INTRODUCTION

1. If you want to compare the amount of gas produced from baking soda and baking powder when vinegar is added to them, should you use the same amount of baking soda and baking powder in your test? Explain.

2. In the test described above, should you use the same amount of vinegar? Explain.

ACTIVITY

Question to investigate:
Will baking powder or baking soda produce more gas when vinegar is added?

Materials
- Vinegar in cup
- 2 small clear plastic cups labeled vinegar
- Baking soda in cup
- 1 small empty plastic cup labeled Baking soda
- Baking powder in cup
- 1 small empty plastic cup labeled Baking powder
- Detergent solution in cup
- Graduated cylinder or teaspoon
- Measuring spoon, ⅛-teaspoon size
- Dropper
- Teaspoon
- ⅛ Teaspoon

Safety: Wear safety goggles and be sure to follow all safety instructions given by your teacher. Wash your hands after completing the activity.
Procedure
1. Add 2 teaspoons-full (about 10 mL) of vinegar into each of the two small cups labeled “Vinegar.”
2. Use a dropper to add 1 drop of detergent solution to the vinegar in each cup. Gently swirl to mix.
3. Measure ½ teaspoon of baking soda and place it in the cup labeled “Baking Soda.”
4. Measure ¼ teaspoon of baking powder and place it in the cup labeled “Baking Powder.”
5. At the same time, pour the vinegar into the cup containing baking soda and the cup containing baking powder.
6. Compare how the two white powders react with vinegar.

3. What did you observe when you added vinegar to the two cups containing baking soda and baking powder?

4. Do your results from this experiment make you think that baking soda and baking powder are chemically the same or different? Explain.

EXPLAIN IT WITH ATOMS & MOLECULES
5. You saw an animation showing that baking powder is actually made up of baking soda and two other ingredients. How does this help explain why baking powder doesn’t produce as much gas as baking soda when vinegar is added?
**TAKE IT FURTHER**
Your teacher did a demonstration or showed a video about using the same amount of vinegar in two bottles. Attached to each bottle was a balloon containing either baking soda or baking powder. The amount of powder was the same in each balloon.

6. Was it important that the balloons were the same type and size? Why?

7. Did the results of the demonstration agree with what you observed in your first experiment using baking soda and baking powder with vinegar? Explain.