Position of Equilibrium

Pre-lesson assignment – Textbook p302 and 304-306

Make notes on changing the position of equilibrium

Use the following questions as guidance

Watch the video tutorial 'Position of equilibrium 1'

1. Write an expression for K_c for $N_2O_{4(g)} \rightleftharpoons 2NO_{2(g)}$
2. $[N_2O_{4(g)}] = 0.010$ mol dm^{-3} $[NO_2] = 0.400$ dm^{-3}
   Calculate K_c under these conditions.
3. Adding $N_2O_{4(g)}$ so that $[N_2O_{4(g)}] = 0.050$ mol dm^{-3} breaks down the equilibrium. Using the value of K_c and the ratio of $[NO_2]/[N_2O_4]$ now obtained, explain why.
4. Explain how the equilibrium is re-formed.

Watch the video tutorial 'Position of equilibrium 2'

1. Write an expression for K_p for $N_2O_{4(g)} \rightleftharpoons 2NO_{2(g)}$
2. $p(NO_{2(g)}) = 9.6$ atm
   $p(N_2O_{2(g)}) = 0.24$ atm
   Calculate K_p
3. The pressure is doubled. Calculate $p(NO_{2(g)})$ and $p(N_2O_{4(g)})$.
4. Explain, using K_p and the ratio $p(NO_{2(g)})/p(N_2O_{4(g)})$ now obtained, why the system is no longer at equilibrium.
5. Explain how the equilibrium is reformed.