Year 12 Chemistry
Quick Quiz: Using and Controlling Reactions

1. Draw a flowchart for the production of zinc from its ore.

2. Consider the reaction $N_{2(g)} + 3H_{2(g)} \rightleftharpoons 2NH_{3(g)}$ in a 0.5 L reaction vessel.

   The reaction starts with 2 moles of N_2, 4 moles of H_2, and zero moles of NH_3.
   At equilibrium, reached 1 minute later, there are 2 moles of NH_3 present.

   (a) Determine the number of moles of each reactant present at equilibrium.

   (b) At 2 minutes, the reaction vessel is compressed to 0.25 L, and equilibrium is re-established by the third minute. Draw a graph showing the concentration of H_2 over the three minutes (estimate the final concentration of H_2 using Le Chatelier's Principle).
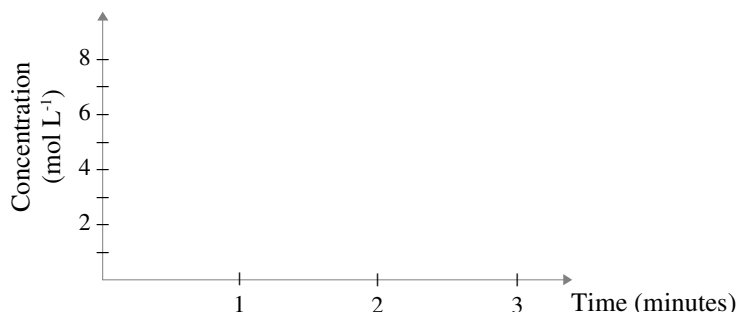
3. State what it means for the reaction mixture to reach equilibrium.

4. Calculate the maximum volume of water that could be heated 40°C by burning 4.0 grams of CH_4, given that its molar enthalpy of combustion is 891 kJ mol^{-1}.
   The specific heat capacity of water is 4.18 J g^{-1} °K^{-1}.