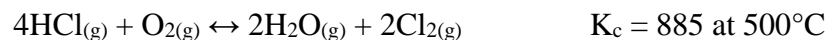


- d. What is the equilibrium concentration of $\text{HCN}_{(g)}$ if nitrogen and acetylene are mixed so that both are starting concentrations of 1.0 M ?

3. Consider the following equilibrium reaction.



- a. If 0.030 mole HCl, 0.020 mole O_2 , 0.090 mol H_2O and 0.085 mole Cl_2 are mixed in a 1.0 L container at 500°C , in what direction will the reaction proceed?

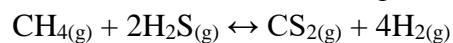
- b. What is the value of K_p for the reaction at 500°C ?

4. Suppose a 1.0 L flask is filled with 0.30 atm $\text{Br}_{2(g)}$ and 0.30 atm $\text{Cl}_{2(g)}$ at 400 K.



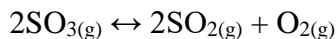
a. Find the pressures of all three gases at equilibrium

5. For the reaction below, which change would cause the equilibrium to shift to the right?

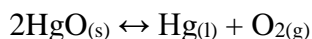


- Decrease the concentration of dihydrogen sulfide.
- Increase the pressure on the system.
- Increase the temperature of the system.
- Increase the concentration of carbon disulfide.
- Decrease the concentration of methane.

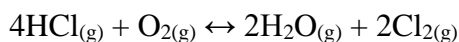
6. What would happen to the position of the equilibrium when the following changes are made to the equilibrium system below?



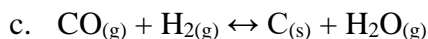
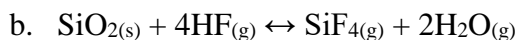
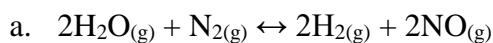
- Sulfur dioxide is added to the system.
 - Sulfur trioxide is removed from the system.
 - Oxygen is added to the system.
7. What would happen to the position of the equilibrium when the following changes are made to the reaction below?



- HgO is added to the system.
 - The pressure on the system increases.
8. When the volume of the following mixture of gases is increased, what will be the effect on the equilibrium position?



9. Predict the effect of decreasing the volume of the container for each equilibrium.



10. Predict the effect of decreasing the temperature on the position of the following equilibria.

