

Integrative record A · Explain and limit

This fresh task can elicit beginning evidence. It is not an equivalent form of record B. If previously shown, record exposure and use it for practice. No physical experiment is required.

Fresh matched 100 g covered water samples start at 38°C in 20°C surroundings. 12 min; all cups/lids/exposure/readout match. Covered liquid water; cups/lids, mass, starting temperature, duration, exposure and reading procedure match within and across trials. Surroundings stay at the stated room temperature. No ice, phase change, active heating/cooling, direct sunlight or meaningful evaporative cooling. Each trial uses fresh samples. Accuracy is not supplied.

PF-D-A0 · Supplied design record

Constructed teaching data: these values were invented for this activity, not collected in an experiment.

Paired trial	Sleeve H final °C	Sleeve J final °C
1	32	34
2	31	33
3	32	34

PF-A1. Read the headings, units and interval. Find the temperature fall for each design in each trial. Which sleeve better limits cooling in these records? Use at least two matched comparisons.

PF-A2. Identify warmer and cooler parts; explain the net transfer direction and connect the idea to the readings. What can this record not establish?

Keep A1 out of view until you have recorded your initial claim.

Integrative record A · New evidence

New record: only H tested in 25°C surroundings. 100 g starts at 38°C; 12 min; other stated procedures match initial record. Covered liquid water; cups/lids, mass, starting temperature, duration, exposure and reading procedure match within and across trials. Surroundings stay at the stated room temperature. No ice, phase change, active heating/cooling, direct sunlight or meaningful evaporative cooling. Each trial uses fresh samples. Accuracy is not supplied.

PF-D-A1 · Supplied design record

Constructed teaching data: these values were invented for this activity, not collected in an experiment.

Setup	Water g	Start °C	After 12 min °C
H only, 25°C room	100	38	35

PF-A3. Compare the new conditions with A0. Retain, narrow, change or withhold a conclusion as justified. Write the original bounded claim and a revised claim. Can the new record rank H and J at 25°C?

PF-A4. Propose a matched next comparison for a question you name. Which raw readings and conditions would you retain?

Use connected prose, an oral explanation pointing to data, or a labeled model. No fixed paragraph template is required.

Integrative record B · Design and evidence

A separate fresh later task, not a validated equivalent form or a score of improvement. Tokens are fictional resource units, not prices or energy. Keep B1 out of view until you record a proposal.

90 g, start 12°C, room 24°C, 15 min. Final ≤17°C in EVERY trial; ≤6 tokens; ≤18 mm added thickness. Covered liquid water; cups/lids, mass, starting temperature, duration, exposure and reading procedure match within and across trials. Surroundings stay at the stated room temperature. No ice, phase change, active heating/cooling, direct sunlight or meaningful evaporative cooling. Each trial uses fresh samples. Accuracy is not supplied.

PF-D-B0 · Supplied design record

Constructed teaching data: these values were invented for this activity, not collected in an experiment.

Design	Tokens	Added mm	Trial 1 final °C	Trial 2 final °C	Trial 3 final °C
R	4	15	16	16.5	16
S	6	18	15	15.5	15
T	5	16	15	17.5	15

PF-B1. Check every requirement and compare all trials. Which designs qualify? Choose one with a stated priority; explain the warming using a scientific idea.

PF-B2. Propose one modification and a matched repeated test. Specify a prediction, constraints, recording plan, and evidence that would challenge it.

Integrative record B · Revised design record

Fictional prototypes, not your proposal’s results: R-tight closes a gap with an extra token; S-thin uses a thinner wrap. These constructed values were not measured. Starts/room/mass/time/procedure match B0.

90 g, start 12°C, room 24°C, 15 min. Final ≤17°C in EVERY trial; ≤6 tokens; ≤18 mm added thickness. Covered liquid water; cups/lids, mass, starting temperature, duration, exposure and reading procedure match within and across trials. Surroundings stay at the stated room temperature. No ice, phase change, active heating/cooling, direct sunlight or meaningful evaporative cooling. Each trial uses fresh samples. Accuracy is not supplied.

PF-D-B1 · Supplied design record

Constructed teaching data: these values were invented for this activity, not collected in an experiment.

Design	Tokens	Added mm	Trial 1 final °C	Trial 2 final °C	Trial 3 final °C
R-tight	5	15	15.5	16	17.5
S-thin	6	16	15.5	16	16

PF-B3. Reassess each prototype using every requirement and the original record. Describe tradeoffs; revise the claim without erasing an inconvenient trial.

PF-B4. What remains uncertain? Name a useful next test and explain why this record cannot prove that your own proposal works or identify a unique transfer pathway.