

TEACHER + STUDENT RESOURCE

Grade 6 | The Number System

Divide fractions with meaning



NC.6.NS.1

Current North Carolina Standard Course of Study

Aligned for 2026-27 and 2027-28; 2026-adopted standards start in 2028-29.

Seven instructional sections • 30 multiple-choice tasks • 30 open / performance tasks •
Worked visual and algorithm keys • Reusable organizers and evidence records

Choose a short core across several sessions. This resource bank is not a 60-item test or a
timed-fluency requirement.

Free sample | Contents

NC.6.NS.1 | Sixth Grade mathematics

This sample contains 19 complete selected pages from the 107-page resource, plus this sample contents page. Original printed page numbers are retained. Gaps are intentional.

Included original pages: 1-14, 29-30, 59, 74-75

Representative activities

M01: sample PDF page(s) 15; original page(s) 14

M02: sample PDF page(s) 15; original page(s) 14

O01: sample PDF page(s) 16; original page(s) 29

O02: sample PDF page(s) 17; original page(s) 30

Selected teacher prompts and keys: original page(s) 59, 74-75

Using this sample

Read the preparation and access guidance before using a selected activity.

Keep teacher keys and private preparation pages separate from student copies.

Use the original resource contents to see the scope of the complete packet.

Complete paid download

The complete resource includes the full PDF task bank and teaching materials.

TEACHER GUIDE

Plan the learning

Navigation: exact standard and targets follow on page 3, access and prerequisites on page 4, then worked teaching models and seven lesson scripts. Student organizers come next, followed by the 30-item choice bank and the 30-item open/performance bank.

Teacher-only worked keys, evidence records, and source notes complete the packet. Each page is labelled by its function.

A flexible 4-session core

Session 1: warm-up and I Do, about 20 minutes. Session 2: We Do and collaborative practice, about 25 minutes. Session 3: independent work and a responsive small group, about 25 minutes. Session 4: exit conference and transfer, about 15 minutes. Adjust time and item selection to observed needs; these are planning estimates, not student speed cutoffs.

Each section offers M and O item ranges of 4 / 4 / 5 / 5 / 5 / 4 / 3. Begin with the selected pair in its script. Use the remaining items for later practice, alternate examples, or conferences. A coached response is not an independent assessment sample.

Materials: pencils, plain paper, ruler for organizing work, and optional full paper strips. All essential blank organizers and model examples appear here. Adults handle any cutting. Print selected student pages separately from teacher keys. Printed diagrams represent mathematical units and are not promised physical measurement scales.

Mathematical practices: MP2 (units and quantities), MP3 (justify and critique), MP4 (model situations), MP6 (precision), and MP7 (place-value or factor structure). Use an individual explanation and work sample as evidence.

TEACHER GUIDE

Exact standard and targets

Use visual models and common denominators to:

- Interpret and compute quotients of fractions.
- Solve real-world and mathematical problems involving division of fractions.

A | I can: Interpret and compute fraction quotients using visual models and common denominators.

B | I can: Solve fraction-division problems in context and interpret the quotient.

Evidence: A learner-created labelled visual model, common-denominator calculation, multiplication check, and interpretation of the quotient unit. A correct reciprocal-only computation does not supply all requested evidence.

TEACHER GUIDE

Access, prerequisites, response

Prerequisites: Equivalent fractions; a consistent unit whole; multiplication and division as inverse operations; interpreting numerator and denominator. Review equal partitions before discussing quotient units.

Access: read directions neutrally, enlarge print, allow a straightedge or place-value grid, or accept oral, signed, AAC, or dictated explanations. A learner can direct an adult to write exact algorithm steps or model partitions when motor access requires it. Do not supply the operation, calculation, quotient digit, factor, grouping, or partition being assessed.

Record access separately from answer-supplying help. Calculator use can verify completed work during teaching, but it cannot establish independent algorithm computation. For supported work, preserve the support record and collect a fresh independent example later.

Respond to a misconception: If a learner calls leftover small parts the same fraction of a group as of a whole, bracket a complete divisor-size group and compare the leftover with that bracket. Do not hand over a reciprocal rule in place of a visual explanation.

Fluency evidence: accuracy, sensible efficiency, and independent, reliable use across varied examples over time. Observe explanations and self-checks. No fixed timer, official cut score, or automatic mastery claim is introduced by this packet.

Essential question: How does changing to equal-size fractional units make division meaningful?

TEACHER MODEL | NOT ASSESSMENT

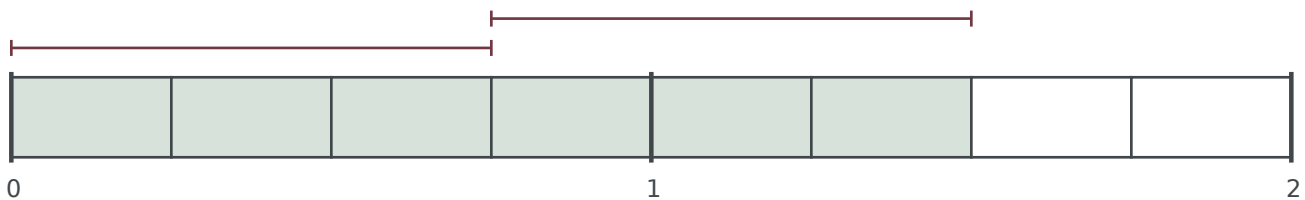
Think aloud: B

Say: “Name one whole → rename in common-size parts → count divisor-size groups → express any leftover as a fraction of ONE GROUP → check by multiplication.”

$\frac{3}{2}$ liter of paint covers $\frac{3}{4}$ square meter at a constant rate. How many liters cover one square meter? Use a labelled visual model AND common denominators. Identify the original whole and the unit represented by the quotient. Check by multiplication.

Model and explain: Rename with common denominator 4: $\frac{3}{2} = \frac{6}{4}$ and $\frac{3}{4} = \frac{3}{4}$. Count groups of 3 small parts in 6 small parts: $6 \div 3 = 2$. Each small part is $\frac{1}{4}$ of the ORIGINAL whole. There are 2 complete groups. Check: $\frac{3}{4} \times 2 = \frac{3}{2}$. Answer: 2 liters per square meter. Scaling interpretation: $\frac{3}{4}$ square meter corresponds to $\frac{3}{2}$ liter; divide both values by $\frac{3}{4}$ to reach 1 square meter. In the grouping drawing, the numerical ratio is the same; label the final rate in liters per square meter.

Equal-unit strip: one full unit contains 4 small parts.



Colored cells show $\frac{3}{2}$; each complete bracket spans 3 cells = $\frac{3}{4}$. A final short bracket, if present, is a fraction of ONE divisor-size group, not of the original whole.

Area (square meters)



Paint (liters)



Aligned quantities preserve the rate: the given area and paint amount correspond; 1 square meter corresponds to the quotient in liters.

Ask: “Which unit or relationship justifies each step? How does the check connect to the original quantity?”

LESSON SCRIPT | Warm-up

Warm-up teaching moves

Optional bank: M01-M04 and O01-O04. Selected core: M01 and O01. Target B: Solve fraction-division problems in context and interpret the quotient.

0-3 minutes: Ask learners to name the units or factors before computing. Collect one estimate or factor relationship. Say, “What do you know before doing the algorithm?”

Next 5-8 minutes: Learners complete the selected O item; observe the actual model or algorithm and record supports.

Selected-task solution for the teacher: Rename with common denominator 4: $\frac{3}{4} = \frac{3}{4}$ and $\frac{1}{2} = \frac{2}{4}$. Count groups of 2 small parts in 3 small parts: $3 \div 2 = \frac{3}{2}$. Each small part is $\frac{1}{4}$ of the ORIGINAL whole. There are 1 complete groups and $\frac{1}{2}$ of another group. Check: $\frac{1}{2} \times \frac{3}{2} = \frac{3}{4}$. Answer: $\frac{3}{2}$ design-lengths.

Final 3-5 minutes: discuss M01. Correct response: $\frac{3}{2}$. Ask a learner to explain one wrong choice without relying on option position.

Look / listen for: common-size fractional parts, a whole-group bracket, leftover as a fraction of that group, and correct quotient units.

If stuck: If a learner calls leftover small parts the same fraction of a group as of a whole, bracket a complete divisor-size group and compare the leftover with that bracket. Do not hand over a reciprocal rule in place of a visual explanation.

Extension: produce a second valid representation or check, compare it with the first, and explain which is more useful here. Record item/date, individual work, reasoning, access, help, and next teaching step. Timing is flexible.

LESSON SCRIPT | I Do

I Do teaching moves

Optional bank: M05-M08 and O05-O08. Selected core: M05 and O05. Target B: Solve fraction-division problems in context and interpret the quotient.

0-4 minutes: Use the worked teacher model. Point to each model unit or algorithm column. Say, “I will explain why each step keeps the quantity unchanged.”

Next 5-8 minutes: Teacher models the selected O item and explains each step; learners annotate a separate organizer.

Selected-task solution for the teacher: Rename with common denominator 4: $\frac{3}{2} = \frac{6}{4}$ and $\frac{3}{4} = \frac{3}{4}$. Count groups of 3 small parts in 6 small parts: $6 \div 3 = 2$. Each small part is $\frac{1}{4}$ of the ORIGINAL whole. There are 2 complete groups. Check: $\frac{3}{4} \times 2 = \frac{3}{2}$. Answer: 2 liters per square meter. Scaling interpretation: $\frac{3}{4}$ square meter corresponds to $\frac{3}{2}$ liter; divide both values by $\frac{3}{4}$ to reach 1 square meter. In the grouping drawing, the numerical ratio is the same; label the final rate in liters per square meter.

Final 3-5 minutes: discuss M05. Correct response: 2. Ask a learner to explain one wrong choice without relying on option position.

Look / listen for: common-size fractional parts, a whole-group bracket, leftover as a fraction of that group, and correct quotient units.

If stuck: If a learner calls leftover small parts the same fraction of a group as of a whole, bracket a complete divisor-size group and compare the leftover with that bracket. Do not hand over a reciprocal rule in place of a visual explanation.

Extension: produce a second valid representation or check, compare it with the first, and explain which is more useful here. Record item/date, individual work, reasoning, access, help, and next teaching step. Timing is flexible.

LESSON SCRIPT | We Do

We Do teaching moves

Optional bank: M09-M13 and O09-O13. Selected core: M09 and O09. Target A: Interpret and compute fraction quotients using visual models and common denominators.

0-4 minutes: Start the selected O item together. Pause before a key grouping, regrouping, or factor decision. Say, “What would you write next, and what makes it valid?”

Next 5-8 minutes: Learners complete the selected O item; observe the actual model or algorithm and record supports.

Selected-task solution for the teacher: Rename with common denominator 6: $7/6 = 7/6$ and $2/3 = 4/6$. Count groups of 4 small parts in 7 small parts: $7 \div 4 = 7/4$. Each small part is $1/6$ of the ORIGINAL whole. There are 1 complete groups and $3/4$ of another group. Check: $2/3 \times 7/4 = 7/6$. Answer: $7/4$ groups of size $2/3$.

Final 3-5 minutes: discuss M09. Correct response: $7/4$. Ask a learner to explain one wrong choice without relying on option position.

Look / listen for: common-size fractional parts, a whole-group bracket, leftover as a fraction of that group, and correct quotient units.

If stuck: If a learner calls leftover small parts the same fraction of a group as of a whole, bracket a complete divisor-size group and compare the leftover with that bracket. Do not hand over a reciprocal rule in place of a visual explanation.

Extension: produce a second valid representation or check, compare it with the first, and explain which is more useful here. Record item/date, individual work, reasoning, access, help, and next teaching step. Timing is flexible.

LESSON SCRIPT | Collaborative practice

Collaborative practice teaching moves

Optional bank: M14-M18 and O14-O18. Selected core: M14 and O14. Target B: Solve fraction-division problems in context and interpret the quotient.

0-3 minutes: Partner A calculates and explains. Partner B checks units and one step without supplying the answer. Switch roles on the last O item in this section; each person records individual work.

Next 5-8 minutes: Learners complete the selected O item; observe the actual model or algorithm and record supports.

Selected-task solution for the teacher: Rename with common denominator 4: $\frac{7}{4} = \frac{7}{4}$ and $\frac{1}{2} = \frac{2}{4}$. Count groups of 2 small parts in 7 small parts: $7 \div 2 = \frac{7}{2}$. Each small part is $\frac{1}{4}$ of the ORIGINAL whole. There are 3 complete groups and $\frac{1}{2}$ of another group. Check: $\frac{1}{2} \times \frac{7}{2} = \frac{7}{4}$. Answer: $\frac{7}{2}$ liters per square meter. Scaling interpretation: $\frac{1}{2}$ square meter corresponds to $\frac{7}{4}$ liter; divide both values by $\frac{1}{2}$ to reach 1 square meter. In the grouping drawing, the numerical ratio is the same; label the final rate in liters per square meter.

Final 3-5 minutes: discuss M14. Correct response: $\frac{7}{2}$. Ask a learner to explain one wrong choice without relying on option position.

Look / listen for: common-size fractional parts, a whole-group bracket, leftover as a fraction of that group, and correct quotient units.

If stuck: If a learner calls leftover small parts the same fraction of a group as of a whole, bracket a complete divisor-size group and compare the leftover with that bracket. Do not hand over a reciprocal rule in place of a visual explanation.

Extension: produce a second valid representation or check, compare it with the first, and explain which is more useful here. Record item/date, individual work, reasoning, access, help, and next teaching step. Timing is flexible.

LESSON SCRIPT | Independent practice

Independent practice teaching moves

Optional bank: M19-M23 and O19-O23. Selected core: M19 and O19. Target B: Solve fraction-division problems in context and interpret the quotient.

0-2 minutes: Read directions neutrally if needed. Say, “Show your steps and explain your check.” Provide no answer-supplying prompt; allow time for thought.

Next 5-8 minutes: Learners complete the selected O item; observe the actual model or algorithm and record supports.

Selected-task solution for the teacher: Rename with common denominator 12: $\frac{5}{6} = \frac{10}{12}$ and $\frac{1}{4} = \frac{3}{12}$. Count groups of 3 small parts in 10 small parts: $10 \div 3 = 10/3$. Each small part is $\frac{1}{12}$ of the ORIGINAL whole. There are 3 complete groups and $\frac{1}{3}$ of another group. Check: $\frac{1}{4} \times \frac{10}{3} = \frac{5}{6}$. Answer: $\frac{10}{3}$ design-lengths.

Final 3-5 minutes: discuss M19. Correct response: $\frac{10}{3}$. Ask a learner to explain one wrong choice without relying on option position.

Look / listen for: common-size fractional parts, a whole-group bracket, leftover as a fraction of that group, and correct quotient units.

If stuck: If a learner calls leftover small parts the same fraction of a group as of a whole, bracket a complete divisor-size group and compare the leftover with that bracket. Do not hand over a reciprocal rule in place of a visual explanation.

Extension: produce a second valid representation or check, compare it with the first, and explain which is more useful here. Record item/date, individual work, reasoning, access, help, and next teaching step. Timing is flexible.

LESSON SCRIPT | Small-group reteach

Small-group reteach teaching moves

Optional bank: M24-M27 and O24-O27. Selected core: M24 and O24. Target A: Interpret and compute fraction quotients using visual models and common denominators.

0-4 minutes: Ask the learner to show a previously difficult step. Locate the precise error; use the anchor to rebuild that step. Do not substitute a recognition item for the performance.

Next 5-8 minutes: Learners complete the selected O item; observe the actual model or algorithm and record supports.

Selected-task solution for the teacher: Rename with common denominator 6: $\frac{2}{3} = \frac{4}{6}$ and $\frac{5}{6} = \frac{5}{6}$. Count groups of 5 small parts in 4 small parts: $4 \div 5 = \frac{4}{5}$. Each small part is $\frac{1}{6}$ of the ORIGINAL whole. There are 0 complete groups and $\frac{4}{5}$ of another group. Check: $\frac{5}{6} \times \frac{4}{5} = \frac{2}{3}$. Answer: $\frac{4}{5}$ groups of size $\frac{5}{6}$.

Final 3-5 minutes: discuss M24. Correct response: $\frac{4}{5}$. Ask a learner to explain one wrong choice without relying on option position.

Look / listen for: common-size fractional parts, a whole-group bracket, leftover as a fraction of that group, and correct quotient units.

If stuck: If a learner calls leftover small parts the same fraction of a group as of a whole, bracket a complete divisor-size group and compare the leftover with that bracket. Do not hand over a reciprocal rule in place of a visual explanation.

Extension: produce a second valid representation or check, compare it with the first, and explain which is more useful here. Record item/date, individual work, reasoning, access, help, and next teaching step. Timing is flexible.

LESSON SCRIPT | Exit ticket

Exit ticket teaching moves

Optional bank: M28-M30 and O28-O30. Selected core: M28 and O28. Target B: Solve fraction-division problems in context and interpret the quotient.

0-2 minutes: Ask for one fresh independent explanation. Say, “Show what your answer means, and one check that convinces you.”

Next 5-8 minutes: Learners complete the selected O item; observe the actual model or algorithm and record supports.

Selected-task solution for the teacher: Rename with common denominator 4: $\frac{5}{2} = \frac{10}{4}$ and $\frac{3}{4} = \frac{3}{4}$. Count groups of 3 small parts in 10 small parts: $10 \div 3 = 10/3$. Each small part is $\frac{1}{4}$ of the ORIGINAL whole. There are 3 complete groups and $\frac{1}{3}$ of another group. Check: $\frac{3}{4} \times \frac{10}{3} = \frac{5}{2}$. Answer: $\frac{10}{3}$ design-lengths.

Final 3-5 minutes: discuss M28. Correct response: $\frac{10}{3}$. Ask a learner to explain one wrong choice without relying on option position.

Look / listen for: common-size fractional parts, a whole-group bracket, leftover as a fraction of that group, and correct quotient units.

If stuck: If a learner calls leftover small parts the same fraction of a group as of a whole, bracket a complete divisor-size group and compare the leftover with that bracket. Do not hand over a reciprocal rule in place of a visual explanation.

Extension: produce a second valid representation or check, compare it with the first, and explain which is more useful here. Record item/date, individual work, reasoning, access, help, and next teaching step. Timing is flexible.

REUSABLE STUDENT ORGANIZER

Make the structure visible

Name: _____ Date: _____

Name one whole → rename in common-size parts → count divisor-size groups → express any leftover as a fraction of ONE GROUP → check by multiplication.

A. Quantities, units, estimate / factor relationships**B. My labelled model / algorithm / factor work****C. Check, explanation, and interpretation**

STUDENT CHOICE BANK

M01 and M02

M01 | Warm-up

A learner reports $\frac{2}{3}$ for $\frac{3}{4} \div \frac{1}{2}$. What is the correct quotient?

A. $\frac{3}{4}$

B. $\frac{5}{2}$

C. $\frac{3}{2}$

D. 3

My check / reasoning: _____

M02 | Warm-up

For $\frac{2}{3} \div \frac{1}{6}$, rename both fractions in 6ths. How many groups does this give?

A. $\frac{5}{6}$

B. $\frac{1}{2}$

C. 4

D. $\frac{1}{4}$

My check / reasoning: _____

STUDENT OPEN / PERFORMANCE BANK

001 | Warm-up

Name: _____ Date: _____

A ribbon is $\frac{3}{4}$ meter long; a design needs $\frac{1}{2}$ meter. How many design-lengths, including part of one, are available? Use a labelled visual model AND common denominators. Identify the original whole and the unit represented by the quotient. Check by multiplication.

A. Model / algorithm / factor work**B. Check, units, and explanation**

STUDENT OPEN / PERFORMANCE BANK

002 | Warm-up

Name: _____ Date: _____

$\frac{2}{3}$ liter of paint covers $\frac{1}{6}$ square meter at a constant rate. How many liters cover one square meter? Use a labelled visual model AND common denominators. Identify the original whole and the unit represented by the quotient. Check by multiplication.

A. Model / algorithm / factor work**B. Check, units, and explanation**

TEACHER-ONLY CHOICE KEYS

M01 and M02

M01 | target A | C. 3/2

Rename with common denominator 4: $\frac{3}{4} = \frac{3}{4}$ and $\frac{1}{2} = \frac{2}{4}$. Count groups of 2 small parts in 3 small parts: $3 \div 2 = 1\frac{1}{2}$. Each small part is $\frac{1}{4}$ of the ORIGINAL whole. There are 1 complete groups and $\frac{1}{2}$ of another group. Check: $\frac{1}{2} \times \frac{3}{2} = \frac{3}{4}$.

Possible reasoning behind each distractor (confirm with the learner):

$\frac{3}{4}$: counts groups twice as large as required.

$\frac{5}{2}$: counts one extra divisor-size group.

3: counts groups half as large as required.

M02 | target A | C. 4

Rename with common denominator 6: $\frac{2}{3} = \frac{4}{6}$ and $\frac{1}{6} = \frac{1}{6}$. Count groups of 1 small parts in 4 small parts: $4 \div 1 = 4$. Each small part is $\frac{1}{6}$ of the ORIGINAL whole. There are 4 complete groups. Check: $\frac{1}{6} \times 4 = \frac{2}{3}$.

Possible reasoning behind each distractor (confirm with the learner):

$\frac{5}{6}$: adds instead of divides.

$\frac{1}{2}$: finds a difference instead of a quotient.

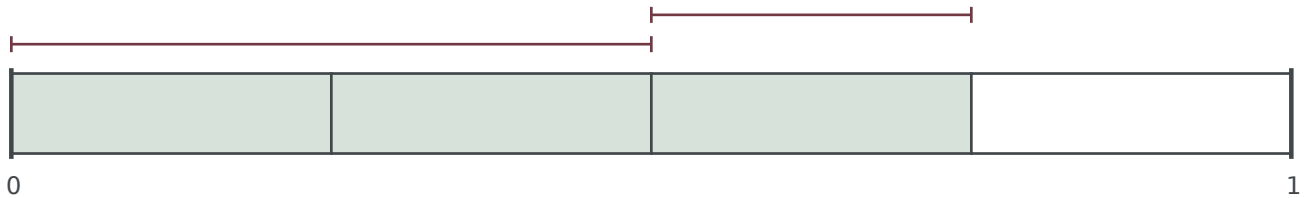
$\frac{1}{4}$: reverses the dividend and divisor.

TEACHER-ONLY PERFORMANCE KEY

001 | target B

Rename with common denominator 4: $\frac{3}{4} = \frac{3}{4}$ and $\frac{1}{2} = \frac{2}{4}$. Count groups of 2 small parts in 3 small parts: $3 \div 2 = \frac{3}{2}$. Each small part is $\frac{1}{4}$ of the ORIGINAL whole. There are 1 complete groups and $\frac{1}{2}$ of another group. Check: $\frac{1}{2} \times \frac{3}{2} = \frac{3}{4}$. Answer: $\frac{3}{2}$ design-lengths.

Equal-unit strip: one full unit contains 4 small parts.



Colored cells show $\frac{3}{4}$; each complete bracket spans 2 cells = $\frac{1}{2}$. A final short bracket, if present, is a fraction of ONE divisor-size group, not of the original whole.

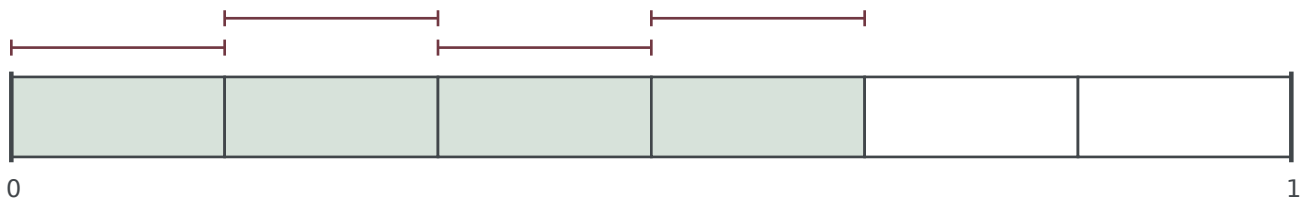
Accept mathematically equivalent notation and valid alternate models or factor trees. Require the representation / algorithm named in the task. Record computation, reasoning, and interpretation separately; a bare correct answer is incomplete evidence.

TEACHER-ONLY PERFORMANCE KEY

002 | target B

Rename with common denominator 6: $\frac{2}{3} = \frac{4}{6}$ and $\frac{1}{6} = \frac{1}{6}$. Count groups of 1 small parts in 4 small parts: $4 \div 1 = 4$. Each small part is $\frac{1}{6}$ of the ORIGINAL whole. There are 4 complete groups. Check: $\frac{1}{6} \times 4 = \frac{2}{3}$. Answer: 4 liters per square meter. Scaling interpretation: $\frac{1}{6}$ square meter corresponds to $\frac{2}{3}$ liter; divide both values by $\frac{1}{6}$ to reach 1 square meter. In the grouping drawing, the numerical ratio is the same; label the final rate in liters per square meter.

Equal-unit strip: one full unit contains 6 small parts.



Colored cells show $\frac{2}{3}$; each complete bracket spans 1 cells = $\frac{1}{6}$. A final short bracket, if present, is a fraction of ONE divisor-size group, not of the original whole.

Area (square meters)



Paint (liters)



Aligned quantities preserve the rate: the given area and paint amount correspond; 1 square meter corresponds to the quotient in liters.

Accept mathematically equivalent notation and valid alternate models or factor trees. Require the representation / algorithm named in the task. Record computation, reasoning, and interpretation separately; a bare correct answer is incomplete evidence.