**Name\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_Period\_\_\_\_Date\_\_\_\_\_\_\_\_\_\_\_**

**Physical Science-Kool-Aid Lab**

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**Background Information:**

We will be making 5 different concentrations of Kool-Aid (0.1 M, 0.3 M, 0.5 M, 0.7 M, & 1.0 M). You will taste the Kool-Aid solutions you make to determine how you like your Kool-Aid

Kool-Aid is mostly sugar (C6H12O6) with added color and flavorings. You can assume the molar mass of Kook-Aid is that of sugar.

**Pre-Lab Questions**

1. What is the purpose of this lab?
2. Calculate the molar mass of Kool-Aid
3. Calculate the mass in grams of Kool-Aid need to make 0.1 L solutions of the following concentrations:
   1. 0.1 M \_\_\_\_\_\_\_\_\_g
   2. 0.3 M \_\_\_\_\_\_\_\_\_g
   3. 0.5 M \_\_\_\_\_\_\_\_\_\_g
   4. 0.7 M \_\_\_\_\_\_\_\_\_\_g
   5. 1.0 M \_\_\_\_\_\_\_\_\_\_g
4. When Kool-Aid is dissolve in water, what is the solute and what is the solvent?

Solute\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ Solvent\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

**Safety:**

Normally, there is NO eating or drinking in lab. However, for this lab we will taste Kool-Aid solutions in order to learn about concentration. Special care must be taken so that nothing becomes contaminated.

* You do have to taste anything you do not want to
* Do not pour the Kool-Aid powder back into the container if you pour too much. Dispose in the trashcan
* If any Kool-Aid powder gets on the lab bench, dispose of it in the trashcan.

**Procedure:**

1. Obtain 5 plastic cups. With the sharpie marker, label the cups with the following concentrations: 0.1 M, 0.3 M, 0.5 M, 0.7 M, and 1.0 M.
2. Each group member will be responsible for making at least 1 solution. Decide who is making which solution. If you have less than 5 people, someone will make two solutions. List who is making each solution below.
   1. 0.1 M\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
   2. 0.3 M\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
   3. 0.5 M\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
   4. 0.7 M\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
   5. 1.0 M\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
3. Weigh out the correct amount of Kool-Aid by putting your cup on the balance, pushing the zero button, and putting the correct mass of powder into the cup using a spoon.
4. Measure out 100 mL of water using a 50 mL graduated cylinder (you will need to use the graduated cylinder twice).
5. Stir with a popsicle stick.
6. Observe and taste the solutions you have made. You can have a designated taster or you can pour a little of each solution into cups for each group member. Record how each solution looked, smelled, and tasted. Rate the taste of the solution on a scale of 1 to 5 (5 being the best)

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| **Concentration** | **Color** | **Smell** | **Taste** | **Rating (circle one)** |
| **0.1 M** |  |  |  | 1 2 3 4 5 |
| **0.3 M** |  |  |  | 1 2 3 4 5 |
| **0.5 M** |  |  |  | 1 2 3 4 5 |
| **0.7 M** |  |  |  | 1 2 3 4 5 |
| **1.0 M** |  |  |  | 1 2 3 4 5 |

**Questions**

1. Which concentration of Kool-Aid did you prefer the most? What was wrong with the other solutions you made?
2. Calculate the molarity of Kool-Aid as prepared using the directions on the back of the container. The Directions read: add 88 grams (3/4 cup) of Kool-Aid powder to 1 quart of water (1 quart of water= .946 L)
3. How is taste related to concentration? Why are they related this way?