Measurable Mass
Investigation #4

Description
Does mixing a powdered drink change its mass? Let’s find out!

Materials
• Powdered drink with scoop
• Water
• Glass jar
• Digital scale
• Magnetic stir plate
• Paper
• Pencil

Procedure
1) Place the empty scoop on the scale and set the scale to Tare.
2) Fill up the scoop with the powdered drink and record the mass of the powder in grams.
3) Place the magnetic stir bar in the jar, fill the jar half full of water, and place the jar on the digital scale.
4) Record the mass in grams.
5) Move the jar onto the magnetic stir plate, add all the powder, and turn on the stir bar to mix the powder and water.
6) Predict what the total mass will be. Then check the mass on the digital scale.
7) What did you notice?
Explanation
The Law of Conservation of Mass states that total mass in a closed system remains the same. Combining the powder and water changes color and makes a mixture, but the color is just a physical change. The total mass is predictable. The total mass is the sum of the powder, water, jar, and magnetic stir bar. Even though the particles can’t really be seen in the mixture, the particles are all still there and are detectable.

Think about this. Mass is the amount of matter in an object. Think about a brick. If we could add up all the atoms in that brick, we could figure out its total mass. But remember, those particles are small so counting all of the particles would be too hard. So, engineers developed balances that could be used to compare the mass between objects. These balances use known masses of grams or kilograms on one side of the balance and the brick on the other. When the balance is level, you know the mass of the brick. Try balancing a brick today!

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