



PRISMS AND CYLINDERS

GCSE Mathematics 1MA1 · L035

Week 12 · 60 minute lesson

The goal

Calculate prism and cylinder volumes from cross-sectional area and length.

Starting point

Explain what you already know.

A prism has a constant cross-section. Volume is cross-sectional area multiplied by length.

Compare methods

With a partner, predict the first step for: A triangular prism has cross-section base 6 cm and height 4 cm, with length 10 cm. Find its volume.

What method will you use? Compare your reasons before the model.

Worked example

A triangular prism has cross-section base 6 cm and height 4 cm, with length 10 cm. Find its volume.

What method will you use?

Explain the method

Triangle area = 12 cm^2 , so volume = 120 cm^3 .

Identify the first step and a check.

Independent practice

A cylinder has radius 3 cm and height 8 cm. Give its volume exactly.

Show working and include units where needed.

Reasoning challenge

A prism has volume 210 cm^3 and cross-section area 15 cm^2 . Find its length.

Explain why your method works.

Optional stretch

A prism has a trapezium cross-section with parallel sides 4 cm and 8 cm and height 3 cm. Its length is 11 cm. Find the volume.

Try this when independent work is secure.

Optional deep challenge

A cylinder and a triangular prism both have cross-sectional area 24 cm^2 and length 7 cm. Compare their volumes and explain.

Explain and check your conclusion.

Independent exit evidence

Without notes, complete the Apply question. Show a method and a separate check.

Your teacher will use this to decide the next step.



Before the next lesson

Surface area and volume

Write one question about today's work and attempt the preparation task in your workbook.

L035 Recall & Review

Prisms and cylinders



Fresh evidence: prove the objective

Solve a new question without prompts. Explain one check, then correct one error in your working.

Objective: Calculate prism and cylinder volumes from cross-sectional area and length.

Write the next practice step before you leave. It must test the method again, not simply copy today's example.

Feedback language

Use the full phrases before the abbreviations.

What Went Well (WWW)

I selected the correct geometric fact, theorem, formula or transformation and used a clear diagram with appropriate labels and units.

Identify the mathematical method, representation, reasoning or check that improved.

Even Better If (EBI)

I will name the fact or theorem, show the substitution or construction step and check whether the size, direction and units of the result are reasonable.

Set one precise next-step action and test it on a fresh question.

Extension route

Choose this route only after the core evidence is secure.

Stretch

A prism has a trapezium cross-section with parallel sides 4 cm and 8 cm and height 3 cm. Its length is 11 cm. Find the volume.

Deep challenge

A cylinder and a triangular prism both have cross-sectional area 24 cm^2 and length 7 cm. Compare their volumes and explain.

Explain your reasoning clearly enough that another learner could check it.