Ice Cube Clues

Read how a fair test reveals changes in matter.

P.3.5.1 "Plan and conduct scientific investigations to determine how changes in heat (i.e., an increase or decrease) change matter from one state to another (e.g., melting, freezing, condensing, boiling, or evaporating)."

NAME _____ DATE _____

1 READ AND MARK

Read it twice

YOUR JOB Underline what Maya kept the same in each test, circle what she changed, and number the results that show a change of state. Your marks will help you see how her tests connect heat to melting and freezing.

Maya's Ice Tests

1. Maya wanted to find out how added heat changes ice. She placed two ice cubes of the same size in two clear cups. She poured the same amount of water into each cup. One cup held warm water, and the other held cool water. Maya planned to check both cups after five minutes. She would look for ice and write down what she saw.

2. After five minutes, Maya found no ice in the warm cup. Some ice was still floating in the cool cup. Both cubes had started as solids. In the water, the cubes gained heat and melted into liquid water. The warm water gave heat to its cube faster, so that cube melted first. Maya kept the cube sizes, water amounts, and wait time the same to make a fair test.

3. Next, Maya tested what happens when liquid water loses heat. She poured the same amount of liquid water into two small cups. She put one cup in a freezer and left the other on a table. After several hours, the freezer cup held solid ice, but the table cup still held liquid water. Water in the freezer lost enough heat to freeze. Maya wrote down both results.

2 ANSWER WITH EVIDENCE

Use the passage

1. Why did Maya use ice cubes of the same size and the same amount of water in her first test?

2. What did Maya see after five minutes that showed the warm cup's ice had melted?

3. How did the freezer change the liquid water, and what change in heat caused it?

4. How did the results in the warm and cool cups differ? What does that tell you about melting?

3 YOUR TURN

Your own words

Plan a test to find out whether water evaporates faster in sunlight or shade using two plates. Tell what you will change, what you will keep the same, when you will check, and what result would show evaporation.

Ice Cube Clues

PART 1 · READ AND MARK

Underline what Maya kept the same in each test, circle what she changed, and number the results that show a change of state. Your marks will help you see how her tests connect heat to melting and freezing. Accept any marking that follows this job and points at the right text.

PART 2 · ANSWERS

#	QUESTION	ANSWER
1	Why did Maya use ice cubes of the same size and the same amount of water in her first test?	**Keeping those things the same helped Maya test how warm and cool water affected melting.**
2	What did Maya see after five minutes that showed the warm cup's ice had melted?	**She saw no ice in the warm cup.**
3	How did the freezer change the liquid water, and what change in heat caused it?	**The liquid water became solid ice because it lost enough heat to freeze.**
4	How did the results in the warm and cool cups differ? What does that tell you about melting?	**No ice remained in the warm cup, but some remained in the cool cup. The ice melted faster in warm water.**

PART 3 · YOUR TURN (SAMPLE ANSWER)

I will put the same amount of water in two matching plates. I will place one plate in sunlight and one nearby in shade, then check them after one hour. I will keep the plates where they cannot be spilled. If less water remains in the sunny plate, that shows more of its liquid water evaporated into the air.

For the marking job, accept marks on equal cube sizes and water amounts, the warm and cool water, the freezer and table locations, and the melting and freezing results. For the open task, accept a different check time if the plan keeps the plates and starting water amounts the same and compares how much liquid remains.