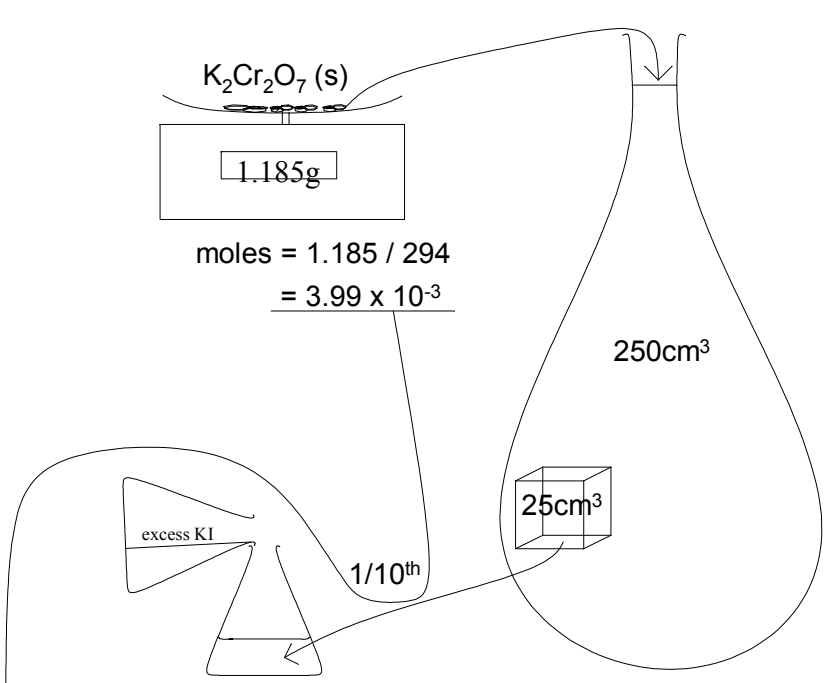
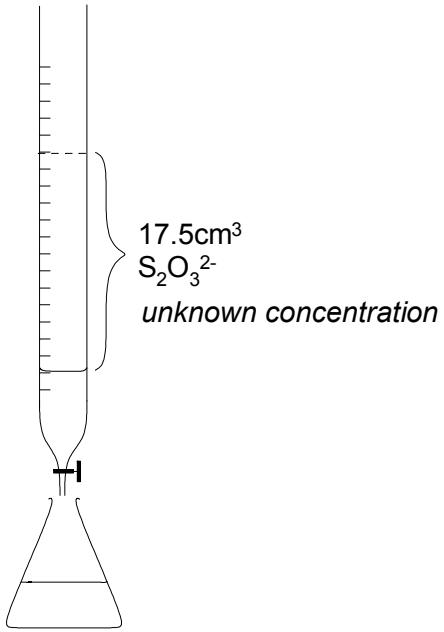
Titration of dichromate with iodide

A standard solution is prepared by dissolving 1.185g of potassium dichromate(VI) and making up to 250cm^3 of solution. This solution is used to find the concentration of a sodium thiosuphate solution. A 25.0cm^3 portion of the oxidant was acidified and added to an excess of potassium iodide to liberate iodine.

$$Cr_2O_7^{2-} + 6I^- + 14H^+ \longrightarrow 3I_2 + 2Cr^{3+} + 7H_20$$

When the solution was titrated against sodium thiosulphate, 17.5 cm^3 of thio were required. Find the concentration of the thiosulphate solution.





Equation	$Cr_2O_7^{2-} + 6I^- + 14H^+ \longrightarrow 3I_2 + 2Cr^{3+} + 7H_2O$		
Ratio	1	:	3
Moles	3.99 x 10^{-4}	:	3 x 3.99 x 10^{-4} = 1.20 x 10^{-3}

Equation	$2S_2O_3^{2-} + I_2 \longrightarrow S_4O_6^{2-} + 2I^-$		
Ratio	2	:	1
Moles	2 x 1.20x10^{-3} = 2.39 x 10^{-3}	:	1.20 x 10^{-3}

concentration = moles / volume

$$= \frac{2.39 \times 10^{-3}}{(17.5 / 1000)}$$

$$= 0.137 \text{ moldm}^{-3}$$