

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; $3 \text{ groups} \times 6 \text{ counters in each group} = 18 \text{ counters}$.

Acceptable explanations and limits: Accept a labeled drawing, repeated addition, or $18 \div 3 = 6$ 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 $12 - 4 = 8 \text{ cm}$.

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

Question 3

$\frac{2}{3} \text{ m}$ for each project; split each 1 m whole into thirds and give one third from each meter to each project. Three shares of $\frac{2}{3} \text{ m}$ reassemble 2 m.

Acceptable explanations and limits: Accept a continuous 2 m bar split into three equal lengths or a valid division/equation explanation. $\frac{2}{3}$ 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; $4 \text{ groups} \times 5 \text{ counters in each group} = 20 \text{ counters}$.

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 $20 \div 5 = 4$ 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 $5 \times 4 = 20$ 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 $\frac{2}{3}$ m. Divide each 1 m into thirds, giving two $\frac{1}{3}$ m pieces to each project, or split a labeled 2 m bar into 3 equal shares.

Acceptable explanations and limits: Accept $2 \div 3 = \frac{2}{3}$ m, a bar/number line or recombination. Distinguish a fraction of 1 m from a fraction of the entire 2 m amount.

Question 2

$\frac{5}{4}$ L, or $1 \frac{1}{4}$ L, in each portion; $4 \times \frac{5}{4}$ L = 5 L. Each 1 L can be divided into fourths, and one fourth from each of the 5 liters gives $\frac{5}{4}$ L.

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

Question 3

No. They are unequal; a half-meter share requires two equal $\frac{1}{2}$ 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, $6 \times 4 = 24$. Second: 4 piles, $4 \times 6 = 24$. Both calculations are $24 \div 6 = 4$, 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 $3 \times 7 \text{ cm} = 21 \text{ cm}$; 14 cm longer, because $21 - 7 = 14 \text{ cm}$.

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

$\frac{4}{3}$ m, or $1\frac{1}{3}$ m, each. Each 1 m divided into thirds supplies four $\frac{1}{3}$ m parts to each project; $3 \times \frac{4}{3} \text{ m} = 4 \text{ m}$.

Acceptable explanations and limits: A labeled 4 m bar split into three equal parts is valid. The share is $\frac{1}{3}$ of the total 4 m amount, but $\frac{4}{3}$ 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 $\frac{1}{3}$ 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

$4 \times 5 = 20$; $20 \div 4 = 5$ finds counters in each of 4 groups; $20 \div 5 = 4$ 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

$15 \div 5 = 3$ 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: $\frac{2}{3}$ m.

Acceptable explanations and limits: Accept a correct fixed-unit drawing and oral response. Bare $\frac{2}{3}$ 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; $3 \text{ groups} \times 5 \text{ counters} = 15$. 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

$\frac{2}{5}$ L each. Split each of two 1 L wholes into fifths; each portion gets two $\frac{1}{5}$ L parts. Five portions of $\frac{2}{5}$ L use all 2 L.

Acceptable explanations and limits: Accept a labeled continuous bar or equation/model. $\frac{5}{2}$ 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; $4 \times 5 = 10 \times 2 = 20$.

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 $\frac{2}{3}$ 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. $30 \div 5 = 6$ 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

$\frac{5}{3}$ m, or $1\frac{2}{3}$ m, each. Split each meter into thirds; each project gets five $\frac{1}{3}$ m parts. Three shares reassemble 5 m.

Acceptable explanations and limits: Accept equivalent labeled models. The fraction is of one meter, not $\frac{5}{3}$ 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 $\frac{1}{3}$ 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

$\frac{3}{5}$ 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. $\frac{1}{5}$ of the total is also valid when connected to $\frac{3}{5}$ 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

$\frac{5}{4}$ m, or $1\frac{1}{4}$ m, each; $4 \times \frac{5}{4} \text{ m} = 5 \text{ m}$.

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 $24 - 6 = 18 \text{ cm}$.

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