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CENTRE NUMBER						CANDIDATE NUMBER			

MATHEMATICS **0580/43**

Paper 4 Calculator (Extended) **May/June 2026**

2 hours

You must answer on the question paper.

You will need: Geometrical instruments

INSTRUCTIONS
- Answer **all** questions.
- Use a black or dark blue pen. You may use an HB pencil for any diagrams or graphs.
- Write your name, centre number and candidate number in the boxes at the top of the page.
- Write your answer to each question in the space provided.
- Do **not** use an erasable pen. Do **not** use correction fluid or tape.
- Do **not** write on any bar codes.
- You should use a scientific calculator where appropriate.
- You may use tracing paper.
- You must show all necessary working clearly.
- Give non-exact numerical answers correct to 3 significant figures, or 1 decimal place for angles in degrees, unless a different level of accuracy is specified in the question.
- For π, use either your calculator value or 3.142.

INFORMATION
- The total mark for this paper is 100.
- The number of marks for each question or part question is shown in brackets [ ].

This document has **20** pages.

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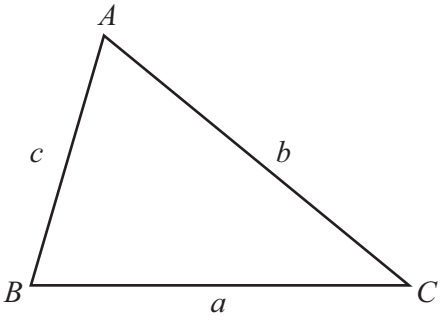
List of formulas

Area, A, of triangle, base b, height h.	$A = \frac{1}{2}bh$
Area, A, of circle of radius r.	$A = \pi r^2$
Circumference, C, of circle of radius r.	$C = 2\pi r$
Curved surface area, A, of cylinder of radius r, height h.	$A = 2\pi rh$
Curved surface area, A, of cone of radius r, sloping edge l.	$A = \pi rl$
Surface area, A, of sphere of radius r.	$A = 4\pi r^2$
Volume, V, of prism, cross-sectional area A, length l.	$V = Al$
Volume, V, of pyramid, base area A, height h.	$V = \frac{1}{3}Ah$
Volume, V, of cylinder of radius r, height h.	$V = \pi r^2 h$
Volume, V, of cone of radius r, height h.	$V = \frac{1}{3}\pi r^2 h$
Volume, V, of sphere of radius r.	$V = \frac{4}{3}\pi r^3$
For the equation $ax^2 + bx + c = 0$, where $a \neq 0$,	$x = \frac{-b \pm \sqrt{b^2 - 4ac}}{2a}$

For the triangle shown,



$$\frac{a}{\sin A} = \frac{b}{\sin B} = \frac{c}{\sin C}$$

$$a^2 = b^2 + c^2 - 2bc\cos A$$

$$\text{Area} = \frac{1}{2}ab\sin C$$

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1 Complete the statement.

View solution

$$\frac{4}{7} = \frac{\square}{56}$$

[1]

2 Work out 55% of 12.2 .

View solution

..... [1]

3 Calculate $\dfrac{0.7 - 3.5^3}{4.2^2}$ giving your answer correct to 2 significant figures.

View solution

..... [2]

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4 Kit and Jo are changing some money.
The exchange rate is \$1 = 0.93 euros.

View solution

(a) Kit changes \$350 into euros.

Calculate the amount, in euros, that Kit receives.

..... euros [1]

View solution

(b) Jo changes 150 euros into dollars (\$).

Calculate the amount, in dollars, that Jo receives.

\$ ..... [1]

View solution

5 Ruta and Zoli share some money in the ratio 7 : 3.
Ruta receives \$420 more than Zoli.

Work out how much money Ruta and Zoli each receive.

Ruta \$ .....

Zoli \$ .....

[3]

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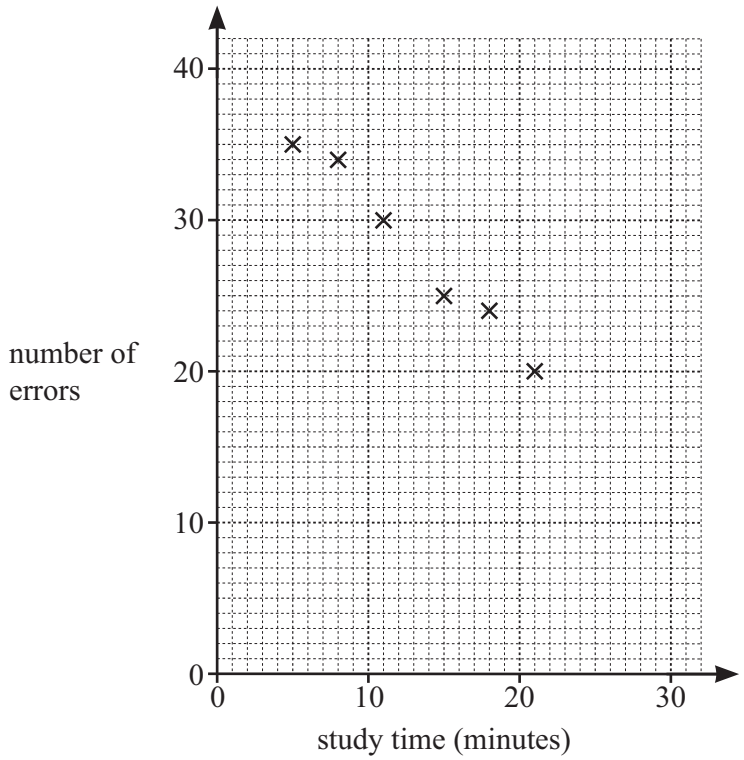
6 The table shows the time 9 students each spent studying for a test and the number of errors each student made in the test.

study time (minutes)	5	8	11	15	18	21	25	27	31
number of errors	35	34	30	25	24	20	13	9	6

View solution

(a) Complete the scatter diagram.
The first 6 points have been plotted for you.



[2]

View solution

(b) What type of correlation is shown in the scatter diagram?

..... [1]

View solution

(c) Draw a line of best fit on the scatter diagram. [1]

View solution

(d) Another student studies for 13 minutes.

Use your line of best fit to estimate the number of errors this student is expected to make in the test.

..... [1]

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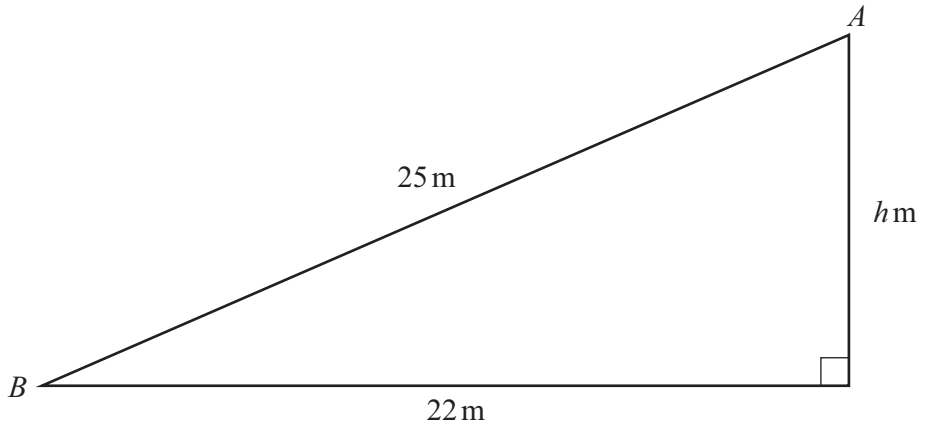

NOT TO SCALE

The point A is on the top of a vertical building.
The horizontal distance from the base of the building to B is 22 m.
$AB = 25$ m and the height of the building is h m.

(a) Find the value of h.

View solution

$h =$ ..... [3]

(b) Work out the angle of depression of B from A.

View solution

..... [2]

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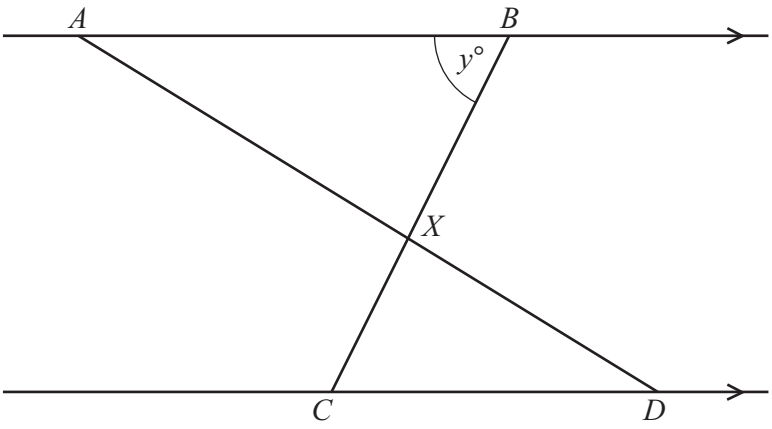

NOT TO SCALE

AB and CD are parallel lines.
AD and BC are straight lines that intersect at X.
Angle $ABX = y°$.

(a) Complete the statement with a geometrical reason.

View solution

Angle $DCX = y°$ because ..... [1]

View solution

(b) Triangle ABX is similar to triangle DCX.

$CX = 5$ cm, $XD = 8$ cm and $AD = 20$ cm.

(i) Find BX.

$BX =$ ..... cm [2]

View solution

(ii) Angle $CXD = 80.5°$.

Work out the area of triangle CXD.

..... cm^2 [2]

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9 The table shows the marks of 100 students in a test.

mark	$0 < x \leqslant 20$	$20 < x \leqslant 40$	$40 < x \leqslant 60$	$60 < x \leqslant 80$	$80 < x \leqslant 100$
frequency	4	20	31	34	11

(a) Write down the modal class.

View solution

..... $< x \leqslant$ ..... [1]

(b) Calculate an estimate of the mean.

View solution

..... [4]

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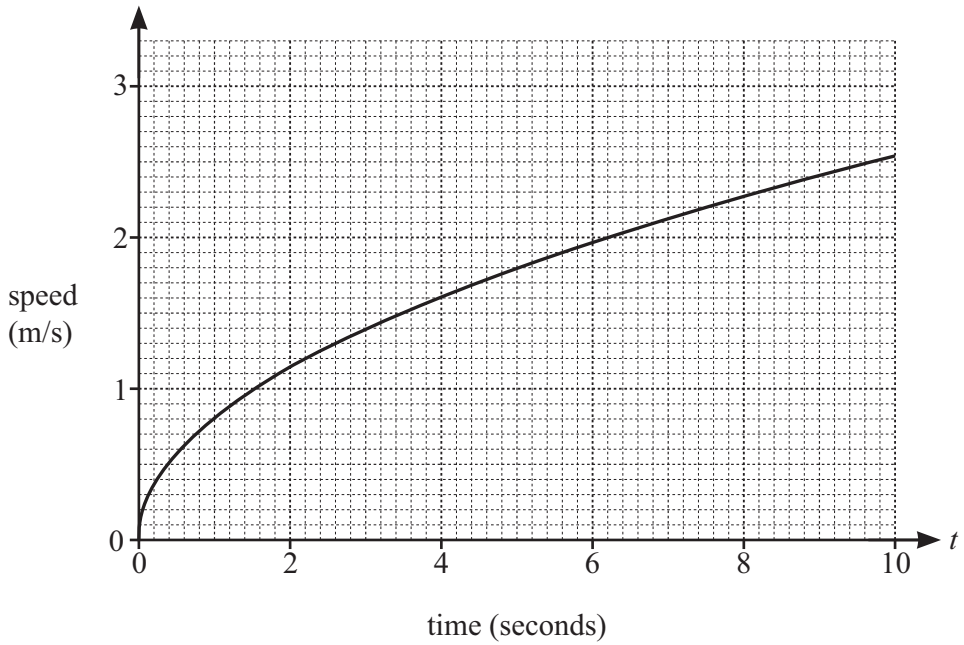
10 Llew cycles to school.

(a) The speed–time graph shows the first 10 seconds of his journey.

View solution



By drawing a suitable tangent, estimate the acceleration at $t = 2$.

..... m/s^2 [2]

(b) Llew cycles to school at an average speed of 18.9 kilometres per hour.

View solution

Write this speed in metres per second.

..... m/s [2]

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11 The table shows some values for $y = 3 \times 2^x - 5$ correct to 1 decimal place.

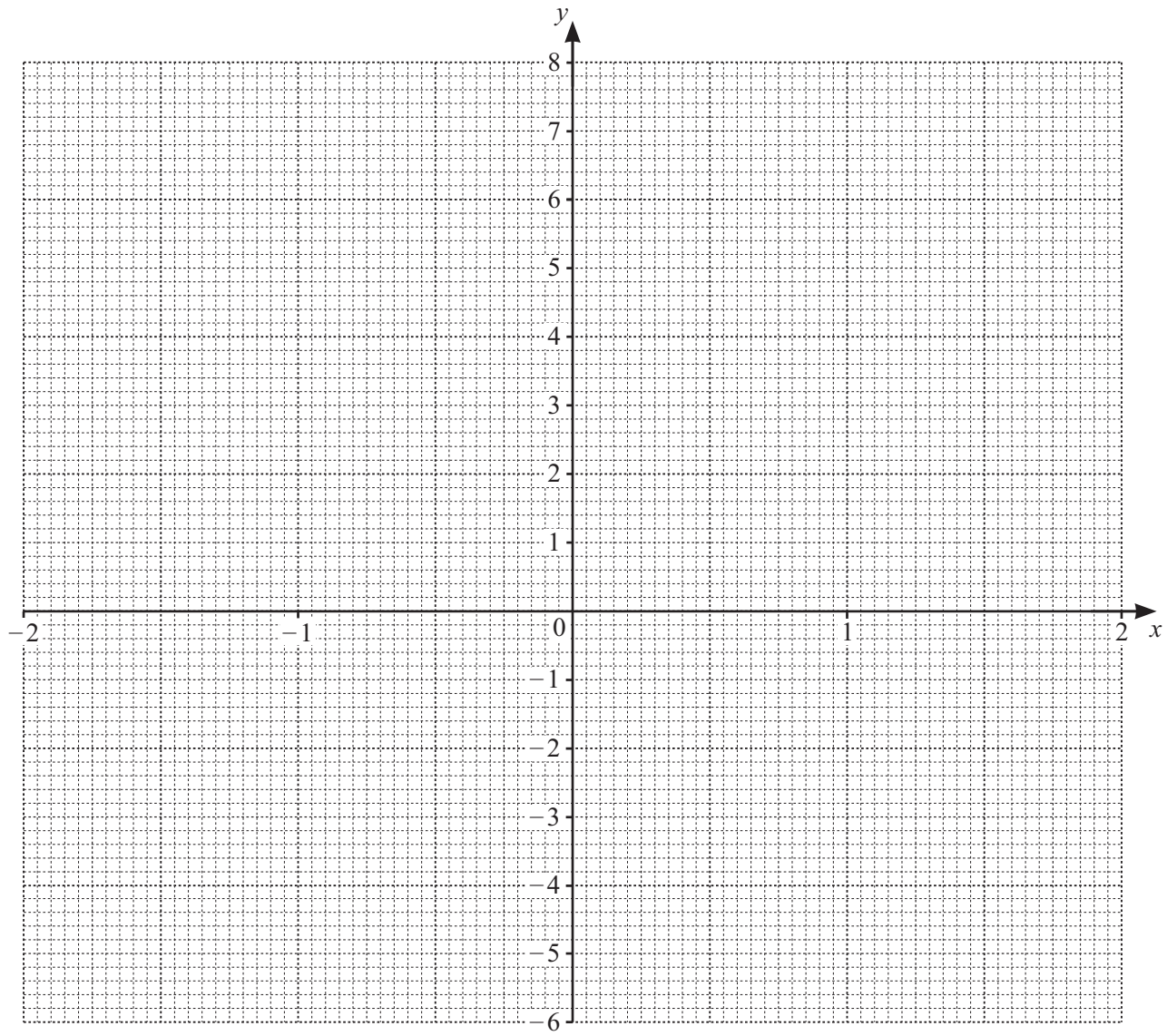
x	-2	-1.5	-1	-0.5	0	0.5	1	1.5	2
y		-3.9		-2.9		-0.8	1	3.5	7

View solution

(a) Complete the table. [3]

View solution

(b) Draw the graph of $y = 3 \times 2^x - 5$ for $-2 \leqslant x \leqslant 2$.



[4]

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(c) By drawing a suitable line on the graph, solve the equation $3 \times 2^x = 7$.

View solution

$x =$ ..... [2]

(d) Find the equation of the asymptote to the graph of $y = 3 \times 2^x - 5$.

View solution

..... [1]

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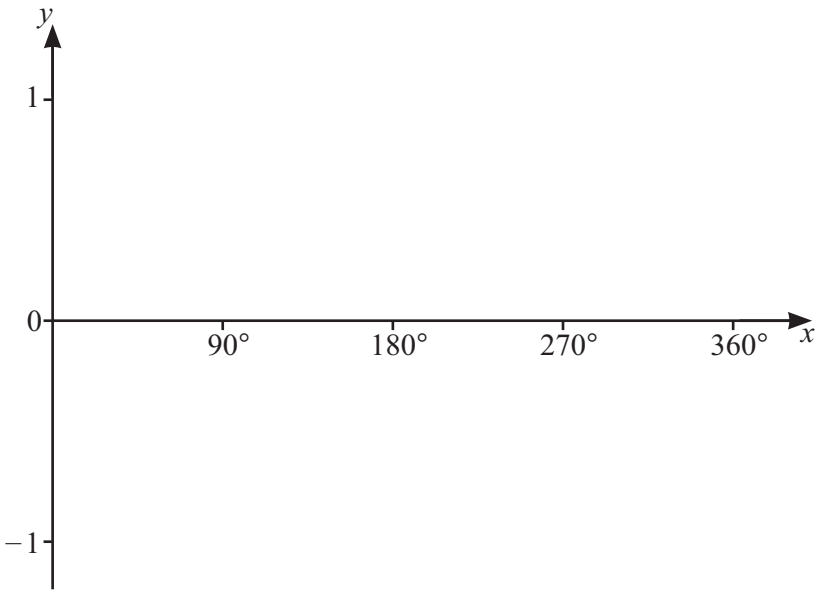
12 **(a)** Sketch the graph of $y = \cos x$ for $0° \leqslant x \leqslant 360°$.

View solution



[2]

(b) Solve the equation $3\cos x + 1 = 0$ for $0° \leqslant x \leqslant 360°$.

View solution

$x =$ ..... or $x =$ ..... [3]

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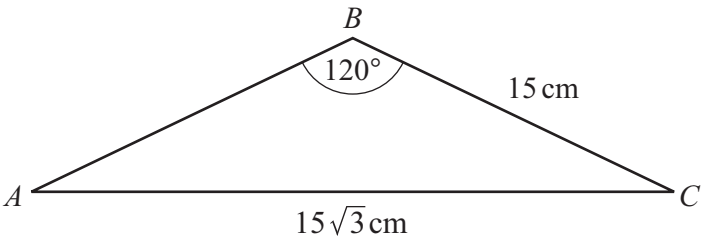
13



NOT TO SCALE

The diagram shows triangle ABC.
$BC = 15$ cm, $AC = 15\sqrt{3}$ cm and angle $ABC = 120°$.

(a) Show that triangle ABC is an isosceles triangle.

View solution

[4]

(b) Calculate the shortest distance from B to AC.

View solution

..... cm [3]

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14 A is the point (5, 2) and B is the point (−3, 6).

(a) Calculate the length of AB.

View solution

..... [3]

(b) Find the equation of the line perpendicular to AB that passes through the point (–2, 5). Give your answer in the form $y = mx + c$.

View solution

$y =$ ..... [4]

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15 The sides of a triangle are 5 cm, 7 cm and 11 cm.

Find the size of the largest angle in this triangle.

View solution

..... [3]

16 A rectangle measures 4.2 cm by 6.8 cm.
Each measurement is given correct to the nearest millimetre.

View solution

Calculate the lower bound of the area of the rectangle.

..... cm^2 [2]

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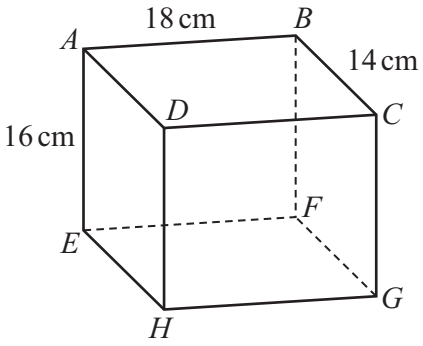
View solution



NOT TO SCALE

The diagram shows a cuboid, $ABCDEFGH$.
$AB = 18$ cm, $BC = 14$ cm and $AE = 16$ cm.

Calculate the length of the diagonal AG.

..... cm [3]

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18 **(a)** $f(x) = 3x + 1 \qquad g(x) = 5 - 3x$

View solution

(i) Find x when $f(x) = g(x)$.

$x =$ ..... [2]

(ii) Find $g^{-1}(x)$.

View solution

$g^{-1}(x) =$ ..... [2]

(iii) Find $gg(x)$.
Give your answer in its simplest form.

View solution

$gg(x) =$ ..... [2]

(b) $h(x) = 2^{2x}$

View solution

Find x when $h^{-1}(x) = 2$.

$x =$ ..... [2]

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19 **(a)** Lee invests \$2000 in an account that pays simple interest at a rate of 3.5% per year.

View solution

Work out the **total** value of the investment at the end of 4 years.

\$ ..... [3]

View solution

(b) Mia invests \$3000 in an account that pays compound interest at a rate of 3.2% per year.

Find the number of complete years it takes for the value of Mia's investment to become greater than \$4800.

..... [3]

View solution

(c) Ryan invests some money.
The value of the investment increases exponentially at a rate of r% per year.
At the end of 6 years, the value of the original investment has increased by 19.4%.

Find the value of r.

$r =$ ..... [3]

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20 **(a)** Find the coordinates of the turning points of the graph $y = 8x^3 - 6x + 5$.
You must show all your working.

View solution

(..... , ...)

(..... , ...)
[5]

(b) Determine whether each turning point is a maximum or a minimum.
Show how you decide.

View solution

[3]

Question 21 is on the back page.

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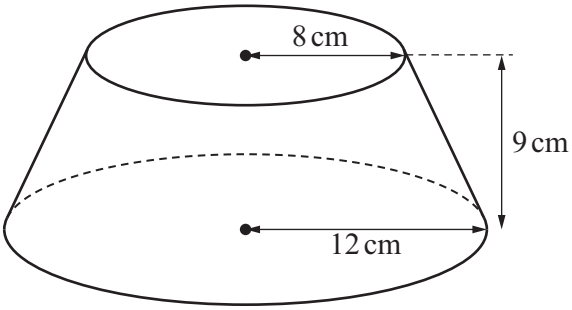
21

View solution

NOT TO SCALE



The diagram shows a frustum.

Calculate the volume of the frustum.

..... cm^3 [5]

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