

Inquiry Question

What are the different ways that we can change the concentration of a solution?

Name: _____ **Date:** _____



Solutions can be very concentrated, with a lot of substance dissolved in the solution, or can be very dilute, with very little substance dissolved in solution. Whether a solution is concentrated or dilute depends on the amount of substance that is dissolved for the amount of solvent that is present. Recall that the substance that is dissolved is called the solute while the solvent is the substance that does the dissolving, often water.

Can we change how much substance is dissolved? Perhaps more of the solute can be added? Can we also change how much solvent is present? Can we add more water or somehow take away just the water?

In this project, you will use the concentration simulation [here](#) to investigate the various ways in which the concentration of a solution can be changed.

General Instructions

The goal of this project is to investigate the different ways in which concentration can be changed.

Materials you'll need:

- the internet to access the simulation
- the [PhET Concentration simulation](#).

Ideas and Hints:

- Click on the link [here](#) to start the simulation.
- Build a table so that you can record the concentration values after each change you make while running the simulation.
- First place the purple probe of the concentration meter in the container.
- Select the solid drink mix as the solute and add a small amount to the container by clicking on the shaker and shaking it. What happens to the colour and concentration when you add more?
- Try adding more water to the solution with the top blue handle. What happens to the colour and concentration?
- Try removing water (the solvent) by evaporation, using the slider on the bottom. What happens to the colour and concentration?
- Try removing solution from the container using the bottom blue handle. What happens to the concentration of the remaining solution in this case?
- Answer the questions above, including the change in concentration, for each adjustment made. Include an explanation as to what is happening to the solution for each adjustment made. Is the solution becoming more concentrated, more dilute or not changing at all?

Project submission:

You can either submit this table with answers and explanations or, if you can drop-in to the school, you can present it to your teacher in-person.