

Learner workbook: Powers roots and index laws

Objective: Use powers, roots and index laws with valid conditions.

Calculator condition: Non-calculator core; calculator optional only for checking where labelled.

L053 Powers roots and index laws

Recall

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Model

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Practise

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Prove

Objective: Use powers, roots and index laws with valid conditions.

Connect & Check

- State the objective and timeline. Retrieve cumulative checkpoint 3 and feedback or a prerequisite. Diagnose a common error before modelling.
- Write one starting question you want answered today.

Choose your route

Route A: Visual Use a diagram, graph, table or annotation first.	Route B: Method Use a worked method, formula or calculation chain first.	Route C: Explain Start with words: what is known, what is changing, and why.
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Share

- Pairs compare methods or predict a result for powers roots and index laws. Ask for a reason, not only an answer.

Present

- Compare repeated multiplication with laws; test a false rule using a counterexample

Apply: supported to independent

Recall: Retrieve the key fact or method needed for powers roots and index laws.

Working: _____

Check/explanation: _____

Core practice: Simplify $(3x^2y^3)(2x^4y)$ and state any assumptions.

Working: _____

Check/explanation: _____

Reasoning: Is $x^5 + x^3 = x^8$? Show why or give a counterexample.

Working: _____

Check/explanation: _____

Exam-style: Solve an exam-style problem involving powers roots and index laws. Show working, include a check and interpret your answer.

Working: _____

Check/explanation: _____

Recall & Review

- Revisit the objective. Learners solve a fresh item without prompts, explain a check, correct one error and record the next practice.

WWW: _____ EBI: _____

Recall & Review: feedback and extension integration

Lesson L053: Powers roots and index laws

Objective: Use powers, roots and index laws with valid conditions.

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 selected an efficient numerical method, showed the key steps clearly and checked the sign, size or accuracy of my answer.

Even Better If (EBI)

I will make the place-value, sign or operation decision explicit and use estimation or an inverse calculation to check a fresh question.

Integrated stretch and deep challenge

Stretch: Simplify $(3x^2y^3)(2x^4y)$ and state any assumptions.

Deep challenge: Is $x^5 + x^3 = x^8$? Show why or give a counterexample.

My next-step response
