

Teacher mark scheme • Surface area and volume

GCSE Mathematics 1MA1 • L036 • 60 minutes

Award method marks where a correct structure is shown, even if arithmetic slips follow. Require correct units where the question context gives units.

Q	Answer	Marks	Guidance
1	84 cm^3	2	1 for $7 \times 4 \times 3$; 1 answer with cubic units.
2	122 cm^2	3	1 face-pair structure; 1 correct arithmetic; 1 square units.
3	$112\pi \text{ cm}^2$	3	1 for $2\pi r^2$; 1 for $2\pi rh$; 1 correct combination.
4	$160\pi \text{ cm}^3$	2	1 $\pi r^2 h$ structure; 1 correct value/units.
5	228 cm^2	4	1 base; 1 pair of long sides; 1 pair of short sides; 1 total/units.
6	$h=6 \text{ cm}$; $SA=396 \text{ cm}^2$	4	1 height equation; 1 height; 1 SA structure; 1 answer/units.
7	Any valid distinction/check, e.g. square vs cubic units and whether faces or 3D capacity were calculated.	2	1 identifies distinction; 1 applies it as a check.

Indicative grade-linked feedback

Developing: distinguishes area from volume with support but may omit faces or units. Secure: selects the correct structure independently and uses correct units. Strong: handles open/closed solids, exact π and reverse dimension problems with justified checks.

Common misconception -> response

Uses cm^2 for volume: Ask: how many dimensions were multiplied? Re-run with unit multiplication $\text{cm} \times \text{cm} \times \text{cm}$.

Uses $2\pi rh$ for a closed cylinder: Return to the net and circle the two end faces before recalculating.

Counts the top of an open box: Ask the learner to shade only material that physically exists.

Rounds π early: Keep π or the full calculator display through the method; round once at the final line.

Uses diameter as radius: Label r on the diagram before substituting; if a diameter is given, halve first.

WWW / EBI bank

- WWW: You selected the correct structure and accounted for every exposed face.
- WWW: Your working kept exact π until the final step and your units were consistent.
- EBI: State whether the solid is open or closed before counting faces.
- EBI: Separate surface-area and volume calculations so that units and formulae do not become mixed.
- EBI: Include a magnitude or unit check before accepting the final answer.