Name:

Exam Style Questions

Volume of a Cylinder

Corbettmaths

Ensure you have: Pencil, pen, ruler, protractor, pair of compasses and eraser

You may use tracing paper if needed

Guidance

1. Read each question carefully before you begin answering it.
2. Don't spend too long on one question.
3. Attempt every question.
4. Check your answers seem right.
5. Always show your workings

Revision for this topic

Secondary

Video 357

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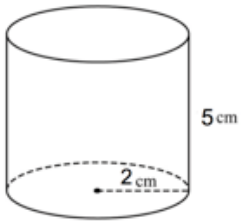
1. Below is a cylinder with radius 2cm and height 5cm.



Calculate the volume of the cylinder.

$\pi \times r^2 \times h$

$\pi \times 2^2 \times 5 = 20\pi$

62.83 cm³

(3)

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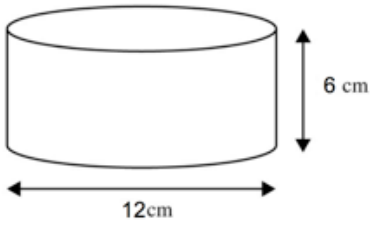
2. Shown below is a cylinder.



Calculate the volume.
Give your answer to 1 decimal place.

$\pi \times 6^2 \times 6$

$\pi \times 36 \times 6 = 216\pi$

678.6 cm³

(3)

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3. A can of baked beans is shown below.

Calculate the volume of the can.

$\pi \times 3.5^2 \times 11$

423.3 ..... cm^3

(3)

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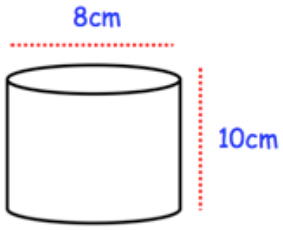
4. Below is a cylinder with diameter 8cm and 10cm.



Find the volume of the cylinder.
Give your answer in terms of π

$\pi \times 4^2 \times 10$

$\pi \times 16 \times 10$

160π ..... cm^3

(3)

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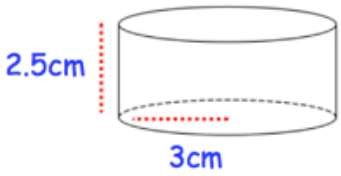
5.



Calculate the volume of the cylinder.
Give your answer in terms of π
State the units of your answer.

$\pi \times 3^2 \times 2.5$

$\pi \times 9 \times 2.5$

22.5π

$22.5\pi \text{ cm}^3$

(4)

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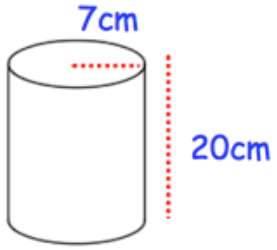
6. Carl is filling flowerpots with soil.



Each flowerpot is a cylinder with radius 7cm and height 20cm.
Carl has 50 litres of soil.

$1000cm^3 = 1$ litre

How many flowerpots can be filled?

$\pi \times 7^2 \times 20 = 980\pi$

$= 3078.76...$

$50000 \div 3078.76... = 16.24...$

16

.....

(4)

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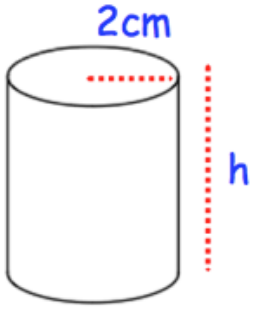
7. A cylinder has radius 2cm.



The volume of the cylinder is 100cm³
Calculate the height of the cylinder.

$V = \pi r^2 h$

$100 = \pi \times 2^2 \times h$

$100 = \pi \times 4 \times h$

$\div \pi \quad \div \pi$

$31.83... = 4h$

$\div 4 \quad \div 4$

$h = 7.9577...$

7.958 ..... cm

(3)

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8. A cylinder has a height of 15cm and a volume of 500cm³
Calculate the radius of the cylinder.

$500 = \pi \times r^2 \times 15$

$\div \pi \quad \div \pi$

$159.15... = r^2 \times 15$

$\div 15 \quad \div 15$

$10.61... = r^2$

$r = \sqrt{10.61...}$

3.257 ..... cm

(3)

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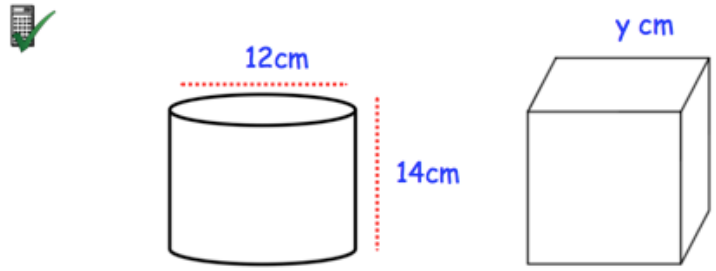
9.



A cylinder has diameter 12cm and height 14cm.
A cube has side length y cm.
The cylinder and cube has the same volume.

Find y.

$V = \pi \times 6^2 \times 14$

$V = 504\pi$ or $1583.362697\ cm^3$

$\sqrt[3]{1583.36\ldots} = 11.655\ldots$

11.655 ..... cm

(4)

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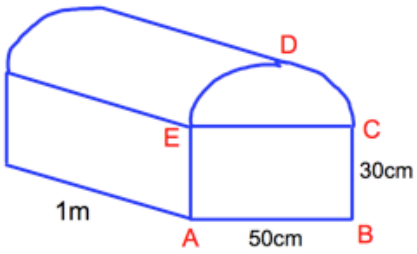
10.



Shown above is a prism that is 1m long.

ABCDE is the cross-section of the prism.
ABCE is a rectangle and CDE is a semi-circle.

Calculate the volume of the prism.
Give your answer correct to 1 decimal place.

Volume of cuboid = $100 \times 50 \times 30 = 150\,000 cm^3$

Volume of top = $\frac{1}{2} \times \pi \times 25^2 \times 100 = 98174.77...$

$1500000 + 98174.77...$

$= 248174.8$ to 1 dp.

248 174.8 ..... cm^3

(4)

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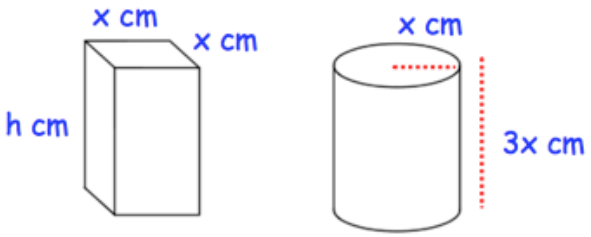
11.



The volume of the cuboid and the cylinder are equal.

Find h in terms of x.
Give your answer in its simplest form.

$V = x^2 h$ $\quad V = \pi \times (x)^2 \times (3x)$

$V = x^2 h$ $\quad V = 3\pi x^3$

$x^2 h = 3\pi x^3$

$h = 3\pi x$

$3\pi x$ ..... cm^3

(3)

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