Teacher guide · Find and interpret per one

One response → one teaching choice

Prepare: keep the readiness and later check files unseen. Teach with the lesson and practice; check with the short check. Use the complete answers below to interpret the actual response before choosing a route.

Response to notice	Teaching move	Student file
Rate is reversed, or the number has no quantity label	Name the requested quantity for one of the other quantity; divide both quantities by the same factor	Clarify
Cannot explain why both quantities scale together	Build equal groups and connect a labeled ratio to one group	Rebuild the idea
Correct labeled rate with an explanation	Apply the same per-one meaning in another supplied context	Continue; then a different follow-up check
Reasoning is secure on the tasks used	Compare representations and explain when a stated constant rate can be used	Extension or apply in a new setting

A blank or unclear response needs a neutral prompt or access check. A response after help is supported performance. Route names are classroom choices, not placement labels. Complete keys and alternatives remain below.

Target

Find a requested unit rate and explain which quantity is measured per one of the other quantity.

Fit and entry

A short supplement for U.S. Grade 6 students learning to find and interpret unit rates. Students should have the prerequisites below.

Name both quantities in a ratio in the intended order, make equivalent labeled pairs by scaling both quantities, divide whole numbers, and read a simple fraction as division. Equivalent ratios supplies ratio-language and equivalent-group work.

Materials

Paper and pencil. Optional counters for equal groups. No device, purchase, account or email is needed.

Teaching sequence

1. Begin with Equivalent ratios for prerequisite work, then Find and interpret per one, then Compare unit rates. Begin with comparisons only when students already understand per one and quantity units.

2. Give Readiness alone before any model, glossary or lesson. If prerequisite reasoning is unclear, use Equivalent ratios or Find and interpret per one as needed. Use the response to choose where to begin teaching.

3. Teach the model and guided page. Then give the separate Independent check file without the answer key. Lesson and check use different tasks.

4. Use the teacher guidance to choose one follow-up from the student’s response. Note why you chose it and give only that follow-up page.

5. Save the follow-up check, later revisit and application tasks until students are ready to try on their own. Their contexts and data differ, so the tasks may have different demands. If students have seen a task before, treat the response as practice.

6. Use the follow-up check after teaching, the later revisit after another learning opportunity, then the application task. Keep local notes on tasks already seen, tools and other support.

Printing and choosing tasks · Find and interpret per one

Choose the student pages you need

Every student file is separate. Give readiness page 1 alone before models, lesson or glossary. Teach-lesson page 1 supplies the model/Worked example; page 2 supplies Guided task 1/Guided task 2. Check-only pages 1 and 2 supply Independent task 1/Independent task 2 and contain no model or intended key.

Give only page 1 of the chosen follow-up file. Save the follow-up check, later revisit and application tasks until students are ready to try on their own. Keep the classroom ZIP and teacher guide for teacher use; they contain answer keys.

When a student has already seen a task

The follow-up check, later revisit and application tasks use new data or contexts and may have different demands. If a student has seen a task, a worked example that answers it, or its answer key, note this and use the response as practice. Use a task the student has not seen to check their own reasoning.

Response criteria

Calculation: divides the requested numerator by its corresponding nonzero denominator.

Meaning: labels both quantities and identifies the quantity represented by 1.

Reason: explains equal groups, equivalent pairs or division with quantity meaning.

Condition: uses the supplied constant rate or equal-use assumption when extending.

Consider each part of the response

Record calculation, quantity labels/direction, explanation and conditions separately. A correct bare number leaves meaning uncertain. A single arithmetic slip can coexist with sound rate reasoning. Use a tentative next step; do not make a summed mastery score or stable ability claim.

Choose a next move · continue

Student response

Independent task 1 and Independent task 2 show requested units, direction and a defensible explanation.

Use Continue task · Continue file page 1

Ask for the labeled rate and why it can be used for the new quantity.

After the move

After teaching, use a follow-up check task the student has not seen. Note calculation, units and explanation separately, then choose the next teaching step from the response. If meaning remains unclear, ask for clarification before drawing a conclusion about the student’s understanding.

Checks after teaching

Follow-up check pages 1 and 2 contain Follow-up check tasks 1 and 2. Use both to examine the target components after a route. Later-revisit pages 1–2 are Later task 1/Later task 2. Transfer page 1 is Apply task. If evidence is still unclear, clarify or reteach and document what remains uncertain.

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Choose a next move · clarify

Student response

A blank, unreadable or number-only answer leaves language, response mode or direction uncertain.

Use Clarify task · Clarify file page 1

Read the task neutrally or allow an oral/labeled drawing response; ask what the 1 names. Supply no calculation or choice. Record the changed conditions.

After the move

After teaching, use a follow-up check task the student has not seen. Note calculation, units and explanation separately, then choose the next teaching step from the response. If meaning remains unclear, ask for clarification before drawing a conclusion about the student’s understanding.

Checks after teaching

Follow-up check pages 1 and 2 contain Follow-up check tasks 1 and 2. Use both to examine the target components after a route. Later-revisit pages 1–2 are Later task 1/Later task 2. Transfer page 1 is Apply task. If evidence is still unclear, clarify or reteach and document what remains uncertain.

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Choose a next move · reteach

Student response

Clarification still shows reversed units or dividing without making the requested denominator 1.

Use Follow-up task · Reteach file page 1

Teach with the supplied equal-group/table task. Keep both quantities named. If the prerequisite remains unclear, use Equivalent ratios labeled groups before Find and interpret per one.

After the move

After teaching, use a follow-up check task the student has not seen. Note calculation, units and explanation separately, then choose the next teaching step from the response. If meaning remains unclear, ask for clarification before drawing a conclusion about the student’s understanding.

Checks after teaching

Follow-up check pages 1 and 2 contain Follow-up check tasks 1 and 2. Use both to examine the target components after a route. Later-revisit pages 1–2 are Later task 1/Later task 2. Transfer page 1 is Apply task. If evidence is still unclear, clarify or reteach and document what remains uncertain.

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Choose a next move · extend

Student response

The learner explains both directions and is ready to examine a fresh fractional-rate error.

Use Extension task · Extend file page 1

Ask for exact fractions or an equivalent common-quantity argument; ask how reversing direction changes the interpretation.

After the move

After teaching, use a follow-up check task the student has not seen. Note calculation, units and explanation separately, then choose the next teaching step from the response. If meaning remains unclear, ask for clarification before drawing a conclusion about the student’s understanding.

Checks after teaching

Follow-up check pages 1 and 2 contain Follow-up check tasks 1 and 2. Use both to examine the target components after a route. Later-revisit pages 1–2 are Later task 1/Later task 2. Transfer page 1 is Apply task. If evidence is still unclear, clarify or reteach and document what remains uncertain.

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Answer guidance · Find and interpret per one · 1

Readiness task

Task: A club puts 12 cards into 3 equal packs. Write cards:packs in that order. How many cards are in each equal pack? Explain how both quantities change when you describe 1 pack.

Answer: 12:3; 4 cards per pack. Divide 12 cards and 3 packs by 3 to obtain 4 cards and 1 pack.

Also accept: Labeled equal groups, a ratio table or 12 / 3 = 4 with the pack meaning.

Look for: Separate quantity order, equal-sharing meaning and arithmetic.

Worked example

Task: Use the pump model. Explain why 5 liters per minute and 1/5 minute per liter can both be correct. Which answers the question How many liters in one minute?

Answer: 5 liters per minute answers the stated question; 1/5 minute per liter answers time for one liter. Both describe the same stated constant rate in opposite directions.

Also accept: A labeled explanation or table that connects 5 liters with 1 minute.

Look for: A model response is teaching evidence, never an independent check.

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Answer guidance · Find and interpret per one · 2

Guided task 1

Task: At a constant rate a printer makes 24 labels in 4 minutes. Find labels per minute. First name the quantity that must become 1, then divide both quantities.

Answer: 6 labels per minute; 4 minutes becomes 1 minute by dividing by 4; 24 labels divided by 4 = 6.

Also accept: Equal groups or a labeled table.

Look for: Does 1 attach to minute rather than label?

Guided task 2

Task: A dispenser pours 3 liters in 4 minutes at a constant rate. Find liters per minute. Write a fraction and explain its meaning. Could this be described as 4/3 liters per minute? Explain.

Answer: 3/4 liter per minute. Each minute corresponds to 3/4 liter. 4/3 is minutes per liter, not liters per minute.

Also accept: 0.75 liter per minute or a labeled fraction/table; decimal notation is acceptable but not required.

Look for: Fractions are meaningful for volume; do not require decimal conversion.

Answer guidance · Find and interpret per one · 3

Independent task 1

Task: A machine produces 35 stickers in 5 minutes at a constant rate. Find stickers per minute and explain the meaning of your answer. Show why your operation matches the requested units.

Answer: 7 stickers per minute. Divide 35 stickers by 5 minutes; the equivalent pair is 7 stickers in 1 minute.

Also accept: A labeled table, equal time groups or a clear equation and sentence.

Look for: Correct number without units does not establish direction.

Independent task 2

Task: At a constant rate a hose supplies 5 liters in 2 minutes. Find liters per minute. Then find minutes per liter. Explain why the unit labels differ.

Answer: 5/2 (2 1/2) liters per minute and 2/5 minute per liter. The first describes water in 1 minute; the second time for 1 liter.

Also accept: 2.5 liters per minute and 0.4 minute per liter; correctly labeled reciprocal relationships.

Look for: Do not treat an inversion as merely a division slip.

Answer guidance · Find and interpret per one · 4

Continue task

Task: A conveyor carries 27 boxes in 9 minutes at a constant rate. Find boxes per minute. At that same rate, how many boxes pass in 4 minutes? Explain.

Answer: 3 boxes per minute and 12 boxes in 4 minutes.

Also accept: Equivalent labeled pairs or multiplication after a correct unit rate.

Look for: Continue when labels, direction and explanation in the check are secure.

Clarify task

Task: A cart travels 18 meters in 3 seconds at a constant speed. Find meters per second. Explain in words or a labeled drawing what the 1 means.

Answer: 6 meters per second; the 1 is 1 second.

Also accept: Read-aloud/oral/drawing response with the same mathematics.

Look for: This alternate response helps clarify an ambiguous or blank response; record support used.

Answer guidance · Find and interpret per one · 5

Follow-up task

Task: At a constant rate, a machine fills 16 liters in 4 minutes. Draw four equal time groups, label each group 1 minute, and share the 16 liters equally among them. State liters per minute. Then describe what changes in both quantities when 4 minutes becomes 1 minute.

Answer: Each group is 4 liters in 1 minute; divide both quantities by 4.

Also accept: Four labeled groups or a matching ratio table.

Look for: Prompt meaning before procedure; if ratio labels/equal groups remain unclear use Equivalent ratios.

Extension task

Task: A fictional response says: 7 liters in 3 minutes means 3/7 liters per minute. At a constant rate, correct the units or number and explain both directions. Which quantity can be 1 in each statement?

Answer: 7/3 liters per minute (1 minute); 3/7 minute per liter (1 liter). The fictional response reversed the direction.

Also accept: Mixed number 2 1/3 for 7/3; either correct unit relabeling or complete paired statements with explanation.

Look for: Extension deepens direction and non-integer reasoning, not speed.

Answer guidance · Find and interpret per one · 6

Follow-up check task 1

Task: A scanner reads 28 pages in 7 minutes at a constant rate. Find pages per minute. Explain which quantity becomes 1 and what your answer means.

Answer: 4 pages per minute; 1 minute; 4 pages scanned each minute.

Also accept: Labeled table/equal groups or explanatory equation.

Look for: Save this task until students are ready to try on their own after the chosen follow-up. If shown earlier, use it as practice.

Follow-up check task 2

Task: A valve releases 7 liters in 4 minutes at a constant rate. Find liters per minute and minutes per liter. Explain the difference.

Answer: 7/4 liters per minute and 4/7 minute per liter.

Also accept: 1 3/4 liters per minute; clear correctly labeled reciprocal explanation.

Look for: Checks fraction direction with fresh data; not a calibrated equivalent form.

Answer guidance · Find and interpret per one · 7

Later task 1

Task: A belt moves 32 centimeters in 8 seconds at a constant speed. Find centimeters per second and explain the meaning.

Answer: 4 centimeters per second. Each second corresponds to 4 centimeters.

Also accept: Correct labeled equation/table.

Look for: Collect after another learning opportunity with no prior solutions visible.

Later task 2

Task: A sprayer uses 11 liters in 5 minutes at a constant rate. Find liters per minute. A fictional note says 5/11 liters per minute. Explain the error.

Answer: 11/5 liters per minute (2 1/5); 5/11 would be minutes per liter.

Also accept: A correctly labeled 2.2 liters per minute plus direction explanation.

Look for: Use new context/data to revisit direction; this is not empirical retention evidence.

Answer guidance · Find and interpret per one · 8

Apply task

Task: A craft station uses 18 meters of ribbon for 6 identical banners, with no waste. Find meters per banner. How much ribbon is needed for 4 identical banners? State the assumption that lets you use the same rate.

Answer: 3 meters per banner; 12 meters for 4 banners. Each banner uses the same amount and no waste is included.

Also accept: Equivalent labeled ratios or multiplication using 3 meters per banner.

Look for: Notice whether the learner carries the condition into a new setting.

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Supports and boundaries

Preserve the learning target

Reading or written-language load: Read task words without explaining the rate, allow oral explanations or labeled diagrams; offer sentence frame ___ units of ___ for each 1 ___. Keep constant: The rate, requested direction and comparison goal stay unchanged. Limit: Record the response mode and assistance; supported work is not evidence of unaided reading/writing.

Arithmetic blocks rate meaning: Separate reasoning from computation. First ask the learner to label the division and the quantity represented by 1. If using a calculator, record it. Keep constant: The learner must choose the correct division/direction and interpret units. Limit: Calculator-supported responses do not establish unaided arithmetic fluency.

Ratio prerequisite or per-one meaning: Use Equivalent ratios labeled complete groups for ratio order/scaling, then Find and interpret per one equal-time/equal-item groups before Compare unit rates comparisons. Keep constant: Return to the original target only after prerequisite support. Limit: Do not interpret an unfinished higher-target task as a lasting difficulty.

Scope

Interpret per one, preserve direction and units, compare on the same basis, explain ties and missing information, and apply a stated constant rate. No percent, measurement conversion, coordinate graphing, complex fractions or complete proportionality course.

Standards fit

6.RP.A.2, selected 6.RP.A.3b. Find and interpret per one addresses unit-rate meaning and language; Compare unit rates addresses selected comparison and unit-pricing/constant-rate problems. These materials do not assess the whole standard or establish course alignment.

https://www.thecorestandards.org/Math/Content/6/RP/

Classroom use and limits

Using these materials

These original tasks use fictional contexts and constructed numerical data.

Teachers may print, use and adapt these materials for their teaching. Retain Mentor Teaching attribution and identify local changes.

Tables in the Word files are editable. No third-party images or copied worksheets are included.

Standards reference

Common Core Grade 6 ratios and proportional relationships: scope and grade reference. Tasks and examples are original. https://www.thecorestandards.org/Math/Content/6/RP/

Teaching limits

Brief responses help you choose a next teaching step. They do not establish a diagnosis, stable ability rank or mastery score. Classroom effectiveness, timing and equal difficulty across checks have not been established. Editable Word pagination and accessibility may vary with local software.

Keep the record local

Use the optional local decision record if helpful. Keep student names, work and response notes locally; do not submit them through the site.

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Fictional teaching response — sound for the named task

Named task: Independent task 1: 35 stickers in 5 minutes at a constant rate

Fictional response — sound for the named task: “35 stickers ÷ 5 minutes = 7 stickers per minute. Dividing the sticker total by the number of minutes gives the sticker amount for one minute at the supplied constant rate.”

Visible evidence: Correct unit-rate value, direction and interpretation of per one minute.

Not established: Actual machine performance or the reciprocal-rate reasoning in independent task 2.

Clarify: Ask what the one in ‘per one minute’ represents.

Next teaching/evidence: Use Follow up check after another learning opportunity and keep Later revisit reserved.

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

Fictional teaching response — partially developed

Named task: Independent task 1: 35 stickers in 5 minutes at a constant rate

Fictional response — partially developed: “35 ÷ 5 = 7.”

Visible evidence: Correct arithmetic for the requested rate.

Not established: The quantity units or meaning of the result.

Clarify: Ask the learner to attach labels to both inputs and the quotient, then explain the one-minute amount.

Next teaching/evidence: If direction remains unclear, use the Clarify cart task: 18 meters in 3 seconds, finding meters per second and explaining the one.

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

Fictional teaching response — plausible error

Named task: Independent task 1: 35 stickers in 5 minutes at a constant rate

Fictional response — plausible error: “5 ÷ 35 = 1/7 stickers per minute.”

Visible evidence: The reciprocal calculation is numerically correct.

Not established: The requested unit direction: 5 minutes divided by 35 stickers is minutes per sticker.

Clarify: Label the numerator and denominator before calculating and ask which quantity must become one.

Next teaching/evidence: Use the Clarify cart task, then ask the learner to label and explain the rate. Reserve the separate follow-up rather than repeating the answered sticker task.

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