Classroom copy · 2 November 2026

Before teaching: equal groups, comparisons and shares

Intended for Grades 5–6 learners who need the selected prerequisite concepts; check local curriculum and readiness. This pack is not a complete grade-level mathematics course. Learners need to count and name whole-number quantities, access short directions, and keep the same 1 m or 1 L whole when reasoning about shares. Clarify words and response access before inferring a mathematics difficulty.

Prepare paper, pencils and the selected student pages; read the keys. Learners may point, label a diagram, explain orally or use an established response method while preserving the same quantity and relationship. No purchase or account is required.

Use Starting Point before showing the models. Select the relevant model and guided practice for equal groups, a multiplicative comparison or equal shares; then use the separate Short Check. Choose Name the Quantity You Are Finding when the unknown or unit is unclear, or the matching Rebuild Groups and Equal Shares task for a relationship error. Keep Follow-up Check and Later Revisit unseen until their occasions. Record support and prior exposure.

Planning estimates, not observed timings: 5–10 minutes for Starting Point, 15–25 minutes for one model and guided practice, 5–10 minutes for the selected check, and 10–15 minutes for one focused response. Split the lessons when needed. Use the key for the particular task rather than summing unrelated errors into a placement score.

Teacher Guide: Groups, Comparisons and Shares

Read the Reasoning and Choose a Task

Keep the evidence separate

- Group roles: the total, number of groups and group size are named; the unknown matches the question.
- Comparison: the same unit and smaller baseline are clear; copy count and additive difference are distinguished.
- Equal sharing: partitions are equal, the reference unit is fixed, and all shares reassemble the total.
- Calculation: check the computation separately from the relationship or model. A fact slip need not mean the idea is missing.

Use a concrete next task

Clarify: use Name the Quantity You Are Finding when a response answers a different unknown or omits a unit; first check wording and access. Reteach: use the relevant Rebuild Groups and Equal Shares page when unequal groups, additive thinking or an unfixed whole changes the relationship. Continue: use Connect Groups and Comparisons when the models are sound but inverse relationships need consolidation. Extend: use Explain What Changes and What Stays Fixed when the learner can explain roles and the measured whole independently.

Look again after teaching

Use the corresponding Follow-Up page after another learning opportunity. Later Revisit and Apply in a New Setting ask for different presentations and amounts; read their own criteria rather than assuming the tasks have identical difficulty. A single response does not establish grade placement or broad mathematics attainment.

Access and support

Allow neutral read-aloud, enlarged diagrams, extra time, oral explanation, typing or dictation as appropriate. A calculator can reduce computation demands after the learner has represented the relationship; record this support and do not infer unaided fact fluency. During a check, do not supply the group role, multiplier, partition or unit interpretation. If reasoning support is given, record it and use the response to plan teaching.

Teacher Guide: Groups, Comparisons and Shares

Answers: Show Your Thinking

For Starting Point: Groups, Comparisons and Shares — Show Your Thinking

Question 1

6 counters in each group; 3 groups × 6 counters in each group = 18 counters.

Acceptable explanations and limits: Accept a labeled drawing, repeated addition, or 18 ÷ 3 = 6 with group roles explained. The number 6 alone does not show which role it has.

Question 2

3 times as long and 8 cm longer. Three copies of 4 cm make 12 cm; the added length is 12 − 4 = 8 cm.

Acceptable explanations and limits: Accept equivalent explanations showing the 4 cm baseline. Do not treat 8 times as long as correct.

Question 3

2/3 m for each project; split each 1 m whole into thirds and give one third from each meter to each project. Three shares of 2/3 m reassemble 2 m.

Acceptable explanations and limits: Accept a continuous 2 m bar split into three equal lengths or a valid division/equation explanation. 2/3 of the entire 2 m ribbon is a different amount; the reference unit must be clear.

Teacher Guide: Groups, Comparisons and Shares

Answers: Try It: Groups of Counters and Beads

For Equal Groups, Comparisons and Shares — Try It: Groups of Counters and Beads

Question 1

5 counters in each group; 4 groups × 5 counters in each group = 20 counters.

Acceptable explanations and limits: A labeled array, equal sets or repeated addition is acceptable. Swapping factors preserves the product, but the story roles still need labels.

Question 2

4 groups. In question 1, 4 is the given number of groups and 5 is the unknown size. Here 5 is the given size and 4 is the unknown number of groups.

Acceptable explanations and limits: Accept 20 ÷ 5 = 4 with role labels. The same drawing can represent both questions if the unknown role is identified.

Question 3

Each of 5 bags has 4 beads, so 5 × 4 = 20 beads. Adding the bag count to the bead count does not represent all the beads.

Acceptable explanations and limits: Accept five repeated groups or 4 + 4 + 4 + 4 + 4. Explain the quantities rather than only naming the wrong operation.

Teacher Guide: Groups, Comparisons and Shares

Answers: Try It: Two Ways to Compare

For Equal Groups, Comparisons and Shares — Try It: Two Ways to Compare

Question 1

3 times as long; 10 cm longer. Three 5 cm copies make 15 cm; 15 − 5 = 10 cm.

Acceptable explanations and limits: Both strips use centimeters and the baseline is the 5 cm strip. A tape drawing or labeled equations are acceptable.

Question 2

12 cm; the strip has the length of four 3 cm copies.

Acceptable explanations and limits: Accept 4 × 3 cm = 12 cm. 4 means the number of copies, not 4 cm of added length.

Question 3

18 cm is 12 cm more than 6 cm. The long strip is 3 times as long because 3 × 6 cm = 18 cm.

Acceptable explanations and limits: Accept an explanation using the common 6 cm baseline. The difference and multiplier are distinct comparisons.

Teacher Guide: Groups, Comparisons and Shares

Answers: Try It: Measured Shares

For Equal Groups, Comparisons and Shares — Try It: Measured Shares

Question 1

Each project receives 2/3 m. Divide each 1 m into thirds, giving two 1/3 m pieces to each project, or split a labeled 2 m bar into 3 equal shares.

Acceptable explanations and limits: Accept 2 ÷ 3 = 2/3 m, a bar/number line or recombination. Distinguish a fraction of 1 m from a fraction of the entire 2 m amount.

Question 2

5/4 L, or 1 1/4 L, in each portion; 4 × 5/4 L = 5 L. Each 1 L can be divided into fourths, and one fourth from each of the 5 liters gives 5/4 L.

Acceptable explanations and limits: A measured amount may be partitioned. Accept a consistent labeled model; 4/5 L would use only 16/5 L in four portions.

Question 3

No. They are unequal; a half-meter share requires two equal 1/2 m parts of the 1 m whole.

Acceptable explanations and limits: The two parts use all the strip but are not equal shares. Do not accept a denominator determined only by counting pieces.

Teacher Guide: Groups, Comparisons and Shares

Answers: Groups and Comparisons

For Check: Groups, Comparisons and Equal Shares — Groups and Comparisons

Question 1

First: 4 buttons in each pile, 6 × 4 = 24. Second: 4 piles, 4 × 6 = 24. Both calculations are 24 ÷ 6 = 4, but the 6 and the answer have different roles.

Acceptable explanations and limits: Accept labeled drawings/words/equations. Equal numerical answers do not make pile count and pile size the same quantity.

Question 2

3 times as long, because 3 × 7 cm = 21 cm; 14 cm longer, because 21 − 7 = 14 cm.

Acceptable explanations and limits: Accept three same-length copies and an extra-length segment. Require a clear baseline and units for the difference.

Teacher Guide: Groups, Comparisons and Shares

Answers: Equal Shares of a Measured Amount

For Check: Groups, Comparisons and Equal Shares — Equal Shares of a Measured Amount

Question 1

4/3 m, or 1 1/3 m, each. Each 1 m divided into thirds supplies four 1/3 m parts to each project; 3 × 4/3 m = 4 m.

Acceptable explanations and limits: A labeled 4 m bar split into three equal parts is valid. The share is 1/3 of the total 4 m amount, but 4/3 of the 1 m unit. Make that distinction explicit.

Question 2

No. All portions sum to 1 L, but they are unequal; equal thirds would each be 1/3 L. Counting portions alone does not establish equal sharing.

Acceptable explanations and limits: Accept a labeled comparison of the amounts. The repeated quarter-liter portions do not make all three equal.

Teacher Guide: Groups, Comparisons and Shares

Answers: Return to the Lesson Amounts

For Connect Groups and Comparisons — Return to the Lesson Amounts

Question 1

4 × 5 = 20; 20 ÷ 4 = 5 finds counters in each of 4 groups; 20 ÷ 5 = 4 finds groups of 5 counters.

Acceptable explanations and limits: Equivalently use factor order 5 × 4 with roles labeled. The inverse calculations alone need interpretation.

Question 2

15 ÷ 5 = 3 counts 5 cm copies. The difference is 15 − 5 = 10 cm; 3 is a count of copies, not the extra length.

Acceptable explanations and limits: Accept a labeled tape drawing and explanation rather than a preferred equation form.

Teacher Guide: Groups, Comparisons and Shares

Answers: Make the Question Clear

For Name the Quantity You Are Finding — Make the Question Clear

Question 1

Total 20 counters; 4 counts groups; find counters in each group: 5.

Acceptable explanations and limits: Neutral clarification of the question is allowed, but do not supply the role during an independent check.

Question 2

Total 2 m; each project receives a share; the answer describes length for one project: 2/3 m.

Acceptable explanations and limits: Accept a correct fixed-unit drawing and oral response. Bare 2/3 needs a named length/unit.

Teacher Guide: Groups, Comparisons and Shares

Answers: Model the Unknown Group Role

For Rebuild Groups and Equal Shares — Model the Unknown Group Role

Question 1

5 counters in each group; 3 groups × 5 counters = 15. The long strip is 5 times as long and 12 cm longer than the 3 cm strip.

Acceptable explanations and limits: Require roles/baseline and distinguish copies from difference; drawing and oral alternatives are acceptable.

Teacher Guide: Groups, Comparisons and Shares

Answers: Model an Equal Fractional Share

For Rebuild Groups and Equal Shares — Model an Equal Fractional Share

Question 1

2/5 L each. Split each of two 1 L wholes into fifths; each portion gets two 1/5 L parts. Five portions of 2/5 L use all 2 L.

Acceptable explanations and limits: Accept a labeled continuous bar or equation/model. 5/2 L is not a share of this 2 L total.

Teacher Guide: Groups, Comparisons and Shares

Answers: Compare Two Arrangements

For Explain What Changes and What Stays Fixed — Compare Two Arrangements

Question 1

Sizes are 5 and 2 counters. The same 20 counters are split among more groups, so each group is smaller; 4 × 5 = 10 × 2 = 20.

Acceptable explanations and limits: No requirement to generalize beyond the stated equal-group arrangements. Keep the fixed total explicit.

Question 2

Yes. One third of the whole 2 m amount is 2/3 m. With 1 m as the reference whole, that share contains two thirds of one meter.

Acceptable explanations and limits: Accept a precise explanation with two different reference wholes. A bare yes or mixing the reference units is insufficient.

Teacher Guide: Groups, Comparisons and Shares

Answers: Groups and Length Comparisons

For Follow-Up: Explain Groups and Shares — Groups and Length Comparisons

Question 1

First 6 marbles in each bag; later 6 bags. 30 ÷ 5 = 6 answers different unknown roles in the two stories.

Acceptable explanations and limits: Accept labeled models/equations. Do not merge number of bags with marbles in a bag.

Question 2

4 times as long; 27 cm longer. Four 9 cm copies make 36 cm, and the extra length is 36 − 9 = 27 cm.

Acceptable explanations and limits: Require the 9 cm baseline. Copy count is not a length unit.

Teacher Guide: Groups, Comparisons and Shares

Answers: Fractional Length Shares

For Follow-Up: Explain Groups and Shares — Fractional Length Shares

Question 1

5/3 m, or 1 2/3 m, each. Split each meter into thirds; each project gets five 1/3 m parts. Three shares reassemble 5 m.

Acceptable explanations and limits: Accept equivalent labeled models. The fraction is of one meter, not 5/3 of the entire ribbon.

Question 2

No. The parts are unequal although they sum to 1 m. All three would have to be equal lengths of 1/3 m.

Acceptable explanations and limits: A visual/model-based comparison is sufficient; do not require fraction addition fluency to explain unequal shares.

Teacher Guide: Groups, Comparisons and Shares

Answers: Show the Roles and the Unit

For Revisit Groups and Measured Shares — Show the Roles and the Unit

Question 1

4 groups of 7 tiles. If 7 is the number of groups, the question asks for 4 tiles in each group instead.

Acceptable explanations and limits: The same numerical division has distinct role interpretations; accept labeled equations or drawings.

Question 2

3/5 L each; one whole in the fractional answer is 1 L. Each portion gets one fifth from each of 3 liters, and five portions use all 3 L.

Acceptable explanations and limits: Accept a correctly labeled bar/number line. 1/5 of the total is also valid when connected to 3/5 L.

Teacher Guide: Groups, Comparisons and Shares

Answers: Plan the Display Materials

For Apply Groups and Shares to a Display Plan — Plan the Display Materials

Question 1

4 panels; 4 groups of 8 labels use all 32 labels.

Acceptable explanations and limits: Accept an array/equation/words with group roles.

Question 2

5/4 m, or 1 1/4 m, each; 4 × 5/4 m = 5 m.

Acceptable explanations and limits: Accept a fixed-unit model; this is equal length sharing, not a measurement taken from an actual display.

Question 3

4 times as wide and 18 cm wider; four 6 cm copies make 24 cm, while 24 − 6 = 18 cm.

Acceptable explanations and limits: The 6 cm width is the baseline; do not claim area grows by 4 from a width comparison.

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Fictional teaching response — sound for the named task

Named task: Groups and Comparisons, question 1: 24 buttons in equal piles

Fictional response — sound for the named task: “For six equal piles, 24 ÷ 6 = 4 buttons in each pile. For piles of six buttons, 24 ÷ 6 = 4 piles. The calculation is the same but the answer counts buttons per pile first and piles second.”

Visible evidence: Correct division and distinct interpretations of the divisor and quotient.

Not established: The separate comparison or fractional-sharing targets on this check.

Clarify: Ask the learner to identify what the 6 counts in each situation rather than relying on the identical numerical answer.

Next teaching/evidence: Use the relevant part of the separate Follow up check; reserve Later revisit rather than scoring unrelated targets as one placement result.

This response is invented for teacher interpretation. Accept defensible alternatives. Record access, prior exposure and the actual response; do not assign an ability label or claim mastery from this example.

Follow up check

Reserve: Later revisit

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Fictional teaching response — partially developed

Named task: Groups and Comparisons, question 1: 24 buttons in equal piles

Fictional response — partially developed: “4 for both, because 24 ÷ 6 = 4.”

Visible evidence: Correct numerical results.

Not established: What each quotient counts; the identical values can hide a quantity-label confusion.

Clarify: Ask ‘Four what?’ for each arrangement, or invite two labeled drawings.

Next teaching/evidence: If the quantities remain unclear, use Name the quantity you are finding (Clarify), then use the separate follow-up check for new evidence.

This response is invented for teacher interpretation. Accept defensible alternatives. Record access, prior exposure and the actual response; do not assign an ability label or claim mastery from this example.

Clarify

Reserve: Later revisit

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Fictional teaching response — plausible error

Named task: Groups and Comparisons, question 1: 24 buttons in equal piles

Fictional response — plausible error: “First there are four piles. In the second arrangement, there are four buttons per pile.”

Visible evidence: The correct numeral four is used in each case.

Not established: The requested quantities: first the number of piles is supplied as six; second buttons per pile is supplied as six. The missing quantities have been reversed.

Clarify: Have the learner mark the supplied total and supplied grouping quantity, then label the unknown before dividing.

Next teaching/evidence: Use Name the quantity you are finding with its 20 counters/four groups prompt. Ask what the four counts and what is unknown. Keep follow-up and later tasks separate.

This response is invented for teacher interpretation. Accept defensible alternatives. Record access, prior exposure and the actual response; do not assign an ability label or claim mastery from this example.

Clarify

Reserve: Later revisit