Staff complete component keys and next teaching

Do not send this whole bank or recipe/aid-data to learners. Accept correct alternative reasoning and usual communication; physical presentation, speed and amount written are not maths components.

l-first · Length

Full supplied source: MODEL paper flag starts at 4 cm and ends at 17 cm on a labelled ruler. Strip A is 11 cm; strip B is 16 cm. A job needs at least 15 cm. These are supplied readings, not measured classroom objects.

Q1 · Choose a useful unit and tool for the length of a small paper flag. Explain why.

Worked/acceptable response: cm and a labelled ruler; they measure the distance along the flag rather than mass/capacity.

Component: Attribute/unit/tool reason

Evidence: independently shown / shown with named cue / partial / not observed. A correct supplied result with adult computation is supported result, not independent reasoning.

Specific unrelated next teaching: Choose units for a new familiar empty box question.

Q2 · How long is the flag? Show how the two readings help.

Worked/acceptable response: 17 − 4 = 13 cm; starting reading must be excluded.

Component: Start-to-end distance and unit

Evidence: independently shown / shown with named cue / partial / not observed. A correct supplied result with adult computation is supported result, not independent reasoning.

Specific unrelated next teaching: Compare unrelated diagrams 0→8 and 3→11 cm.

Q3 · Which strip meets the job, and how much spare length does it give?

Worked/acceptable response: B: 16 cm is at least 15 cm, giving 1 cm spare. A is 4 cm short.

Component: Target comparison and contextual difference

Evidence: independently shown / shown with named cue / partial / not observed. A correct supplied result with adult computation is supported result, not independent reasoning.

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Specific unrelated next teaching: Compare a new target with two new strip lengths.

Q4 · Explain one way to check the flag reading on a real safe ruler if an adult approves. What cannot the paper answer show?

Worked/acceptable response: Check real zero/start, align the flag, read the end in cm or subtract two endpoints, with requested support. A paper explanation does not prove handling/alignment/physical measuring.

Component: Usable real check and evidence boundary

Evidence: independently shown / shown with named cue / partial / not observed. A correct supplied result with adult computation is supported result, not independent reasoning.

Specific unrelated next teaching: Model a different real safe alignment; record action and helper separately.

l-later · Length

Full supplied source: MODEL paper flag starts at 6 cm and ends at 21 cm on a labelled ruler. Strip A is 13 cm; strip B is 19 cm. A job needs at least 17 cm. These are supplied readings, not measured classroom objects.

Q1 · Choose a useful unit and tool for the length of a small paper flag. Explain why.

Worked/acceptable response: cm and a labelled ruler; they measure the distance along the flag rather than mass/capacity.

Component: Attribute/unit/tool reason

Evidence: independently shown / shown with named cue / partial / not observed. A correct supplied result with adult computation is supported result, not independent reasoning.

Specific unrelated next teaching: Choose units for a new familiar empty box question.

Q2 · How long is the flag? Show how the two readings help.

Worked/acceptable response: $21 - 6 = 15$ cm; starting reading must be excluded.

Component: Start-to-end distance and unit

Evidence: independently shown / shown with named cue / partial / not observed. A correct supplied result with adult computation is supported result, not independent reasoning.

Specific unrelated next teaching: Compare unrelated diagrams 0→8 and 3→11 cm.

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Q3 · Which strip meets the job, and how much spare length does it give?

Worked/acceptable response: B: 19 cm is at least 17 cm, giving 2 cm spare. A is 4 cm short.

Component: Target comparison and contextual difference

Evidence: independently shown / shown with named cue / partial / not observed. A correct supplied result with adult computation is supported result, not independent reasoning.

Specific unrelated next teaching: Compare a new target with two new strip lengths.

Q4 · Explain one way to check the flag reading on a real safe ruler if an adult approves. What cannot the paper answer show?

Worked/acceptable response: Check real zero/start, align the flag, read the end in cm or subtract two endpoints, with requested support. A paper explanation does not prove handling/alignment/physical measuring.

Component: Usable real check and evidence boundary

Evidence: independently shown / shown with named cue / partial / not observed. A correct supplied result with adult computation is supported result, not independent reasoning.

Specific unrelated next teaching: Model a different real safe alignment; record action and helper separately.

l-reserve · Length

Full supplied source: MODEL paper flag starts at 8 cm and ends at 26 cm on a labelled ruler. Strip A is 16 cm; strip B is 22 cm. A job needs at least 20 cm. These are supplied readings, not measured classroom objects.

Q1 · Choose a useful unit and tool for the length of a small paper flag. Explain why.

Worked/acceptable response: cm and a labelled ruler; they measure the distance along the flag rather than mass/capacity.

Component: Attribute/unit/tool reason

Evidence: independently shown / shown with named cue / partial / not observed. A correct supplied result with adult computation is supported result, not independent reasoning.

Specific unrelated next teaching: Choose units for a new familiar empty box question.

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Q2 · How long is the flag? Show how the two readings help.

Worked/acceptable response: 26 − 8 = 18 cm; starting reading must be excluded.

Component: Start-to-end distance and unit

Evidence: independently shown / shown with named cue / partial / not observed. A correct supplied result with adult computation is supported result, not independent reasoning.

Specific unrelated next teaching: Compare unrelated diagrams 0→8 and 3→11 cm.

Q3 · Which strip meets the job, and how much spare length does it give?

Worked/acceptable response: B: 22 cm is at least 20 cm, giving 2 cm spare. A is 4 cm short.

Component: Target comparison and contextual difference

Evidence: independently shown / shown with named cue / partial / not observed. A correct supplied result with adult computation is supported result, not independent reasoning.

Specific unrelated next teaching: Compare a new target with two new strip lengths.

Q4 · Explain one way to check the flag reading on a real safe ruler if an adult approves. What cannot the paper answer show?

Worked/acceptable response: Check real zero/start, align the flag, read the end in cm or subtract two endpoints, with requested support. A paper explanation does not prove handling/alignment/physical measuring.

Component: Usable real check and evidence boundary

Evidence: independently shown / shown with named cue / partial / not observed. A correct supplied result with adult computation is supported result, not independent reasoning.

Specific unrelated next teaching: Model a different real safe alignment; record action and helper separately.

m-first · Mass

Full supplied source: MODEL scale labels 0,100,200,300,400,500 g, with a middle mark in each gap. Pointer is at 250 g. Empty pouch is 80 g and pouch plus pieces is 260 g. Another sealed model package is 210 g. No body weighing or actual local product is involved.

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Q1 · Choose a unit and tool for the mass of a small safe package. Explain why.

Worked/acceptable response: g and a scale, for mass; appropriate stable safe familiar tool.

Component: Mass/unit/tool connection

Evidence: independently shown / shown with named cue / partial / not observed. A correct supplied result with adult computation is supported result, not independent reasoning.

Specific unrelated next teaching: Compare attribute questions for a new light object.

Q2 · How big is each marked gap, and what is the pointer reading?

Worked/acceptable response: 50 g gaps; pointer 250 g.

Component: Labelled increment and reading

Evidence: independently shown / shown with named cue / partial / not observed. A correct supplied result with adult computation is supported result, not independent reasoning.

Specific unrelated next teaching: Describe a new scale with 20 g gaps and a new pointer.

Q3 · Find the mass of the pieces without the pouch. Show a connected check.

Worked/acceptable response: 260 − 80 = 180 g; 80 + 180 = 260 g.

Component: Whole/part/net quantity and inverse

Evidence: independently shown / shown with named cue / partial / not observed. A correct supplied result with adult computation is supported result, not independent reasoning.

Specific unrelated next teaching: Draw a new two-part whole including a different tray.

Q4 · Which is heavier: the pointer-reading package or the other package? By how much?

Worked/acceptable response: Pointer package: 250 − 210 = 40 g heavier.

Component: Same-unit comparison and difference

Evidence: independently shown / shown with named cue / partial / not observed. A correct supplied result with adult computation is supported result, not independent reasoning.

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Specific unrelated next teaching: Compare two unrelated same-unit readings without judging shape.

m-later · Mass

Full supplied source: MODEL scale labels 0,100,200,300,400,500 g, with a middle mark in each gap. Pointer is at 350 g. Empty pouch is 70 g and pouch plus pieces is 290 g. Another sealed model package is 210 g. No body weighing or actual local product is involved.

Q1 · Choose a unit and tool for the mass of a small safe package. Explain why.

Worked/acceptable response: g and a scale, for mass; appropriate stable safe familiar tool.

Component: Mass/unit/tool connection

Evidence: independently shown / shown with named cue / partial / not observed. A correct supplied result with adult computation is supported result, not independent reasoning.

Specific unrelated next teaching: Compare attribute questions for a new light object.

Q2 · How big is each marked gap, and what is the pointer reading?

Worked/acceptable response: 50 g gaps; pointer 350 g.

Component: Labelled increment and reading

Evidence: independently shown / shown with named cue / partial / not observed. A correct supplied result with adult computation is supported result, not independent reasoning.

Specific unrelated next teaching: Describe a new scale with 20 g gaps and a new pointer.

Q3 · Find the mass of the pieces without the pouch. Show a connected check.

Worked/acceptable response: 290 − 70 = 220 g; 70 + 220 = 290 g.

Component: Whole/part/net quantity and inverse

Evidence: independently shown / shown with named cue / partial / not observed. A correct supplied result with adult computation is supported result, not independent reasoning.

Specific unrelated next teaching: Draw a new two-part whole including a different tray.

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Q4 · Which is heavier: the pointer-reading package or the other package? By how much?

Worked/acceptable response: Pointer package: 350 − 210 = 140 g heavier.

Component: Same-unit comparison and difference

Evidence: independently shown / shown with named cue / partial / not observed. A correct supplied result with adult computation is supported result, not independent reasoning.

Specific unrelated next teaching: Compare two unrelated same-unit readings without judging shape.

m-reserve · Mass

Full supplied source: MODEL scale labels 0,100,200,300,400,500 g, with a middle mark in each gap. Pointer is at 450 g. Empty pouch is 90 g and pouch plus pieces is 330 g. Another sealed model package is 310 g. No body weighing or actual local product is involved.

Q1 · Choose a unit and tool for the mass of a small safe package. Explain why.

Worked/acceptable response: g and a scale, for mass; appropriate stable safe familiar tool.

Component: Mass/unit/tool connection

Evidence: independently shown / shown with named cue / partial / not observed. A correct supplied result with adult computation is supported result, not independent reasoning.

Specific unrelated next teaching: Compare attribute questions for a new light object.

Q2 · How big is each marked gap, and what is the pointer reading?

Worked/acceptable response: 50 g gaps; pointer 450 g.

Component: Labelled increment and reading

Evidence: independently shown / shown with named cue / partial / not observed. A correct supplied result with adult computation is supported result, not independent reasoning.

Specific unrelated next teaching: Describe a new scale with 20 g gaps and a new pointer.

Q3 · Find the mass of the pieces without the pouch. Show a connected check.

Worked/acceptable response: 330 − 90 = 240 g; 90 + 240 = 330 g.

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Component: Whole/part/net quantity and inverse

Evidence: independently shown / shown with named cue / partial / not observed. A correct supplied result with adult computation is supported result, not independent reasoning.

Specific unrelated next teaching: Draw a new two-part whole including a different tray.

Q4 · Which is heavier: the pointer-reading package or the other package? By how much?

Worked/acceptable response: Pointer package: 450 − 310 = 140 g heavier.

Component: Same-unit comparison and difference

Evidence: independently shown / shown with named cue / partial / not observed. A correct supplied result with adult computation is supported result, not independent reasoning.

Specific unrelated next teaching: Compare two unrelated same-unit readings without judging shape.

c-first · Capacity

Full supplied source: MODEL jug labels 0,100,200,300,400,500,600 mL with one middle mark between labels. Current level is 350 mL; target is 500 mL. Container A has labelled capacity 300 mL; B has labelled capacity 600 mL. Level and capacity are different; no liquid action is performed by this paper source.

Q1 · Choose a useful unit and marked tool for a small liquid amount. Explain why.

Worked/acceptable response: mL and a labelled measuring jug for a small liquid amount; teacher reviews actual safe kit.

Component: Capacity/amount unit and tool

Evidence: independently shown / shown with named cue / partial / not observed. A correct supplied result with adult computation is supported result, not independent reasoning.

Specific unrelated next teaching: Ask a new question about an empty familiar jug.

Q2 · What is each small marked gap, and how much is currently present?

Worked/acceptable response: 50 mL gaps; 350 mL present.

Component: Increment and current level

Evidence: independently shown / shown with named cue / partial / not observed. A correct supplied result with adult computation is supported result, not independent

reasoning.

Specific unrelated next teaching: Read a new described jug with 20 mL gaps.

Q3 · How much more reaches the target? Show a connected check.

Worked/acceptable response: 500 − 350 = 150 mL; 350 + 150 = 500 mL.

Component: Missing amount and inverse check

Evidence: independently shown / shown with named cue / partial / not observed. A correct supplied result with adult computation is supported result, not independent reasoning.

Specific unrelated next teaching: Use an unrelated whole/part amount, keeping unknown blank.

Q4 · Which container can hold the whole target? Explain using capacity, not drawn height.

Worked/acceptable response: B: 600 mL capacity is at least 500 mL. A:300 mL is smaller than the target.

Component: Capacity comparison independent of shape

Evidence: independently shown / shown with named cue / partial / not observed. A correct supplied result with adult computation is supported result, not independent reasoning.

Specific unrelated next teaching: Compare new labelled tall/short containers for a new target.

c-later · Capacity

Full supplied source: MODEL jug labels 0,100,200,300,400,500,600 mL with one middle mark between labels. Current level is 250 mL; target is 400 mL. Container A has labelled capacity 350 mL; B has labelled capacity 550 mL. Level and capacity are different; no liquid action is performed by this paper source.

Q1 · Choose a useful unit and marked tool for a small liquid amount. Explain why.

Worked/acceptable response: mL and a labelled measuring jug for a small liquid amount; teacher reviews actual safe kit.

Component: Capacity/amount unit and tool

Evidence: independently shown / shown with named cue / partial / not observed. A correct supplied result with adult computation is supported result, not independent reasoning.

Specific unrelated next teaching: Ask a new question about an empty familiar jug.

Q2 · What is each small marked gap, and how much is currently present?

Worked/acceptable response: 50 mL gaps; 250 mL present.

Component: Increment and current level

Evidence: independently shown / shown with named cue / partial / not observed. A correct supplied result with adult computation is supported result, not independent reasoning.

Specific unrelated next teaching: Read a new described jug with 20 mL gaps.

Q3 · How much more reaches the target? Show a connected check.

Worked/acceptable response: 400 − 250 = 150 mL; 250 + 150 = 400 mL.

Component: Missing amount and inverse check

Evidence: independently shown / shown with named cue / partial / not observed. A correct supplied result with adult computation is supported result, not independent reasoning.

Specific unrelated next teaching: Use an unrelated whole/part amount, keeping unknown blank.

Q4 · Which container can hold the whole target? Explain using capacity, not drawn height.

Worked/acceptable response: B: 550 mL capacity is at least 400 mL. A:350 mL is smaller than the target.

Component: Capacity comparison independent of shape

Evidence: independently shown / shown with named cue / partial / not observed. A correct supplied result with adult computation is supported result, not independent reasoning.

Specific unrelated next teaching: Compare new labelled tall/short containers for a new target.

c-reserve · Capacity

Full supplied source: MODEL jug labels 0,100,200,300,400,500,600 mL with one middle mark between labels. Current level is 450 mL; target is 600 mL. Container A has labelled capacity 500 mL; B has labelled capacity 750 mL. Level and capacity are different; no liquid action is performed by this paper source.

Q1 · Choose a useful unit and marked tool for a small liquid amount. Explain why.

Worked/acceptable response: mL and a labelled measuring jug for a small liquid amount; teacher reviews actual safe kit.

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Component: Capacity/amount unit and tool

Evidence: independently shown / shown with named cue / partial / not observed. A correct supplied result with adult computation is supported result, not independent reasoning.

Specific unrelated next teaching: Ask a new question about an empty familiar jug.

Q2 · What is each small marked gap, and how much is currently present?

Worked/acceptable response: 50 mL gaps; 450 mL present.

Component: Increment and current level

Evidence: independently shown / shown with named cue / partial / not observed. A correct supplied result with adult computation is supported result, not independent reasoning.

Specific unrelated next teaching: Read a new described jug with 20 mL gaps.

Q3 · How much more reaches the target? Show a connected check.

Worked/acceptable response: 600 − 450 = 150 mL; 450 + 150 = 600 mL.

Component: Missing amount and inverse check

Evidence: independently shown / shown with named cue / partial / not observed. A correct supplied result with adult computation is supported result, not independent reasoning.

Specific unrelated next teaching: Use an unrelated whole/part amount, keeping unknown blank.

Q4 · Which container can hold the whole target? Explain using capacity, not drawn height.

Worked/acceptable response: B: 750 mL capacity is at least 600 mL. A:500 mL is smaller than the target.

Component: Capacity comparison independent of shape

Evidence: independently shown / shown with named cue / partial / not observed. A correct supplied result with adult computation is supported result, not independent reasoning.

Specific unrelated next teaching: Compare new labelled tall/short containers for a new target.

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e-first · Estimate and check

Full supplied source: MODEL collection: 5 complete groups of 20 pieces and 8 loose pieces. Two fictional material batches are 317 and 268 pieces. Stock is 600 pieces. A ticket reports the combined batches as 58 pieces. No real class count, purchase or event is asserted.

Q1 · Estimate the collection using a known group. Explain your clue; keep an estimate different from an exact count.

Worked/acceptable response: Example about 110 or a justified range around 108, anchored to 5×20 plus a small loose group. Exact count 108 is not required for the estimate; don't relabel an exact computation as an independent estimate.

Component: Known-group estimate and uncertainty

Evidence: independently shown / shown with named cue / partial / not observed. A correct supplied result with adult computation is supported result, not independent reasoning.

Specific unrelated next teaching: Estimate a new collection with a clearly known small group.

Q2 · Before exact addition, give a useful estimate of the two batches and explain a benchmark.

Worked/acceptable response: Example benchmark 300 + 300 = 600, or another defensible useful estimate explained before the exact calculation; an estimate is not a guaranteed interval.

Component: Purposeful benchmark before exact result

Evidence: independently shown / shown with named cue / partial / not observed. A correct supplied result with adult computation is supported result, not independent reasoning.

Specific unrelated next teaching: Compare a new sum with two different useful benchmarks.

Q3 · Calculate the exact combined batches. Is stock enough, and what is left?

Worked/acceptable response: 317 + 268 = 585; stock 600 is enough with 15 pieces left.

Component: Exact additive/context/remaining quantity

Evidence: independently shown / shown with named cue / partial / not observed. A correct supplied result with adult computation is supported result, not independent reasoning.

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Specific unrelated next teaching: Represent a new total and stock using grouped place value.

Q4 · Explain why 58 needs checking. Use a connected inverse check for your own exact total.

Worked/acceptable response: Two positive hundreds cannot total 58; 585 − 268 = 317 (or 585 − 317 = 268) connects the exact parts. Rough scale alone does not prove every digit.

Component: Reasonableness and connected inverse

Evidence: independently shown / shown with named cue / partial / not observed. A correct supplied result with adult computation is supported result, not independent reasoning.

Specific unrelated next teaching: Use an unrelated subtle digit error requiring an exact inverse check.

e-later · Estimate and check

Full supplied source: MODEL collection: 4 complete groups of 25 pieces and 7 loose pieces. Two fictional material batches are 426 and 157 pieces. Stock is 600 pieces. A ticket reports the combined batches as 58 pieces. No real class count, purchase or event is asserted.

Q1 · Estimate the collection using a known group. Explain your clue; keep an estimate different from an exact count.

Worked/acceptable response: Example about 110 or a justified range around 107, anchored to 4×25 plus a small loose group. Exact count 107 is not required for the estimate; don't relabel an exact computation as an independent estimate.

Component: Known-group estimate and uncertainty

Evidence: independently shown / shown with named cue / partial / not observed. A correct supplied result with adult computation is supported result, not independent reasoning.

Specific unrelated next teaching: Estimate a new collection with a clearly known small group.

Q2 · Before exact addition, give a useful estimate of the two batches and explain a benchmark.

Worked/acceptable response: Example benchmark 400 + 200 = 600, or another defensible useful estimate explained before the exact calculation; an estimate is not a guaranteed interval.

Component: Purposeful benchmark before exact result

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Evidence: independently shown / shown with named cue / partial / not observed. A correct supplied result with adult computation is supported result, not independent reasoning.

Specific unrelated next teaching: Compare a new sum with two different useful benchmarks.

Q3 · Calculate the exact combined batches. Is stock enough, and what is left?

Worked/acceptable response: 426 + 157 = 583; stock 600 is enough with 17 pieces left.

Component: Exact additive/context/remaining quantity

Evidence: independently shown / shown with named cue / partial / not observed. A correct supplied result with adult computation is supported result, not independent reasoning.

Specific unrelated next teaching: Represent a new total and stock using grouped place value.

Q4 · Explain why 58 needs checking. Use a connected inverse check for your own exact total.

Worked/acceptable response: Two positive hundreds cannot total 58; 583 − 157 = 426 (or 583 − 426 = 157) connects the exact parts. Rough scale alone does not prove every digit.

Component: Reasonableness and connected inverse

Evidence: independently shown / shown with named cue / partial / not observed. A correct supplied result with adult computation is supported result, not independent reasoning.

Specific unrelated next teaching: Use an unrelated subtle digit error requiring an exact inverse check.

e-reserve · Estimate and check

Full supplied source: MODEL collection: 3 complete groups of 30 pieces and 12 loose pieces. Two fictional material batches are 238 and 346 pieces. Stock is 600 pieces. A ticket reports the combined batches as 58 pieces. No real class count, purchase or event is asserted.

Q1 · Estimate the collection using a known group. Explain your clue; keep an estimate different from an exact count.

Worked/acceptable response: Example about 100 or a justified range around 102, anchored to 3×30 plus a small loose group. Exact count 102 is not required for the estimate; don't relabel an exact computation as an independent estimate.

Component: Known-group estimate and uncertainty

Evidence: independently shown / shown with named cue / partial / not observed. A correct supplied result with adult computation is supported result, not independent reasoning.

Specific unrelated next teaching: Estimate a new collection with a clearly known small group.

Q2 · Before exact addition, give a useful estimate of the two batches and explain a benchmark.

Worked/acceptable response: Example benchmark 200 + 300 = 500, or another defensible useful estimate explained before the exact calculation; an estimate is not a guaranteed interval.

Component: Purposeful benchmark before exact result

Evidence: independently shown / shown with named cue / partial / not observed. A correct supplied result with adult computation is supported result, not independent reasoning.

Specific unrelated next teaching: Compare a new sum with two different useful benchmarks.

Q3 · Calculate the exact combined batches. Is stock enough, and what is left?

Worked/acceptable response: 238 + 346 = 584; stock 600 is enough with 16 pieces left.

Component: Exact additive/context/remaining quantity

Evidence: independently shown / shown with named cue / partial / not observed. A correct supplied result with adult computation is supported result, not independent reasoning.

Specific unrelated next teaching: Represent a new total and stock using grouped place value.

Q4 · Explain why 58 needs checking. Use a connected inverse check for your own exact total.

Worked/acceptable response: Two positive hundreds cannot total 58; 584 − 346 = 238 (or 584 − 238 = 346) connects the exact parts. Rough scale alone does not prove every digit.

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Component: Reasonableness and connected inverse

Evidence: independently shown / shown with named cue / partial / not observed. A correct supplied result with adult computation is supported result, not independent reasoning.

Specific unrelated next teaching: Use an unrelated subtle digit error requiring an exact inverse check.