

1. For reaction as: $\text{PCl}_5(\text{g}) \rightleftharpoons \text{PCl}_3(\text{g}) + \text{Cl}_2(\text{g})$

(a) Calculate **K** if it is observed that initially $P_{\text{PCl}_5} = 10.00 \text{ atm}$ and $P_{\text{PCl}_3} = P_{\text{Cl}_2} = 0$, and at equilibrium $P_{\text{PCl}_5} = 6.55 \text{ atm}$.



$$K_p = \underline{\hspace{4cm}}$$

(b) Find P_{PCl_5} if at equilibrium $P_{\text{PCl}_3} = 0.10 \text{ atm}$ and $P_{\text{Cl}_2} = 0.30 \text{ atm}$.

$$P_{\text{PCl}_5} = \underline{\hspace{4cm}}$$

(c) Find all **P's** if initially $P_{\text{PCl}_5} = 1.00 \text{ atm}$ and $P_{\text{PCl}_3} = P_{\text{Cl}_2} = 0 \text{ atm}$.

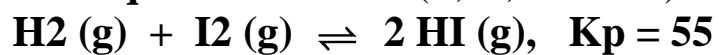


$$P_{\text{PCl}_5} = \underline{\hspace{4cm}}$$

$$P_{\text{PCl}_3} = \underline{\hspace{4cm}}$$

$$P_{\text{Cl}_2} = \underline{\hspace{4cm}}$$

2. Predict the **direction of equilibrium shift** (L, R, or None) for each case:



(a) I 1 1 0
C
E _____ _____ _____ shifts _____

(b) I 0 0 1
C
E _____ _____ _____ shifts _____

(c) I 1 0 1
C
E _____ _____ _____ shifts _____

(d) I 1 1 1
C
E _____ _____ _____ shifts _____

(e) I 0.02 0.02 0.53
C
E _____ _____ _____ shifts _____

If $Q > K$, then the reaction will shift _____

If $Q < K$, then the reaction will shift _____

If $Q = K$, then _____