Molarity Activity Name/Number: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

**Safety** Normally in the chemistry laboratory there is no eating or drinking. However, for this activity we will taste Kool-Aid solutions in order to learn about concentration. Special care must be taken so that nothing becomes contaminated.

* If at anytime you do not want to taste the solutions, you do not have to!
* Do not pour the Kool-Aid powder back into the container if you pour out too much. Dispose of the extra in the trash can.
* If any Kool-Aid powder touches the lab table or balance, dispose of it.

**Materials** 3plastic cups sharpie ruler Kool-Aid powder 1 spoon drinking water straw

# Procedure

1. Obtain 3 plastic cups. With the sharpie marker, label the cups with the following concentrations: 0.1 M,

0.4 M and 0.7 M.

1. Make a mark \_\_\_\_\_ cm from the bottom of each cup. This line will represent where you will need to fill the cup to obtain 125 mL of solution.
2. Calculate the mass, in grams, of solid Kool-Aid [assume Kool-Aid is C6H12O6] needed to make 125 mL of a 0.10 M solution. Perform the calculation here:
3. Calculate the mass, in grams, of solid Kool-Aid needed to make 125 mL of a 0.40 M solution. Perform the calculation here:
4. Calculate the mass, in grams, of solid Kool-Aid needed to make 125 mL of a 0.70 M solution. Perform the calculation here:

\_\_\_\_\_Check off your answers with Ms. Zacker and obtain your group’s flavor of Kool-Aid. \*\***All group members must have these completed in order to receive the Kool-Aid.**

1. Weigh out the correct amount of Kool-Aid for each solution using the correct labeled cup and a spoon. Be sure to hit the zero/tare button with the cup on the balance ***before*** adding any Kool-Aid.
2. Add a small amount of drinking water **[not tap water!]** to the cup with the measured Kool-Aid. Do not fill it all the way up to your line yet. Mix with a straw to dissolve the solid; then add more water to reach the level [to the line you drew].
3. Observe and taste the solutions you have made. You can have one ‘designated taster’ or each of you can have your own straw and taste each of the solutions. Record how each solution *looked* and *tasted* in your data table. Be sure you make good observations when writing in your data table.
4. Dispose of your 3 plastic cups, straws and spoons. Return any unused Kool-Aid to your teacher. Wipe up any Kool-Aid that might have spilled on your table. CHECK OUT WITH YOUR INSTRUCTOR!

# \_\_\_\_\_CHECK OUT WITH MS. ZACKER

**Data** *Make* ***good*** *observations regarding the color of each concentration of Kool-Aid. Use a rating of 1 to 5 stars for the taste, 1 being “worst thing I’ve ever drank” and 5 being the “tastiest Kool-Aid EVER!”*

|  |  |  |
| --- | --- | --- |
| **Concentration** | **Color Description** | **Taste** |
| 0.1 M |  |  |
| 0.4 M |  |  |
| 0.7 M |  |  |

**Calculations Show all of your work for calculations, labeling every number with a unit.**

1. Calculate the molarity of Kool-Aid as prepared using the directions on the back of the container. The directions read: Add 88 grams of Kool-Aid powder to 1 quart of water [1 quart = 946.35 mL]. Again, assume that Kool-Aid is mostly glucose, so use the molar mass of C6H12O6.
2. Determine the molarity of a solution that contains 0.18 mol NaCl dissolved in 175 mL of solution.
3. How many grams of Ca(NO3)2 would you need to prepare 3.00 L of a 0.500 M solution?

**Questions** Answer the following questions using complete sentences.

1. What is molarity?
2. What was the solvent in this activity? What was the solute?