Where Did It Go?

Use measurements to investigate what happens when ice melts.

5.3 "Conduct investigations to provide evidence that the total weight of matter is conserved during phase changes when substances are heated, cooled, or mixed."

NAME _____ DATE _____

1 READ AND MARK

Read it twice

YOUR JOB Underline each change of state described in the passage, and circle the two numbers that show what happened to the closed jar's weight.

Nia's Melting Ice Test

1 At the school science fair, Nia wonders whether melting ice makes matter disappear. She puts ice and warm water in a jar, closes the lid tightly, and weighs the whole jar. She leaves it on a sunny shelf until the ice melts. The lid stays closed, so water and water vapor cannot leave.

2 Nia also tests an open cup with ice and warm water. She weighs each container and its contents before and after the ice melts. Both containers sit on the same shelf for several hours. The table shows what her scale reads. She does not pour out any water or add anything after the first weighing.

WEIGHTS BEFORE AND AFTER MELTING

Container	Weight before (g)	Weight after (g)
Closed jar	214	214
Open cup	120	117

3 In the closed jar, the ice becomes liquid water, but the weight of the jar and everything inside stays the same. The open cup weighs less afterward because some water turns into vapor and escapes into the air. To test whether matter is conserved, Nia must count that vapor along with the cup and the water left in it.

2 ANSWER WITH EVIDENCE

Use the passage

1. How did the closed jar's weight change after the ice melted? What does this show?

2. How many grams less did the open cup weigh afterward? What left the cup?

3. Does the open cup's lower weight show that matter disappeared? Explain using the passage.

4. How did the closed lid help Nia test whether the total weight was conserved?

3 YOUR TURN

Your own words

Design a different test in which water changes state by heating or cooling. In three or four sentences, describe what you would weigh before and after, give possible weights, and explain how the results would show whether the total weight was conserved.

Where Did It Go?

PART 1 · READ AND MARK

Underline each change of state described in the passage, and circle the two numbers that show what happened to the closed jar's weight. Accept any marking that follows this job and points at the right text.

PART 2 · ANSWERS

#	QUESTION	ANSWER
1	How did the closed jar's weight change after the ice melted? What does this show?	**It stayed at 214 g. The total weight of the closed jar and its contents was conserved.**
2	How many grams less did the open cup weigh afterward? What left the cup?	**It weighed 3 g less. Some water left as vapor.**
3	Does the open cup's lower weight show that matter disappeared? Explain using the passage.	**No. Some water became vapor and escaped into the air, so it was no longer on the scale.**
4	How did the closed lid help Nia test whether the total weight was conserved?	**The lid kept water and water vapor from leaving, so Nia could weigh all the matter before and after the ice melted.**

PART 3 · YOUR TURN (SAMPLE ANSWER)

I would seal liquid water in a flexible bag and weigh the bag and water: 112 g. After the water freezes, I would weigh the sealed bag again and predict 112 g. Equal weights would show that freezing changed the water's state without changing the total weight.

Accept any workable heating or cooling test that weighs an entire closed container before and after a state change. The proposed results should use equal total weights as evidence that matter was conserved.