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Generating and Using a Calibration Graph

Solution Dilution!

Now that you've taken absorbance spectra and plotted absorbance vs. wavelength, it's time to make a calibration graph, and plot absorbance vs. concentration. First though, you'll need solutions of different concentrations, and to do that, you need to make dilutions.

Dilution measurements use the equation:

$$M_1V_1 = M_2V_2$$

Where M1 is the molarity of the first solution and M2 is the molarity of the second, and V1 and V2 are the volumes.

This is actually a condensed equation of two molarity equations. Let's walk through how it comes to this.

You want to make a 50mL of a 0.03M solution. You have a 0.1M solution.

We can start with the Molarity Equation

$$M = \frac{mols}{Liters}$$

Start with what you want. You want 50mL of a 0.03M solution. You have a volume and a concentration so you can find how many moles of your compound will be in there. Try doing this!

Scroll here to check your answer!

Now that you know the number of moles you need, now you need to find a volume of your current solution, that has that many moles in it. Your

current solution is 0.1M So how many mL would you need, to have that many moles?

Scoll here to check your answer!

Now that you found how many mL of your stock solution you need, how many mL of water will you need to add?

Scroll here to check your answer!

That was the long way of doing this problem. You can also use the simplified equation of

$$M_1V_1 = M_2V_2$$

You want 50mL of a 0.03M solution. You have a volume and a concentration for one of the solutions, so that will go on one side

M1 = 0.03M

V1 = 50mL

You also have the concentration of the other solution. You have a stock solution of 0.1M

M2 = 0.1M

$$(50mL)(0.03M) = (0.1M)V_2$$

$$1.5\left(M * mL\right) = \left(0.1M\right)V_2$$

$$\frac{1.5(M * mL)}{0.1M} = V_2$$

$$V_2 = 15mL$$