

Bridge · Compare a claim with its support

Target: use new evidence to retain, narrow or change a particular claim—or remain uncertain. Prerequisites: read starts/°C/time/change, compare matched trials and identify conditions. Newest does not automatically mean most informative.

K5-D-P · Two fresh 100 g samples; 22°C surroundings; 10 min; same covered setup/procedure. Covered liquid water; no active heating/cooling, ice, phase change, direct sunlight or meaningful evaporative cooling. Room, cup, lid and supporting surfaces are at the stated surrounding temperature; it stays constant. Readings represent the sample temperature with a consistent procedure. This is a paper scenario, not apparatus instructions.

Two independent trials

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

Trial ID	Start (°C)	After 10 min (°C)
P-1	12	16
P-2	12	17

K5-P1. Find both changes. Which claim is supported: (a) these samples warmed in this 10-minute record, or (b) every sample always warms? Explain.

K5-P2. What conditions belong in a bounded claim? What would you compare before using a new result to revise it?

Retain = evidence remains consistent; narrow = limit scope; change = alter a conclusion; uncertain = withhold a confident conclusion. Decisions may combine, such as narrow and uncertain.

Model · Initial evidence

Work on this page first. Record a bounded claim before turning to the new-evidence page. Question: What does this record support about R's 20-minute performance? A nominal classroom criterion is final water at or below 15°C in each supplied trial; it is not storage advice or a guarantee.

K5-D-M0 · Fresh 100 g samples start 10°C in 22°C surroundings. Same sleeve versions, cups/lids, 20 min, exposure and procedure within/across trials. Covered liquid water; no active heating/cooling, ice, phase change, direct sunlight or meaningful evaporative cooling. Room, cup, lid and supporting surfaces are at the stated surrounding temperature; it stays constant. Readings represent the sample temperature with a consistent procedure. This is a paper scenario, not apparatus instructions.

Initial matched trials

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

Trial ID	Sleeve R final (°C)	Sleeve S final (°C)
M-1	14.0	16.0
M-2	14.5	16.5
M-3	14.0	16.0

K5-M1. Write a bounded claim about R and support it with readings. What limit matters?

Do not look ahead until you have recorded the claim. Keep this page for the revision.

Model · New evidence

Now compare this record with your original claim. Keep all raw readings.

K5-D-M1 ·R only: fresh 100 g,10°C start,20 min, same R version/cup/lid/exposure/procedure. All surroundings now 28°C. S was not tested. Covered liquid water; no active heating/cooling, ice, phase change, direct sunlight or meaningful evaporative cooling. Room, cup, lid and supporting surfaces are at the stated surrounding temperature; it stays constant. Readings represent the sample temperature with a consistent procedure. This is a paper scenario, not apparatus instructions.

Additional trials in changed surroundings

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

Trial ID	Sleeve R start (°C)	Sleeve R final (°C)
M-4	10	18.0
M-5	10	18.5
M-6	10	18.0

Fictional claim to evaluate: “R keeps water at or below 15°C in every room.”

K5-M2. What changed? Which earlier condition-specific statement can stay, and which broader claim needs revision? Can these new results rank R against S?

K5-M3. Use the next-page revision record. Explain why this is a scope change rather than proof that the first record was wrong.

Revision record · Model case

Use K5-D-M0/M1 and retain both pages. Record the actual claim being evaluated. Write, dictate while pointing to data, or use labeled notes. Each field is a prompt; decisions can combine.

K5-MR-1. Original claim

K5-MR-2. Original support

K5-MR-3. New evidence and conditions

K5-MR-4. Decision: retain / narrow / change / uncertain (more than one may apply)

K5-MR-5. Revised claim

K5-MR-6. Reasoning: why this decision fits all relevant records

K5-MR-7. Next useful evidence

Guided practice · Initial evidence

First record a bounded statement. Question: What pattern is supported about warming in these trials? Keep this page while revising.

K5-D-G0 · Fresh 100 g; 11°C start; 23°C surroundings; 18 min. Complete sleeves C/D; cups/lids/exposure/procedure match within/across trials. Covered liquid water; no active heating/cooling, ice, phase change, direct sunlight or meaningful evaporative cooling. Room, cup, lid and supporting surfaces are at the stated surrounding temperature; it stays constant. Readings represent the sample temperature with a consistent procedure. This is a paper scenario, not apparatus instructions.

First set of matched trials

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

Trial ID	Sleeve C final (°C)	Sleeve D final (°C)
G-1	16	18
G-2	17	19
G-3	16	18

K5-G1. State a bounded claim and evidence across these three trials. Include uncertainty rather than a future guarantee.

Stop here before reading new evidence.

Guided practice · Additional evidence

K5-D-G1 · Additional fresh 100 g;11°C start;23°C surroundings;18 min. Versions, cups/lids/exposure/procedure match G0. Covered liquid water; no active heating/cooling, ice, phase change, direct sunlight or meaningful evaporative cooling. Room, cup, lid and supporting surfaces are at the stated surrounding temperature; it stays constant. Readings represent the sample temperature with a consistent procedure. This is a paper scenario, not apparatus instructions.

Additional matched trials

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

Trial ID	Sleeve C final (°C)	Sleeve D final (°C)
G-4	16	18
G-5	16	18
G-6	17	19

K5-G2. Compare all six trials. Does a new record require reversing your claim? Retain, narrow, change or remain uncertain; justify the decision.

K5-G3. Give a revised or retained claim and a useful next comparison. What can these values still not establish?

Independent task · Initial record

This initial/new pair is also Use a Quick Check. It repeats I from Teach the Lesson; it is not fresh after I has been attempted. Goal: evaluate evidence about limiting cooling. Write a bounded initial statement, then turn the page.

K5-D-I0 ·Fresh 120 g water each trial;40.0°C start;22°C surroundings;15 min;covers P/Q.
Cups/lids/exposure/procedure match. Display to 0.1°C; accuracy not supplied. Covered liquid water; no active heating/cooling, ice, phase change, direct sunlight or meaningful evaporative cooling. Room, cup, lid and supporting surfaces are at the stated surrounding temperature; it stays constant. Readings represent the sample temperature with a consistent procedure. This is a paper scenario, not apparatus instructions.

Initial paired endpoints

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

Trial ID	Cover P final (°C)	Cover Q final (°C)
I-1	35.0	34.8
I-2	35.1	34.9

K5-I1. Compare changes and write an initial claim about these two trials. Explain how confident the record allows you to be.

Keep the original statement; do not erase it when new evidence arrives.

Independent task · New record

K5-D-I1 · Four additional fresh 120 g trials; 40.0°C start; 22°C surroundings; 15 min; versions/cups/lids/exposure/procedure match I0. Accuracy remains unknown. Covered liquid water; no active heating/cooling, ice, phase change, direct sunlight or meaningful evaporative cooling. Room, cup, lid and supporting surfaces are at the stated surrounding temperature; it stays constant. Readings represent the sample temperature with a consistent procedure. This is a paper scenario, not apparatus instructions.

New paired endpoints

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

Trial ID	Cover P final (°C)	Cover Q final (°C)
I-3	34.7	35.0
I-4	35.1	34.9
I-5	34.9	35.0
I-6	35.0	35.1

K5-I2. Using all six trials, decide whether to retain, narrow, change or remain uncertain. Give a revised claim and specific comparisons, including any contrary result.

K5-I3. What useful next evidence would address the uncertainty? Does overlap establish identical performance? Does the newest row alone decide?

Reteach · Initial claim and support

Before looking at new evidence, state what this record supports about limiting warming. Keep your statement visible.

K5-D-A0 · Fresh 90 g; 9°C start; 21°C surroundings; 16 min; matched complete sleeves J/K, cups/lids/exposure/procedure. Covered liquid water; no active heating/cooling, ice, phase change, direct sunlight or meaningful evaporative cooling. Room, cup, lid and supporting surfaces are at the stated surrounding temperature; it stays constant. Readings represent the sample temperature with a consistent procedure. This is a paper scenario, not apparatus instructions.

Initial comparisons

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

Trial ID	Sleeve J final (°C)	Sleeve K final (°C)
A-1	14	17
A-2	15	18

K5-A1. Write a bounded claim and the support for it. State a limit.

Stop before turning to the next record.

Reteach · Keep the evidence, change the claim

K5-D-A1 ·Six additional fresh 90 g trials;9°C start;21°C surroundings;16 min;same versions/cups/lids/exposure/procedure as A0. No exclusions recorded. Covered liquid water; no active heating/cooling, ice, phase change, direct sunlight or meaningful evaporative cooling. Room, cup, lid and supporting surfaces are at the stated surrounding temperature; it stays constant. Readings represent the sample temperature with a consistent procedure. This is a paper scenario, not apparatus instructions.

New comparable evidence

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

Trial ID	Sleeve J final (°C)	Sleeve K final (°C)
A-3	18	13
A-4	19	14
A-5	18	13
A-6	19	14
A-7	18	13
A-8	19	14

Fictional response 1: “Use only A-1/A-2; J is always better.” Fictional response 2: “A-8 is newest, so K must win.”

K5-A2. Evaluate both responses. Keep all eight results and revise your earlier claim. Explain why weight and relevance, not just recency, matter.

Fresh recheck · Initial record

This is a new sequence; complete the initial claim before looking ahead.

K5-D-Ac 0 ·Fresh 100 g;12°C start;24°C surroundings;14 min;matched U/V sleeves/cups/lids/procedure. Covered liquid water; no active heating/cooling, ice, phase change, direct sunlight or meaningful evaporative cooling. Room, cup, lid and supporting surfaces are at the stated surrounding temperature; it stays constant. Readings represent the sample temperature with a consistent procedure. This is a paper scenario, not apparatus instructions.

Initial recheck evidence

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

Trial ID	Sleeve U final (°C)	Sleeve V final (°C)
Ac-1	16	19
Ac-2	16	19

K5-A3. State a bounded claim and its support; mention what is not established.

Fresh recheck · Additional record

K5-D-Ac 1 · Additional fresh 100 g;12°C start;24°C surroundings;14 min;same versions/cups/lids/exposure/procedure as Ac 0. Covered liquid water; no active heating/cooling, ice, phase change, direct sunlight or meaningful evaporative cooling. Room, cup, lid and supporting surfaces are at the stated surrounding temperature; it stays constant. Readings represent the sample temperature with a consistent procedure. This is a paper scenario, not apparatus instructions.

Additional recheck evidence

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

Trial ID	Sleeve U final (°C)	Sleeve V final (°C)
Ac-3	17	20
Ac-4	16	19
Ac-5	17	20

K5-A4. Retain, narrow, change or remain uncertain? Explain using initial and new records. Revise only what the evidence warrants; name a useful next step.

Reteach · Initial conditions and claim

Write a bounded warming comparison, then turn to the new conditions. Keep both records.

K5-D-B0 · Fresh 100 g;10°C start;22°C surroundings;20 min;matched L/N versions/cups/lids/exposure/procedure. Covered liquid water; no active heating/cooling, ice, phase change, direct sunlight or meaningful evaporative cooling. Room, cup, lid and supporting surfaces are at the stated surrounding temperature; it stays constant. Readings represent the sample temperature with a consistent procedure. This is a paper scenario, not apparatus instructions.

Initial matched comparison

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

Trial ID	Sleeve L final (°C)	Sleeve N final (°C)
B-1	15	18
B-2	16	19
B-3	15	18

K5-B1. Write the supported comparison and list the conditions that matter for a new comparison.

Reteach · Compare conditions before revising

K5-D-B1 · 22°C surroundings. Cups/lids/position/procedure match. Mass, start and duration differ between L and N and from B0. Covered liquid water; no active heating/cooling, ice, phase change, direct sunlight or meaningful evaporative cooling. Room, cup, lid and supporting surfaces are at the stated surrounding temperature; it stays constant. Readings represent the sample temperature with a consistent procedure. This is a paper scenario, not apparatus instructions.

A new comparison with changed conditions

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

Trial ID / setup	Mass (g)	Start (°C)	Time (min)	Final (°C)
B-4 / L	80	12	20	18
B-4 / N	160	10	10	13
B-5 / L	80	12	20	19
B-5 / N	160	10	10	14

Fictional response: “Pool every endpoint; N is now better, so cross out the first conclusion.”

K5-B2. Find the changes and identify relevant condition differences. What can be described? What cannot be attributed to sleeve design alone? Evaluate the fictional response.

K5-B3. Revise or retain the particular earlier claim. Specify a more informative next comparison with actual matching values.

Fresh recheck · Initial conditions

Complete this new initial statement before looking at the next page.

K5-D-Bc 0 ·Fresh 100 g;10°C start;22°C surroundings;20 min;matched E/F sleeves/cups/lids/exposure/procedure. Covered liquid water; no active heating/cooling, ice, phase change, direct sunlight or meaningful evaporative cooling. Room, cup, lid and supporting surfaces are at the stated surrounding temperature; it stays constant. Readings represent the sample temperature with a consistent procedure. This is a paper scenario, not apparatus instructions.

Initial recheck trials

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

Trial ID	Sleeve E final (°C)	Sleeve F final (°C)
Bc-1	15	17
Bc-2	16	18

K5-B4. State a bounded E/F comparison and support it.

Fresh recheck · Changed surroundings

K5-D-Bc 1 ·Only E tested now;fresh 100 g;10°C start;28°C surroundings;20 min;all other E conditions match Bc 0. No new F data. Covered liquid water; no active heating/cooling, ice, phase change, direct sunlight or meaningful evaporative cooling. Room, cup, lid and supporting surfaces are at the stated surrounding temperature; it stays constant. Readings represent the sample temperature with a consistent procedure. This is a paper scenario, not apparatus instructions.

New evidence for one design

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

Trial ID	Sleeve E start (°C)	Sleeve E final (°C)
Bc-3	10	18
Bc-4	10	19

K5-B5. What conditions changed? What conclusion can stay, what scope needs limiting, and what ranking is not established? Propose useful next evidence.

Later check · Initial evidence

New cooling context. Record a bounded claim before the next page. Goal: limit cooling, not find the smallest final number.

**K5-D-T0 · Fresh 110 g;38°C start;20°C surroundings;12 min;matched covers
A/B,cups/lids/exposure/procedure. Covered liquid water; no active heating/cooling, ice, phase change, direct sunlight or meaningful evaporative cooling. Room, cup, lid and supporting surfaces are at the stated surrounding temperature; it stays constant. Readings represent the sample temperature with a consistent procedure. This is a paper scenario, not apparatus instructions.**

Initial later-check trials

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

Trial ID	Cover A final (°C)	Cover B final (°C)
T-1	32	28
T-2	31	27

K5-T1. Compare the cooling and write an initial claim with support and a limit.

Later check · New evidence

K5-D-T1 ·Five additional fresh 110 g;38°C start;20°C surroundings;12 min;same versions/cups/lids/exposure/procedure as T0. No exclusions. Covered liquid water; no active heating/cooling, ice, phase change, direct sunlight or meaningful evaporative cooling. Room, cup, lid and supporting surfaces are at the stated surrounding temperature; it stays constant. Readings represent the sample temperature with a consistent procedure. This is a paper scenario, not apparatus instructions.

Additional later-check trials

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

Trial ID	Cover A final (°C)	Cover B final (°C)
T-3	27	33
T-4	26	32
T-5	27	33
T-6	26	32
T-7	27	33

K5-T2. Revise using all seven trials. Identify weight/relevance, any contrary result and uncertainty. Retain, narrow, change or remain uncertain; justify a useful conclusion.

K5-T3. Name useful further evidence. Explain why the temperature pattern is consistent with net energy transfer, without inventing a specific pathway.