

Teacher guide: Rates from graphs pathway

Objective: Interpret rates and areas from graphs at the appropriate tier.

Calculator condition: Calculator allowed where labelled; non-calculator reasoning remains required.

Learning Cycle plan

Stage	Time	Teacher move	Evidence to collect
Connect & Check	5 min	State the objective and timeline. Retrieve cumulative checkpoint 7 and feedback or a prerequisite. Diagnose a common error before modelling.	Independent written response, correction or verbal explanation.
Share	7 min	Pairs compare methods or predict a result for rates from graphs pathway. Ask for a reason, not only an answer.	Independent written response, correction or verbal explanation.
Present	10 min	Foundation: straight-line rates and simple speed graphs. Higher: tangents and estimates of area under curves	Independent written response, correction or verbal explanation.
Apply	25 min	Explain a rate estimate and check units and approximation Use guided support, then remove it for independent working.	Independent written response, correction or verbal explanation.
Recall & Review	8 min	Revisit the objective. Learners solve a fresh item without prompts, explain a check, correct one error and record the next practice.	Independent written response, correction or verbal explanation.

Differentiation

- All learners reach the same objective; route choice changes the journey, not the standard.
- Use visual, method and explanation routes to support access.
- Remove prompts before exit evidence.
- Use stretch and deep challenge only after the core method is secure.

Assessment response

- Check the formative mini-test and independent workbook response against the objective. Use the teacher answers or mark guidance; group errors for reteaching. NC/C selected to purpose; label each question.

Recall & Review: feedback and extension integration

Lesson L089: Rates from graphs pathway

Objective: Interpret rates and areas from graphs at the appropriate tier.

Timing for a 60-minute lesson

0-7 Connect & Check; 7-14 Share; 14-25 Present/model; 25-44 Apply route choice/practice; 44-52 independent exam-style check; 52-60 Recall & Review, WWW/EBI and next step.

Recall & Review evidence

At the end of the lesson, solve a fresh question without prompts, explain one check, correct one error and record the next practice step.

What Went Well (WWW)

I read or constructed the graph accurately, used the scale and axes correctly and linked the relevant gradient, intercept, shape or trend to my conclusion.

Even Better If (EBI)

I will label units and scale clearly, show the calculation or graphical evidence I used and check that the interpretation fits the context.

Integrated stretch and deep challenge

Stretch: A velocity increases uniformly from 4 to 16 m/s in 6 s. Find acceleration and distance.

Deep challenge: A velocity-time graph dips below the time axis. What does negative area mean?

Teacher use

Use the What Went Well (WWW) and Even Better If (EBI) prompts to write mathematics-specific feedback linked to the objective. Do not accept generic praise: identify the method, representation, reasoning or checking step that improved, then set a fresh next-step question.

Assessment evidence to inspect: Check the formative mini-test and independent workbook response against the objective. Use the teacher answers or mark guidance; group errors for reteaching. NC/C selected to purpose; label each question.