Bubble Clues

Use test results to predict what happens when materials mix.

P.7.5D.1 "Analyze evidence from scientific investigations to predict likely outcomes of chemical reactions."

NAME _____ DATE _____

1 READ AND MARK

Read it twice

YOUR JOB Underline observations of bubbling or balloon movement. Circle the materials in each test so you can connect the evidence to new pairs of materials.

Which Mixtures Make Gas?

1. At a museum workshop, students tested which pairs of materials make bubbles. They put equal spoonfuls of powdered chalk in two clear cups. One cup received vinegar; the other received water. The vinegar and chalk made steady bubbles, while the water and chalk showed no bubbles. A third cup held clean sand and vinegar; it showed no bubbles. Each cup was observed for one minute. The students kept the amounts of solid and liquid the same so they could compare the results fairly.

2. The group then tested a piece of eggshell in vinegar. Tiny bubbles collected on the shell, and the shell slowly became thinner. Chalk and eggshell both contain calcium carbonate, while sand is mostly a different mineral. In a separate test, lemon juice made chalk bubble, but plain water did not. Lemon juice and vinegar are both acids. The group did not decide that every pair of materials will react. Instead, they used the pattern across these tests to think about which new pairs might produce gas.

3. To collect more evidence, students put chalk and vinegar in a bottle and stretched a balloon over its opening. As bubbles formed in the liquid, the balloon expanded. With only vinegar in the bottle, the balloon stayed flat. The expanding balloon showed that gas left the liquid and took up space. These tests provide visible evidence of a reaction, but a prediction is not a guarantee. A different acid strength, amount of solid, or length of time could change how noticeable the results are.

2 ANSWER WITH EVIDENCE

Use the passage

1. What is likely to happen if an eggshell is placed in lemon juice? Support your prediction with two test results.

2. Would you expect clean sand in lemon juice to bubble as much as chalk in lemon juice? Use the tests to explain.

3. What will likely happen to a balloon placed over a bottle containing chalk and lemon juice? Cite evidence from two tests.

4. If an eggshell is placed in water, will bubbles likely appear within one minute? Support your prediction with two test results.

3 YOUR TURN

Your own words

A marble chip contains calcium carbonate. In 3 to 4 sentences, plan a fair test with a marble chip, vinegar, and a comparison cup. Predict what you would see in both cups, and support your prediction with two results from the passage.

ANSWER KEY

Bubble Clues

GRADE 7 · P.7.5D.1

PART 1 · READ AND MARK

Underline observations of bubbling or balloon movement. Circle the materials in each test so you can connect the evidence to new pairs of materials. Accept any marking that follows this job and points at the right text.

PART 2 · ANSWERS

#	QUESTION	ANSWER
1	What is likely to happen if an eggshell is placed in lemon juice? Support your prediction with two test results.	**Bubbles will likely form. Eggshell bubbled in vinegar, and chalk bubbled in lemon juice. Both solids contain calcium carbonate, and both liquids are acids.**
2	Would you expect clean sand in lemon juice to bubble as much as chalk in lemon juice? Use the tests to explain.	**Probably not. Sand showed no bubbles in vinegar, another acid, while chalk bubbled in lemon juice.**
3	What will likely happen to a balloon placed over a bottle containing chalk and lemon juice? Cite evidence from two tests.	**The balloon will likely expand. Chalk bubbled in lemon juice, and a balloon expanded when chalk and vinegar made bubbles in a bottle.**
4	If an eggshell is placed in water, will bubbles likely appear within one minute? Support your prediction with two test results.	**Probably not. Chalk, which also contains calcium carbonate, did not bubble in water. Eggshell bubbled in vinegar, an acid.**

PART 3 · YOUR TURN (SAMPLE ANSWER)

I would put equal-sized marble chips in two cups, then add equal amounts of vinegar to one and water to the other. I predict bubbles in the vinegar cup and few or no bubbles in the water cup. Chalk and eggshell both contain calcium carbonate and bubbled in vinegar. Chalk did not bubble in water, which supports my comparison prediction.

Accept predictions that match the pattern of evidence, even if students note that results may vary. In Part 3, the comparison cup should change the liquid while keeping the solid amount and liquid amount the same.