## QUESTIONS AND PROBLEMS

1. If you had added 50 mL of water to a sample of KHP instead of 30 mL, would the titration of that sample then have required more, less, or the same amount of base? Explain.

Same amount of base because the amount of water doesn't effect the chemical reaction.

2. A student weighed out 1.106 g of KHP How many moles was that?

$1.106\,g \cdot \frac{1\,mol}{204.2\,g} = 0.005416\,mol$

.005416 mol

3. A titration required 18.38 mL of 0.1574 M NaOH solution. How many moles of NaOH were in this volume?

$\frac{0.1574\,mol}{1000\,mL} \times 18.38\,mL = 0.002893\,mol$

0.002893 mol

4. A student weighed a sample of KHP and found it weighed 1.276 g. Titration of this KHP required 19.84 mL of base (NaOH). Calculate the molarity of the base.

$1.276\,g \times \frac{1\,mol}{204.2\,g} = 0.006248\,mol\,KHP \cdot \frac{1\,mol\,NaOH}{1\,mol\,KHP} = \frac{0.006248\,mol}{.01984\,L} = .3149586\,M$

.3150 M

5. Forgetful Freddy weighed his KHP sample, but forgot to bring his report sheet along, so he recorded the mass of KHP on a paper towel. During his titration, which required 18.46 mL of base, he spilled some base on his hands. He remembered to wash his hands, but forgot about the data on the towel, and used it to dry his hands. When he went to calculate the molarity of his base, Freddy discovered that he didn't have the mass of his KHP. His kindhearted instructor told Freddy that his base was 0.2987 M. Calculate the mass of Freddy's KHP sample.

$\frac{0.2987\,mol}{1000\,mL} \times 18.46\,mL = 0.005514\,mol \times \frac{204.2\,g}{1\,mol} = 1.125548$

1.126 g

6. What mass of solid NaOH would be needed to make 645 mL of Freddy's NaOH solution?

$\frac{.2987\,mol}{1000\,mL} \times 645\,mL = 0.1926615\,mol \times \frac{40.00\,g}{1\,mol} =$

7.71 g