When Fizzing Fades

Use test results to track an acid-base reaction

P.7.5D.3 "Collect, organize, and interpret data using various tools (e.g., litmus paper, pH paper, cabbage juice) regarding neutralization of acids and bases using common substances."

NAME _____ DATE _____

1 READ AND MARK

Read it twice

YOUR JOB Underline what each testing tool tells you about a mixture, then number the table rows from most acidic to most basic using the results.

Maya's Mixed-Up Test Notes

1. At the school science fair, Maya tests how baking soda solution changes vinegar. She puts the same amount of vinegar into four cups, then adds a different number of spoonfuls of baking soda solution to each cup. She stirs and waits for the fizzing to slow before testing a drop from each mixture.

2. Three tools compare the mixtures. pH paper gives a number: readings below 7 are acidic, 7 is neutral, and readings above 7 are basic. Red cabbage juice looks pink in acids, purple near neutral, and blue in mild bases. Blue litmus paper turns red in an acid but stays blue in neutral or basic mixtures.

MAYA'S TEST RESULTS

Spoonfuls added	pH paper	Cabbage juice	Blue litmus
3	8	Blue	Stays blue
0	3	Pink	Turns red
2	7	Purple	Stays blue
1	5	Pink-purple	Turns red

3. Maya's notes were mixed up on the way to her desk. When an acid reacts with a base, a mixture may move toward neutral, but extra base can make it basic. Sorting tests by amount added shows the change. One litmus color can fit more than one type of mixture, so she checks another tool.

2 ANSWER WITH EVIDENCE

Use the passage

1. Which mixture is neutral? Give its amount of baking soda solution and two test results that support your choice.

2. Which acidic mixture is closer to neutral? Use the pH readings to explain.

3. Compare the mixtures with 0 and 3 spoonfuls. What do their pH and blue litmus results show?

4. Which two mixtures have the same blue litmus result but are not both neutral? Explain how another tool separates them.

3 YOUR TURN

Your own words

Plan a new test using equal cups of diluted lemon juice and different amounts of baking soda solution. In three or four sentences, name at least three amounts you would test, two tools you would use, what you would record, and how you would recognize a neutral mixture.

ANSWER KEY

When Fizzing Fades

GRADE 7 · P.7.5D.3

PART 1 · READ AND MARK

Underline what each testing tool tells you about a mixture, then number the table rows from most acidic to most basic using the results. Accept any marking that follows this job and points at the right text.

PART 2 · ANSWERS

#	QUESTION	ANSWER
1	Which mixture is neutral? Give its amount of baking soda solution and two test results that support your choice.	**The mixture with 2 spoonfuls is neutral. Its pH is 7, and the cabbage juice is purple.**
2	Which acidic mixture is closer to neutral? Use the pH readings to explain.	**The mixture with 1 spoonful is closer to neutral. Its pH of 5 is closer to 7 than the 0-spoonful mixture's pH of 3.**
3	Compare the mixtures with 0 and 3 spoonfuls. What do their pH and blue litmus results show?	**The 0-spoonful mixture is acidic: its pH is 3, and blue litmus turns red. The 3-spoonful mixture is basic: its pH is 8, and blue litmus stays blue.**
4	Which two mixtures have the same blue litmus result but are not both neutral? Explain how another tool separates them.	**The 2- and 3-spoonful mixtures both leave blue litmus blue. pH paper shows that the first is neutral at 7 and the second is basic at 8.**

PART 3 · YOUR TURN (SAMPLE ANSWER)

I would add zero, one, two, or three spoonfuls of baking soda solution to equal cups of diluted lemon juice. I would test each cup with pH paper and cabbage juice. I would record the amount added, the pH reading, and the cabbage juice color in a table. A pH near 7 and purple cabbage juice would point to a neutral mixture.

Accept pH 7 as the clearest neutral result; cabbage juice color provides supporting evidence. In the open task, accept other sets of at least three amounts and any two suitable tools, provided the student explains how the results would be recorded and used.