

# Unit-rate mentoring rehearsal

## Prepare one small cycle

For a mentor and new teacher planning locally fitted Grade 6 mathematics. Every learner response and conversation in this rehearsal is invented for professional practice. None is a classroom observation or evidence that a teaching move worked.

Choose one teacher-owned focus: help a learner explain what a per-one amount means. Use the existing First 30 Days of New-Teacher Mentoring guide for the wider relationship and meeting plan. This companion supplies the mathematics case and follow-through.

- Agree roles, how notes will be used and the local boundary between mentoring and formal evaluation before any real observation. Follow school procedures; do not promise confidentiality that local policy does not permit.
- Read the worked case together. Then try the guided and independent cases before opening the facilitator keys. Allow about 30-40 minutes for rehearsal; this is a planning estimate.
- Keep the learner prompt sheets and keys separate. Use only the chosen prompt page. Reserve the fresh and later checks until needed. All essential prompts, keys and a reusable record are in this pack.
- For real use, fit the target to the taught curriculum and available support. Record brief anonymous evidence rather than student or employee identifiers. The new teacher may continue, change the focus or pause.

## The sequence

Target and task -> notice the response -> hold alternative explanations -> ask a neutral probe -> choose teaching from the reply -> use a fresh matched check -> return to the evidence and choose one next action.

# Unit-rate mentoring rehearsal

## Know the mathematics before discussing a learner

Interpret the requested litres per container as a per-one amount; label the quantities and explain equal sharing. A reconstruction of the total supports the explanation. Decimal speed and writing fluency are not the target.

A class shares 6 litres of water equally among 8 containers. All 6 litres are used, with no loss or leftover. Each container has enough space. How much water goes in one container? Give the amount and its unit. Draw or explain the equal sharing, then write an equation and check that 8 equal amounts make 6 litres.

### A worked equal-share model

Think of one bar representing all 6 litres. Partition that total into 8 equal parts. One part is  $\frac{6}{8}$  litre =  $\frac{3}{4}$  litre = 0.75 litre. Eight copies reconstruct the total:  $8 \times \frac{3}{4}$  litre = 6 litres. A part is  $\frac{1}{8}$  of the 6-litre total, not  $\frac{1}{8}$  litre.

6 litres / 8 containers = 0.75 litre per container. The reverse rate, 8 containers / 6 litres =  $1 \frac{1}{3}$  containers per litre, answers a different question. Its arithmetic can be correct while its label fails the requested quantity.

No container capacity is given beyond enough space for the share. Do not treat one container as a one-litre unit. These are invented quantities for a written task; no physical trial is required.

### Prerequisites and a useful route

Learners need to track the two quantities, understand equal sharing, and represent a fraction of a litre. If those ideas need teaching, use the existing Unit Rates: Find Per One lesson, or the Equal Groups and Shares collection for prerequisite work. A missing written explanation alone does not establish a missing mathematical idea.

# Unit-rate mentoring rehearsal

## Worked conversation: notice, then investigate

Fictional response A: "8 divided by 6 = 1  $\frac{1}{3}$ . Each container gets 1  $\frac{1}{3}$  litres." The learner supplied no drawing or explanation. The response was written individually before a model or partner help.

### Mentor: What can we observe?

New teacher: The division gives the reverse numerical rate correctly, but the answer labels it litres per container. There is no drawing or total check. I cannot yet tell why the learner used that order.

### Mentor: Keep more than one explanation open

New teacher: The learner may have answered containers per litre and then mixed up the label. Or the learner may use a larger-number-divided-by-smaller-number rule without tracking the quantities. These are possibilities, not a diagnosis.

### A neutral probe

New teacher to learner: "Read your equation using the quantity names. Show where one container and the 6-litre total appear in your drawing."

This asks for the learner's meaning without supplying the correct division order or amount. Record the reply before choosing a move. A probe still changes the interaction: note that it was asked when interpreting the evidence.

### Mentor: What would change your decision?

New teacher: If the reply shows reversed rate language but sound sharing, I will clarify the requested unit and check independently. If it shows a larger-over-smaller rule and no equal-share meaning, I will model the share and ask the learner to reconstruct the total.

# Unit-rate mentoring rehearsal

## Worked conversation: two replies, two moves

### Possible reply 1: a numerical rule

Invented probe reply: "I divide the bigger number by the smaller one. The amount must be more than one because I divided." This supports concern about quantity meaning; it does not prove a stable misconception.

New teacher to learner: "This bar stands for all 6 litres, not one litre. We need 8 equal shares. I partition the total into 8 equal parts: each part is  $\frac{6}{8}$  litre, or  $\frac{3}{4}$  litre. Now point to one container's share. Explain how 8 copies return the 6 litres."

After the model, give the practice page: 8 litres shared among 10 containers. Ask for a labelled amount, equal-share explanation and reconstruction. If the learner still cannot connect one share to the total, continue with a concrete bar or quantity labels before giving a fresh check. Record support.

### Possible reply 2: a reversed rate label

Invented probe reply: "I found containers per litre and wrote the wrong unit. For one container it is 6 divided by 8, or 0.75 litre. Eight copies make 6 litres."

New teacher to learner: "Your reply explains the sharing. Underline the quantity the question asks for and revise your answer with litres per container. Then show the sharing and total check on a new problem by yourself." Use the fresh-check page when ready.

### Choose a move that fits the reply

The two replies support different immediate moves. Neither establishes broad mastery or a lasting cause. A supported practice answer and an independent fresh-check answer provide different evidence.

# Unit-rate mentoring rehearsal

## Guided case: a correct number with missing meaning

A class shares 6 litres of water equally among 8 containers. All 6 litres are used, with no loss or leftover. Each container has enough space. How much water goes in one container? Give the amount and its unit. Draw or explain the equal sharing, then write an equation and check that 8 equal amounts make 6 litres.

Fictional response B: "0.75". No unit, drawing, explanation or check was supplied. The response was written individually before a model or partner help.

Discuss questions 1-3 before reading the possible replies on the next page. Use the cycle record or a separate sheet. Compare with the facilitator guide afterward.

1. What is directly visible, and what evidence requested by the task is missing? Avoid adding a cause.
2. Give at least two plausible explanations for this response. What would you need to distinguish them?
3. Write a neutral probe that asks the learner to explain 0.75 with the quantities and equal sharing, without giving its unit or the solution.

**Notes: observation, alternatives and your exact probe**

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# Unit-rate mentoring rehearsal

## Guided case: choose from new evidence

### Two possible probe replies

Reply B1: "I just divided the numbers in the order they were written. I do not know whether 0.75 tells how many containers or how much water."

Reply B2: "It is 0.75 litre for each container, or  $\frac{3}{4}$  litre. Eight copies make 6 litres. I did not write the unit or explanation."

4. For each reply, write a different justified next move and the exact words you would say to the learner. Name a complete prompt page you would use next. State which support you would record and what evidence would let you continue or adjust.

Keep the target fixed. Making an explanation visible can include a drawing, speech or typing; if writing is not the target, record the response mode rather than treating handwriting as mathematical meaning.

### B1: evidence, teaching words, next prompt and decision

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### B2: evidence, teaching words, next prompt and decision

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## Unit-rate mentoring rehearsal

## Independent case: correct after help

A class shares 6 litres of water equally among 8 containers. All 6 litres are used, with no loss or leftover. Each container has enough space. How much water goes in one container? Give the amount and its unit. Draw or explain the equal sharing, then write an equation and check that 8 equal amounts make 6 litres.

Fictional response C: "6 divided by 8 =  $\frac{3}{4}$  litre per container. Eight lots of  $\frac{3}{4}$  litre make 6 litres." The learner wrote this after a partner explained the same problem and the teacher displayed its worked solution.

Work alone before opening the facilitator guide. This case asks you to make an instructional decision, not rate the teacher or learner.

1. What does the written response show? What does the recorded help prevent you from concluding?
2. Give two plausible accounts of the correct response. Write a neutral probe or checking plan that would help distinguish them.
3. Choose a next action and name the complete learner prompt page you would use. Write the exact direction, the conditions and support record, and the mathematical evidence you will look for.
4. Describe how a labelled explanation, a correct unlabelled number, or a reversed rate on that check would change your next teaching. Do not invent a result.

## Independent decision and contingencies

[illegible]

# Unit-rate mentoring rehearsal

## Return conversation: qualify the conclusion

Invented fresh-check record: After the sharing model and supported practice, the learner received only the fresh-check page: 5 litres shared equally among 8 containers. No example answer, calculator or partner help was supplied; the teacher read the directions once without explaining them. The learner wrote: "5/8 litre per container = 0.625 litre per container. Eight copies of 5/8 litre make 5 litres," and drew a total bar divided into 8 equal parts.

Invented new-teacher claim: "That proves I fixed unit rates." The mentor returns to the one target, the known conditions and the actual response.

1. Which parts of the target does this response support on this task? What remains unknown?
2. Rewrite the teacher's claim as a limited evidence statement. Separate a sequence after teaching from proof that teaching caused the result.
3. Choose a concrete next action with the teacher. When would you use the later-check page, and what prior exposure or support would you record?
4. Write a short mentor question that preserves the teacher's agency and agrees one feasible follow-up using available support.

### Return conversation notes

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# Unit-rate mentoring rehearsal

## Try the cycle in your own setting

The following planning questions extend the professional rehearsal; they do not turn the fictional responses into classroom evidence. Keep the existing mentoring meeting plan and locally agreed note use.

1. Name one locally relevant learner target and the task that will expose the reasoning. If you change the mathematics, write and check a new solution and criteria before use.
2. Choose one short work sample without identifiers. Record the original prompt, what help or model was available, and only what is actually visible. Hold at least two explanations until you have enough evidence.
3. Plan a neutral probe, conditional learner-facing teaching and a matched new check whose answer has not already been shown. Record response mode and support; keep keys separate.
4. Agree one return conversation and one feasible next action. The teacher may continue, adjust the target or pause. Record a limited learning claim and an unresolved question, not a rating or invented outcome.

### One next action, available support and agreed return

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Optional existing routes: First 30 Days of New-Teacher Mentoring for the relationship; Check for Understanding and Choose the Next Step for general response planning; Unit Rates: Find Per One for further mathematics teaching. They supplement this complete rehearsal rather than replace a missing prompt.