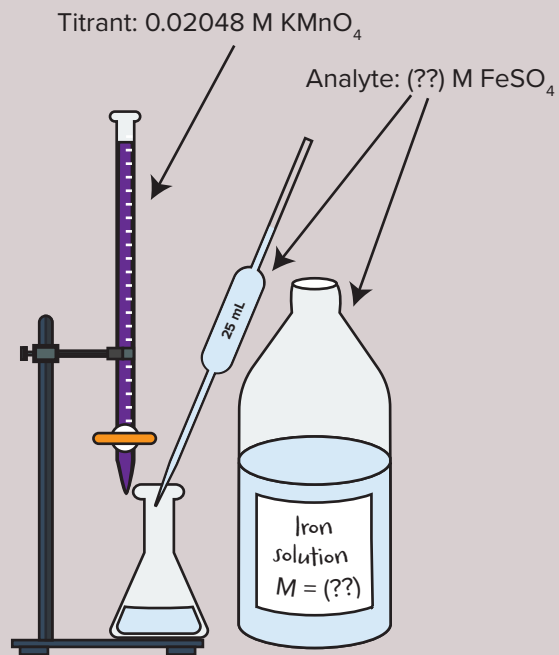


## Before titration

25.00 mL FeSO<sub>4</sub> is transferred to flask for titration.  
Buret is filled with 0.02048 M KMnO<sub>4</sub>



# Example calculations for titration of iron solution

What is the concentration of the iron solution?

## Step 1. Calculate mol titrant dispensed

$$18.22 \text{ mL KMnO}_4 \text{ sol'n} \times \frac{1 \text{ L}}{1000 \text{ mL}} \times \frac{0.02048 \text{ mol KMnO}_4}{1 \text{ L sol'n}} = 3.731 \times 10^{-3} \text{ mol KMnO}_4 \text{ dispensed}$$

Total amount of KMnO<sub>4</sub> solution added by the endpoint

Total mol KMnO<sub>4</sub> added by the endpoint

## Step 2. Determine mol analyte in flask

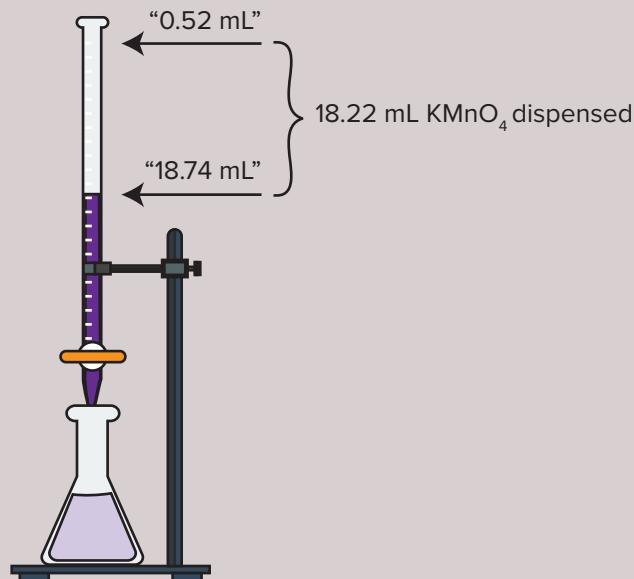
Balanced equation for KMnO<sub>4</sub> reaction with FeSO<sub>4</sub>:



$$3.731 \times 10^{-3} \text{ mol KMnO}_4 \text{ dispensed} \times \frac{10 \text{ mol FeSO}_4}{2 \text{ mol KMnO}_4} = 1.886 \times 10^{-3} \text{ mol FeSO}_4 \text{ in flask}$$

## At endpoint

18.22 mL KMnO<sub>4</sub> was used to completely react all the iron in the 25.00 mL FeSO<sub>4</sub> sample



## Step 3. Calculate concentration of analyte in solution

$$\frac{1.886 \times 10^{-3} \text{ mol FeSO}_4}{25.00 \text{ mL}} \times \frac{1000 \text{ mL}}{1 \text{ L}} = 0.07463 \text{ M FeSO}_4$$

mL of FeSO<sub>4</sub> solution titrated