

Finding the Missing Mass

Can the Law of Conservation of Mass be applied to a chemical reaction in which a gas is produced?

Watch the demonstration carefully. The test tube contains 10 mL of hydrochloric acid. The beaker contains one scoop of sodium bicarbonate.

1. Make a table to record your observations of masses during the investigation. Include a column in your table for your qualitative observations.
2. Write a hypothesis about how the mass of the products will compare to the mass of the reactants.
3. As the demonstration proceeds, complete your data table.
4. Calculate the difference in mass between the reactants and the products and record it in your table.
5. Did a chemical reaction occur in the beaker? Justify your answer.
6. What might account for any difference in mass you observed?
7. Write a word equation to represent the chemical reaction.

8. Which of these products remained in the beaker? Justify your answer.

(P, D) 9. This demonstration seems to violate the Law of Conservation of Mass. How would you modify the procedure so that the demonstration could be used to prove the law?

(D) 10. A grade nine student is working on her science assignment and needs your help. The teacher showed a video in which some magnesium was burned. The mass of the magnesium was 3.0 g and the mass of the ash remaining after it burned was 5.0 g. The poor little niner is completely lost and needs help with the questions on the assignment.

- a) The reaction has two reactants and one product. Write a word equation for the reaction.
- b) How do you explain the apparent gain in mass?