A titration involves reacting two solutions – one with a known concentration and the other with an unknown concentration. The goal of the lab is to calculate the concentration of acetic acid in vinegar, so that is the solution with the unknown concentration. Therefore, there must be a way to find the concentration of the base solution so that it can be known. A separate procedure can be used to do this. The process is called standardization and is formally defined as the process by which the concentration of a standard solution is determined by titration against a primary standard. The primary standard used in standardizing sodium hydroxide is potassium hydrogen phthalate, otherwise known as KHP.

1. KHP is a solid. What tool in the lab can you use to be sure within 4 significant figures of the number of moles of acid in your reaction?

2. You will need to make a more dilute solution of sodium hydroxide than the 6 M sodium hydroxide that you’ll find in the hood to react with KHP. It is recommended that you make a 0.2 M solution. How many significant figures are represented by a 6 M solution of sodium hydroxide?

3. How will you make a 0.2 M solution of sodium hydroxide from a 6 M solution of sodium hydroxide? Provide detail.

4. Do you have more significant figures to describe the number of moles of KHP? Or the number of moles of sodium hydroxide?