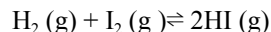


**ICE Box Practice & Review**  
**HBA AP Chemistry**

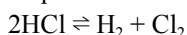
1. At the start of an experiment,  $[H_2] = 1 \times 10^{-3} \text{ M}$  and  $[I_2] = 2 \times 10^{-3} \text{ M}$ . When equilibrium is reached, the  $[HI] = 1.86 \times 10^{-3} \text{ M}$ . Find the  $K_{eq}$ .



2. Initially,  $N_2$  and  $H_2$  each have a concentration of 0.01 M. At equilibrium,  $[NH_3]$  is 0.002 M. What is the  $K_{eq}$  value for this reaction at equilibrium?



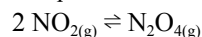
3. The initial concentration of HCl is 0.4 M and has a  $K_c = 6.25$ . What are the equilibrium concentrations of all products and reactants?



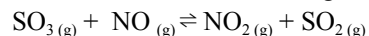
4. A sample containing 0.800 moles of  $POCl_3$  is enclosed in a 0.500 litre vessel at a certain temperature. When the equilibrium for the dissociation reaction below is attained, it is found that the vessel contains 0.259 moles of  $Cl_2$ . Calculate the equilibrium constant.



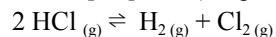
5. The brown gas  $NO_2$  on cooling is converted into the colourless gas  $N_2O_4$  as described by the equation below. If the original concentration of  $NO_2$  is 0.90 M, and at equilibrium its concentration is only 0.26 M, what is the equilibrium constant for the reaction ?



6. If 0.300 mol of  $SO_3$  and 0.300 mol  $NO$  were placed in a 1.00 L flask and allowed to react, what would be the equilibrium concentration of each gas ? ( $K_{eq} = 0.500$ )



7. If 2.00 mol HCl are placed in a 5.00 L flask and allowed to come to the equilibrium shown above, what will the equilibrium  $[H_2]$  be ? ( $K_{eq} = 3.2 \times 10^{-4}$ )



8. If 1.50 mol of each chemical species are placed in a 3.00 L flask and allowed to achieve the equilibrium above, what mass of CO will be present at equilibrium ? ( $K_{eq} = 3.59$ )

