Prisms cylinders and composite solids

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A sample from this topic. The complete topic collection contains three different resources and worked solutions.

Read the explanation and worked example. Show your working; use a calculator only where asked.

What you will practise

- Calculate exposed surface area and volume of prisms and cylinders.
- Explain a method and check the reasonableness of a result.

Useful starting skills: Use the prerequisite operations and representations shown in the worked example.

For a cylinder, $V=\pi r^2 h$. A closed cylinder surface area is $2\pi r^2+2\pi rh$. An open top removes one circular face.

For joined solids, volumes add if interiors do not overlap. Exposed surface area excludes hidden joining faces. Draw and label the visible surfaces.

Worked example

A closed cylinder has r=3 cm, h=8 cm. Find volume and surface area.

$V=\pi\times 9\times 8=72\pi$ cm³.

$SA=2\pi\times 9+2\pi\times 3\times 8=66\pi$ cm².

Answer: 72π cm³; 66π cm²

Try it yourself

Name: _____ Date: _____

1. Find cylinder volume for r=4 m, h=5 m.

2. Find closed-cylinder area for r=2 cm, h=6 cm.

Answers and explanations

Check the method as well as the final answer. An alternative correct method is also valid.

1. 80π m³

$\pi \times 4^2 \times 5$.

2. 32π cm²

$8\pi + 24\pi$.

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