Dilution Lab

Purpose: To create a concentrated solution and properly dilute it to the desired concentration.

Materials:

KoolAid Small cup

Water Spoon

Large cup Electronic balance

Procedure:

1. Weigh the small, empty cup.
2. Weight the large, empty cup.
3. Place 3 even spoonfuls of KoolAid into the large cup and weigh.
4. Fill the small cup with water and weigh.
5. Add the water to the large cup and stir to dissolve the KoolAid.
6. Take a small, half spoonful of KoolAid and taste. Record your observations to color, taste, grittiness, etc.
7. Fill the small cup again with water and weigh. Add that water to the KoolAid and stir.
8. Take a small, half spoonful of KoolAid and taste. Record your observations to color, taste, grittiness, etc.
9. Fill the small cup again with water and weigh. Add that water to the KoolAid and stir.
10. Take a small, half spoonful of KoolAid and taste. Record your observations to color, taste, grittiness, etc.
11. You may drink your finished product if you choose. If not, pour it down the drain and clean up your area. Wipe up any KoolAid powder on your table tops with a Chlorox wipe.

Data:

|  |  |
| --- | --- |
| mass of small, empty cup |  |
| mass of large empty cup |  |
| mass of large cup & KoolAid |  |
| mass of small cup & water #1 |  |
| mass of small cup & water #2 |  |
| mass of small cup & water #3 |  |

Analysis:

1. To find the initial concentration (Molarity) of the KoolAid solution.
   1. Find the mass (m1) of the KoolAid, subtract the mass of the large, empty cup from the mass of the large cup & KoolAid.
   2. Convert the mass of the KoolAid to moles (n). Assume the Koolaid is completely made of sucrose, C12H11O11.
   3. Find the volume of the water:
      1. Find the mass of the water #1: Subtract the mass of the small, empty cup from the mass of the small cup & water #1.
      2. Use the following equation to calculate the volume of the water: V1 = mass of water #1/ 1.00g/mL. Your answer will be in mL.
      3. Convert Vi from mL to L.
   4. Use M = n/V to calculate the molarity of the KoolAid #1.
2. To find the final volume of the KoolAid solution:
   1. Subtract the mass of the small, empty cup from the mass of small cup & water #2.
   2. Subtract the mass of the small, empty cup from the mass of small cup & water #3.
   3. Add the mass of water #1 from above to mass of water #2 and mass of water #3 this will be known as mass of water #1-2-3
   4. Find the final volume of the water:
      1. Use the following equation to calculate the volume of the water: V2 = mass of water #1-2-3/ 1.00g/mL. Your answer will be in mL.
      2. Convert V2from mL to L.
3. To find the final Molarity of your KoolAid solution, use the equation: M1V1 = M2V2.