

### Worksheet - Titration Problems

1. What is the M of NaOH if it takes 40 ml of NaOH to reach the equivalence point in a titration with 50 ml of 0.2 M HCl?  
M
2. 50 ml of 0.3 M KOH are required to titrate 60 ml of  $\text{H}_2\text{SO}_4$ . What is the M of the  $\text{H}_2\text{SO}_4$ ?  
M
3. 60 ml of 1.2 M NaOH are required to titrate 40 ml of HF. What is the M of the HF?  
M
4. What volume of 0.40 M NaOH would be required to titrate 100 ml of 0.25 M HCl?  
ml
5. 40 ml of 0.1M  $\text{H}_3\text{PO}_4$  are required to titrate 150 ml of NaOH to the equivalence point. What is the M of the NaOH?  
M
6. 55 ml of 1.2 M  $\text{H C}_2\text{H}_3\text{CO}_2$  are used to titrate a sample of 0.67 M  $\text{Ba}(\text{OH})_2$ . What is volume of the  $\text{Ba}(\text{OH})_2$  used?  
ml
7. 90 ml of 0.25 M  $\text{Ca}(\text{OH})_2$  are required to titrate 100 ml of HCl. What is M of the HCl?  
M
8. 50 ml of 0.45M  $\text{Sr}(\text{OH})_2$  are required to titrate a .75 M  $\text{H}_2\text{SO}_4$  sample. What is the volume of the  $\text{H}_2\text{SO}_4$ ?  
ml
9. A 94 mL sample of citric acid,  $\text{H}_3\text{C}_6\text{H}_5\text{O}_7$ , solution (example=orange juice) is titrated to the phenolphthalein endpoint using 7.0 mL of 0.010 M NaOH. What is the concentration of the citric acid in the orange juice?  
M
10. 30 ml of 0.3 M NaOH are required to titrate  $\text{H}_3\text{PO}_4$  to the equivalence point. How many moles of  $\text{H}_3\text{PO}_4$  are needed to reach the equivalence point?  
moles  $\text{H}_3\text{PO}_4$