

5<sup>th</sup> Grade - Lesson 4.1  
Activity Sheet  
Conservation of Mass

Name: \_\_\_\_\_

Date: \_\_\_\_\_

**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?

The mass stays the same as the ice melts.

b. Why do you think this happens?

The mass stays the same because the water molecules that were in the ice are just changing from a solid to a liquid. It is still the same number of water molecules so the mass should stay the same.

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?

If you let butter melt, it should weigh the same as when it was solid. No butter is gained or lost, it just changed from a solid to a liquid.



### 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.
4. **Carefully** swirl the cup to help the sugar dissolve.
5. When the sugar is dissolved, place the cup back on the scale to measure the mass.



## WHAT DID YOU OBSERVE?

3. When you dissolved sugar in water, did the total mass of the water and sugar stay the same, or did it change?

When we dissolved sugar in water, the mass stayed the same.

4. Why do you think you got the result that you did?

The mass stayed the same because even though the sugar dissolved, there was still the same number of sugar molecules and water molecules as before.

5. If you dissolved salt in water, do you think the total mass of the water and salt would change? Why or why not?

If you dissolve salt in water, the mass would stay the same. This is because there is still the same amount of water and salt, but the salt has just been broken down and dissolved, but it's still there.

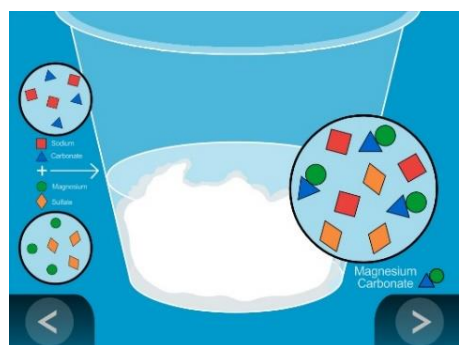
## DEMONSTRATION

6. You saw a chemical reaction between two liquids that combined to form a solid. Why do you think the total mass of the substances stayed the same from before the reaction to after the reaction?

In the reaction, the mass stayed the same because the reactants combined and reacted to form the precipitate but everything that was there before was still there but in a different form.



## EXPLAIN IT WITH ATOMS & MOLECULES



7. 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?

It shows that all the magnesium and sulfate ions and all the sodium and carbonate ions are still there after the reaction but they are just arranged and attached to one another differently.

## TAKE IT FURTHER

8. 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?

Water weighs the same before and after it freezes because there are still the same number of water molecules. It has changed from a liquid to a solid but the number of water molecules does not change so the mass stays the same.