0.51 mol

Worksheet 2-3 - Calculations Involving the Equilibrium Constant Page 5

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Chemistry Unit 5 Answers