# Cooler or Not?

Check whether cooling claims match the evidence behind them.

**HS-ETS1-5** "Evaluate the validity and reliability of claims in a variety of materials."

NAME _____ DATE _____

## 1 READ AND MARK

Read it twice

**YOUR JOB** Circle claims about cooling, underline reported measurements, and number at least three details that limit how well the measurements support the claims.

### A Cooler Place to Wait?

1. During a heat wave, a school district considers a pale coating for bus-shelter roofs. A supplier's brochure claims the coating will make waiting areas 8°C cooler. In small print, the brochure says it measured roof surfaces, not the air where students stand. It reports one reading from each of two shelters on a sunny afternoon, without saying how the shelters were chosen. Roof temperature matters because a hot roof can transfer heat, but a cooler roof does not by itself prove a specific drop in air temperature. The brochure offers no repeated measurements or access to its raw readings.

2. A district engineer's memo describes a two-week trial at four shelters, two coated and two left unchanged. Sensors at standing height recorded air temperature every hour during school dismissal. The memo reports that coated shelters averaged 1°C cooler than uncoated shelters on sunny days, but it does not report uncertainty or explain whether the shelters had similar shade and traffic. A local news article calls the trial proof that the coating works everywhere. It quotes the 1°C average but omits the small number of shelters and the missing information about shade. Neither source reports results during cloudy weather.

3. An online post from a parent says a coated shelter felt cooler on one afternoon. The parent gives the date and shelter location but no temperature readings or comparison with an uncoated shelter. District purchasing rules require evidence about air temperature where riders wait, across the range of shelters the district uses. Shelters vary in tree shade, nearby pavement, and bus traffic. The supplier has offered to share its raw roof readings. The engineer has saved hourly sensor files and a list of shelter locations, but no independent team has repeated the trial. The district must decide what the current evidence supports before signing a contract.

## 2 ANSWER WITH EVIDENCE

Use the passage

1. Does the brochure's measurement test its claim that waiting areas will be 8°C cooler? Explain using what was measured.

2. Which provides more dependable evidence of an air-temperature difference, the engineer's memo or the parent's post? Give one strength and one limit of the stronger source.

3. Is the news article's claim that the coating works everywhere supported by the trial? Use two details from the passage.

4. If the supplier shares its raw readings, what two details would you check to judge how dependable its result is?

## 3 YOUR TURN

Your own words

A cafeteria supplier claims reusable trays use less water per meal than disposable trays. Write one paragraph naming two types of materials you would consult, one check that the evidence tests the claim, one check that the results are dependable, and a finding that would make you withhold judgment.

# Cooler or Not?



## PART 1 · READ AND MARK

Circle claims about cooling, underline reported measurements, and number at least three details that limit how well the measurements support the claims. Accept any marking that follows this job and points at the right text.

## PART 2 · ANSWERS

| # | QUESTION | ANSWER |
|---|---|---|
| 1 | Does the brochure's measurement test its claim that waiting areas will be 8°C cooler? Explain using what was measured. | **No. It measured roof surfaces, while the claim concerns the air where students wait. A roof-temperature reading cannot establish an 8°C drop in air temperature.** |
| 2 | Which provides more dependable evidence of an air-temperature difference, the engineer's memo or the parent's post? Give one strength and one limit of the stronger source. | **The memo is stronger because sensors measured air temperature hourly for two weeks at coated and uncoated shelters. Its limit is that it includes only four shelters, with no explanation of whether their shade and traffic were similar.** |
| 3 | Is the news article's claim that the coating works everywhere supported by the trial? Use two details from the passage. | **No. The trial included only four shelters, and the memo does not establish whether they had similar shade and traffic. Results from those shelters cannot establish an effect everywhere.** |
| 4 | If the supplier shares its raw readings, what two details would you check to judge how dependable its result is? | **Check how the two shelters were chosen and whether readings were repeated. The brochure reports neither a selection method nor repeated measurements.** |

## PART 3 · YOUR TURN (SAMPLE ANSWER)

I would compare the supplier's water-use report with an independent study of tray production and use. I would check whether both count water used to make the trays and water used to wash reusable trays, then calculate water use per meal. To judge dependability, I would look for repeated measurements at several cafeterias and methods another team could follow. If one source leaves out tray production or the results differ sharply across cafeterias, I would withhold judgment.

Accept other answers that distinguish a measured result from the claim it is used to support. For Your Turn, look for separate checks of whether the evidence measures water use per meal and whether the result is dependable across repeated tests.