Chocolate Heat Test

Plan a fair test and use changes you can feel as evidence.

P.3.5.3 "Plan and conduct investigations that particles speed up or slow down with addition or removal of heat."

NAME _____ DATE _____

1 READ AND MARK

Read it twice

YOUR JOB Underline what Maya keeps the same, circle what she checks or notices, and write 1 beside the warm-water test and 2 beside the move to icy water.

What Happens to the Chocolate?

1. Maya wants to test how heat changes a chocolate square. She gets two small, sealed bags. Each bag holds the same kind and size of chocolate square. She plans to place one bag in warm water and the other in cool water. The bags keep the chocolate dry. Changing only the water temperature helps her compare what happens to the squares.

2. Maya predicts that the warm-water square will soften first. She places the bags in the two bowls and checks them every two minutes. She gently presses each square through its bag. After six minutes, the warm-water square feels soft, but the cool-water square still feels firm. Then she moves the soft square, still in its bag, into icy water and checks it later.

3. Chocolate is made of tiny particles that are too small to see. When chocolate gains heat from warm water, its particles move faster, and it can soften. When it loses heat to icy water, its particles slow down, and it can firm up again. Maya feels the chocolate change, but she cannot feel one particle moving. Her observations give her clues about changes in particle speed.

2 ANSWER WITH EVIDENCE

Use the passage

1. What does Maya keep the same about the chocolate in the two bags? Why?

2. What does Maya check every two minutes? What does she find after six minutes?

3. When Maya moves the soft square to icy water, what may happen to its particles and to the chocolate?

4. Why does Maya use the chocolate's firmness as a clue instead of watching its particles?

3 YOUR TURN

Your own words

Plan a different test with two equal ice cubes, one cup of warm water, and one cup of cool water. In four sentences, tell what you will keep the same, how you will check the cubes, and what you predict about ice particles gaining heat and warm water particles losing heat.

ANSWER KEY

Chocolate Heat Test

PART 1 · READ AND MARK

Underline what Maya keeps the same, circle what she checks or notices, and write 1 beside the warm-water test and 2 beside the move to icy water. Accept any marking that follows this job and points at the right text.

PART 2 · ANSWERS

#	QUESTION	ANSWER
1	What does Maya keep the same about the chocolate in the two bags? Why?	**She uses the same kind and size of chocolate square so she can compare what happens when the water temperature changes.**
2	What does Maya check every two minutes? What does she find after six minutes?	**She presses the squares to check how firm they feel. After six minutes, the warm-water square feels soft, while the cool-water square feels firm.**
3	When Maya moves the soft square to icy water, what may happen to its particles and to the chocolate?	**The chocolate may lose heat, so its particles slow down and the chocolate may firm up.**
4	Why does Maya use the chocolate's firmness as a clue instead of watching its particles?	**The particles are too small to see. A change in firmness gives her a clue about a change in their speed.**

PART 3 · YOUR TURN (SAMPLE ANSWER)

I will use equal cups with the same amount of water and put one equal ice cube in each cup. I will check both cubes every minute to see which melts first. I predict the ice in warm water will melt first because its particles gain heat and move faster. The warm water loses heat to the ice, so its particles slow down.

Accept plans that compare equal ice cubes in equal amounts of water and check for a change over time. The response should predict that ice particles speed up as the ice gains heat and that warm water particles slow down as the water loses heat.