Lesson: Baking Soda and Vinegar Reaction	Name:
Teacher:	Date:

Baking Soda and Vinegar Explosion – Middle School Science Worksheet

When baking soda (a base) and vinegar (an acid) are combined, they react to create a fizzy explosion! This experiment is a great example of a chemical reaction, where new substances are formed and energy is released. The fizzing and bubbling you see is a gas being produced. Scientists use this experiment to help explain how acids and bases interact, and why chemical changes are different from physical changes.

Fill in the Blank: Fill in the blank with the correct words.

1. When baking soda and vinegar are mixed together, they create _____ and bubbles.
2. The gas produced in this experiment is called _____.
3. Vinegar is an _____, and baking soda is a _____.
4. The bubbling and fizzing are signs that a _____ reaction is taking place.
5. Adding food coloring to the mixture will make the reaction look _____, but will not change the result.

Word Bank:

- chemical - base - carbon dioxide - acid - different

Multiple Choice Questions: Choose the correct answer from the choices for each question.

1. What type of reaction happens between baking soda and vinegar?
   - a) Freezing
   - b) Acid-base chemical reaction
   - c) Melting
   - d) Dissolving
2. Which gas is created when the two substances react?
   - a) Oxygen
   - b) Hydrogen
   - c) Carbon dioxide
   - d) Nitrogen

3. What is one sign of a chemical reaction in this experiment?
    - a) The mixture becomes colder
    - b) The mixture turns into a solid
    - c) Bubbles and fizz appear
    - d) The color changes to blue
4. What would make the reaction happen faster?
    - a) Using less vinegar
    - b) Using more baking soda or vinegar
    - c) Keeping the mixture cold
    - d) Doing nothing
5. Why is it important to do this experiment in a well-ventilated area?
    - a) So the bubbles don't escape
    - b) To avoid breathing in strong smells
    - c) To make the reaction go slower
    - d) So the mixture does not freeze

Open-Ended Questions: Answer the following questions in complete sentences.

1. Describe what you saw when vinegar was poured onto baking soda.

2. Why do you think bubbles form during the experiment?

3. Give one real-life example where a gas is made in a chemical reaction.

ANSWER KEY

Fill in the Blank:

1. new substances
2. carbon dioxide
3. acid, base
4. chemical
5. different

Word Bank:

chemical, base, carbon dioxide, acid, different

Multiple Choice Questions:

1. b) Acid-base chemical reaction
2. c) Carbon dioxide
3. c) Bubbles and fizz appear
4. b) Using more baking soda or vinegar
5. b) To avoid breathing in strong smells

Open-Ended Questions (sample responses):

1. When vinegar was poured onto baking soda, I saw lots of fizzing and bubbling. The mixture foamed up quickly and sometimes overflowed.
2. Bubbles form because a chemical reaction between the baking soda and vinegar creates carbon dioxide gas, which escapes as bubbles.
3. One real-life example is baking bread, where yeast makes carbon dioxide gas to help the bread rise.

Reminder for Teachers: Please review all answer key responses for accuracy and adjust as needed to match your teaching goals.