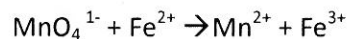


Name: \_\_\_\_\_

Pd: \_\_\_\_\_ Date: \_\_\_\_\_

### Chemistry 12 Lesson #7 Redox Titrations

Balance the following redox reaction (in acid solution):



When  $\text{MnO}_4^{1-}$  is reduced to  $\text{Mn}^{2+}$  there is a colour change.  $\text{MnO}_4^{1-}$  is \_\_\_\_\_ and  $\text{Mn}^{2+}$  is \_\_\_\_\_. So in a titration the  $\text{MnO}_4^{1-}$  undergoes reduction and becomes colourless. When you see the colour purple in the solution you have reached the equivalence point, and you STOP titrating.

**Note: Spectator ions are chemical species that are present in a reaction but they do not participate. As an analogy, before you get you learn to drive your parents must bring you to your sporting events. They are there but they do not play in the game.**

Examples:

When 20.0 mL of unknown concentration of  $\text{Fe}(\text{NO}_3)_2$  is titrated with 15.25 mL of 0.100 M  $\text{KMnO}_4$  (under acid conditions colour change is observed. What is the concentration of the  $\text{Fe}(\text{NO}_3)_2$ ?

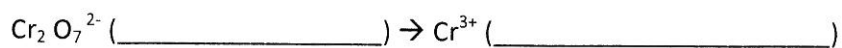
Step 1. Balanced redox equation

Step 2. Determine the moles of known

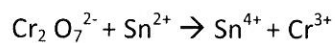
Step 3. Cross the mole bridge to determine moles of unknown

Step 4. Calculate the unknown concentration

Another common substances used in redox titrations is the reduction of  $\text{Cr}_2\text{O}_7^{2-}$  to  $\text{Cr}^{3+}$  under acid conditions.



A titration is performed with an unknown volume of a 0.50 M sample of  $\text{SnCl}_2$  in an acidic solution. The titration requires 15.0 mL of 0.030 M  $\text{K}_2\text{Cr}_2\text{O}_7$ . What is the volume of the  $\text{SnCl}_2$  used if the UNBALANCED redox reaction is:



Step 1. Balanced redox equation

Step 2. Determine the moles of known

Step 3. Cross the mole bridge to determine moles of unknown

Step 4. Calculate the unknown volume

Homework:

Ex: 26-32 pgs 213-214

PLDs: T4 + T6