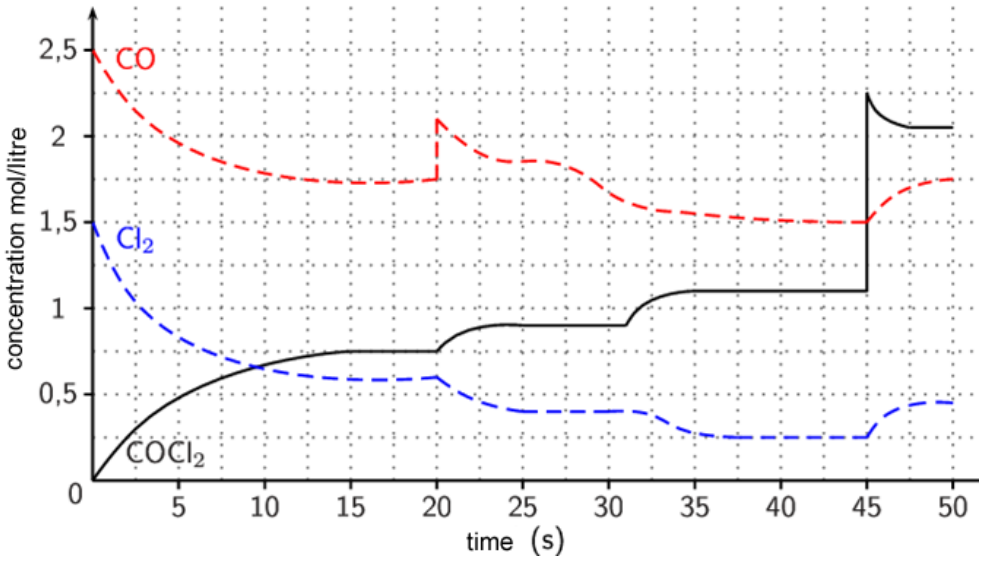
Friday Worksheet **Name: ……**

Chemical equilibrium worksheet 1

1) Consider the graph below of the reaction
$CO(g) + Cl_2(g) <=> COCl_2(g)$



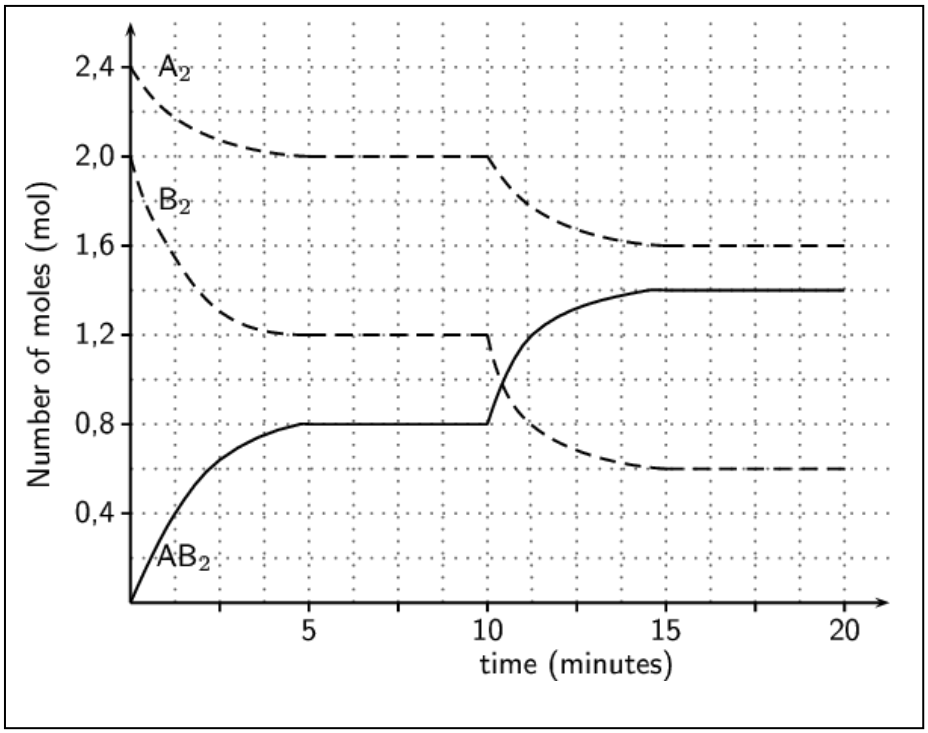
a) How does the rate of the forward and backward reactions compare at the following times
i) 50 s
ii) 5 s
iii) 23 s

b) What happened at t = 20s? Explain how the system responded by referring to Le Chatellier's principle

c) Write the equilibrium expression.

d) Calculate the equilibrium constant at t = 40 s

e) 2.0 mol of Cl_2 is placed in a 2.0 litre vessel along with 3.0 mol of CO gas at a certain temperature. The mixture was allowed to reach equilibrium and then analysed. It was found to contain 1.5 mol of $COCl_2$. Calculate the equilibrium constant .



2) Consider the chemical equilibrium represented by the unbalanced equation

$$A_2(g) + B_2(g) \Leftrightarrow AB_2(g) \quad (+\Delta H).$$

and the graph shown above.

a) How does the rate of the forward and backward reactions compare at the following times

i) 8 min

ii) 20 min

b) What happened at t = 10 min? Explain your answer by referring to Le Chatellier's principle

c) Write the equilibrium expression.

d) Calculate the equilibrium constant at t = 8 min if the reaction occurred in a 1.50 litre vessel