

**Safety:** Wear safety goggles and be sure to follow all safety instructions given by your teacher. Wash your hands after completing the activity.

### DEMONSTRATION

1. In a demonstration, you observed an ice cube in a cup of water on a scale.
  - a. Does the mass change or stay the same as the ice cube melts?
  - b. Why do you think this happens?
  
2. If you weighed a stick of butter and then let it melt, do you think it would weigh more, less, or the same afterwards? Why?



### ACTIVITY

#### Question to investigate:

Will the combined mass of a cup containing sugar and water be the same after the sugar dissolves in the water?

#### Materials:

- 1 Clear plastic cup
- Water
- 1 Teaspoon of sugar

#### Procedure

1. Add water to the cup until it is about 1/4-full.
2. Add 1 teaspoon of sugar to the water.
3. Weigh the cup with the water and sugar and record the mass.  
**Mass of water + sugar (not dissolved) \_\_\_\_\_ grams**
4. **Carefully** swirl the cup to make the sugar dissolve.
5. When the sugar is dissolved, place the cup back on the scale to measure the mass.  
**Mass of water + sugar (dissolved) \_\_\_\_\_ grams**



## WHAT DID YOU OBSERVE?

- When you dissolved sugar in water, did the total mass of the water and sugar stay the same, or did it change?
- Why do you think you got the result that you did?
- If you dissolved salt in water, do you think the total mass of the water and salt would change? Why or why not?

## DEMONSTRATION

Mass of sodium carbonate solution and cup \_\_\_\_\_ grams

Mass magnesium sulfate solution and cup \_\_\_\_\_ grams

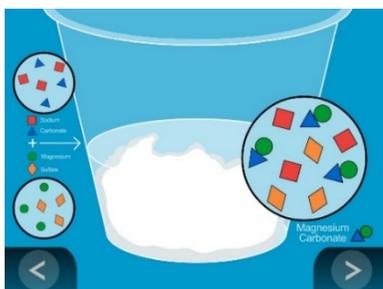
Mass of combined solutions and 2 cups \_\_\_\_\_ grams

- Why do you think the total mass of the substances stayed the same from before the reaction to after the reaction?



## EXPLAIN IT WITH ATOMS & MOLECULES

- In the animation showing what happened in the chemical reaction, how did it explain why the mass of the products was the same as the mass of the reactants?



## TAKE IT FURTHER

- When water freezes to form ice, it expands to take up more room in the container. Why does the ice have the same mass as the liquid water did before it was frozen?