

Ice Wrap Investigation

Plan a fair test, collect evidence, and use results.

3.1 "Scientific and engineering practices. The student asks questions, identifies problems, and plans and safely conducts classroom, laboratory, and field investigations to answer questions, explain phenomena..."

NAME _____ DATE _____

1 READ AND MARK _____ Read it twice

YOUR JOB Underline the investigation question. Circle each safety action, and put a box around each tool used to collect evidence.

Which Wrap Helps Ice?

- ① Ms. Lee's class noticed that an ice cube on a tray became smaller during a lesson. They asked, "Which wrapping leaves the tallest remaining ice cube after 10 minutes?" To make a fair test, they chose three same-size ice cubes. One cube had no wrapping, one was wrapped in cotton, and one was wrapped in aluminum foil.
- ② Each group put its cubes on separate labeled trays in the same classroom spot. Students wore safety goggles, kept the floor dry, and did not taste ice or materials. They started a timing device. After 10 minutes, they used a metric ruler to measure the height of each cube. Their notebook table shows the measurements.

ICE CUBE HEIGHTS

Wrapping	Start Height (cm)	Height After 10 Minutes (cm)
No wrapping	2.0	0.6
Cotton	2.0	1.5
Aluminum foil	2.0	1.0

- ③ Before stating a claim, groups repeated the test with new cubes. A repeat helps students see whether their evidence is similar again. Next, the class built a simple model from paper and tape. The model showed an ice cube inside a wrapping, with arrows showing heat moving toward the cube. Models help explain an investigation, but measurements are evidence.

2

ANSWER WITH EVIDENCE

Use the passage

1

What question did the class investigate?

2

Name two choices that helped make the test fair.

3

Name one safety action the students used during the test.

4

Which wrapping left the greatest measured ice height after 10 minutes? Use a measurement from the table.

3

YOUR TURN

Your own words

Plan a fair test for this question: Which type of paper towel holds the most water? Complete the table for three types. Keep the sheet size, water amount, and dip time the same. Use a graduated cylinder for water and a digital scale to compare mass before and after dipping each sheet, then write one safety step.

PAPER TOWEL TYPE	SAME FOR EVERY TEST	TOOLS AND MEASUREMENT	SAFETY STEP

PART 1 • READ AND MARK

Underline the investigation question. Circle each safety action, and put a box around each tool used to collect evidence. Accept any marking that follows this job and points at the right text.

PART 2 • ANSWERS

#	QUESTION	ANSWER
1	What question did the class investigate?	Which wrapping leaves the tallest remaining ice cube after 10 minutes?
2	Name two choices that helped make the test fair.	They used same-size ice cubes and kept the cubes in the same classroom spot.
3	Name one safety action the students used during the test.	Answers include wore safety goggles, kept the floor dry, or did not taste the ice or materials.
4	Which wrapping left the greatest measured ice height after 10 minutes? Use a measurement from the table.	Cotton. Its ice cube was 1.5 cm tall after 10 minutes, taller than the foil cube at 1.0 cm and the unwrapped cube at 0.6 cm.

PART 3 • YOUR TURN (SAMPLE ANSWER)

PAPER TOWEL TYPE	SAME FOR EVERY TEST	TOOLS AND MEASUREMENT	SAFETY STEP
Single-ply towel	10 cm by 10 cm sheet, 20 mL water, 5-second dip	Graduated cylinder for 20 mL; digital scale to find wet mass minus dry mass in g	Wear goggles and wipe spills right away.
Two-ply towel	10 cm by 10 cm sheet, 20 mL water, 5-second dip	Graduated cylinder for 20 mL; digital scale to find wet mass minus dry mass in g	Wear goggles and wipe spills right away.
Recycled towel	10 cm by 10 cm sheet, 20 mL water, 5-second dip	Graduated cylinder for 20 mL; digital scale to find wet mass minus dry mass in g	Wear goggles and wipe spills right away.

Accept equivalent fair-test choices and safety actions stated in the passage. For the open task, accept any reasonable paper towel types, controlled variables, appropriate measurements, and safe handling of water and materials. Height after ten minutes does not measure the time until complete melting; do not infer which cube lasted longest.