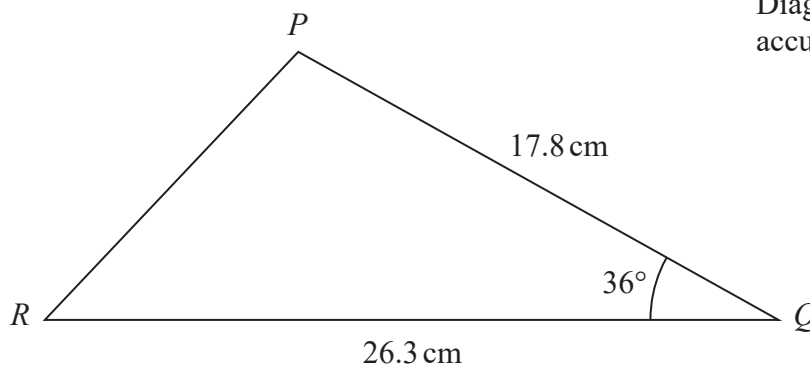


18 The diagram shows triangle PQR .

Diagram **NOT**
accurately drawn



Calculate the length of PR .
Give your answer correct to 3 significant figures.

..... cm

(Total for Question 18 is 3 marks)

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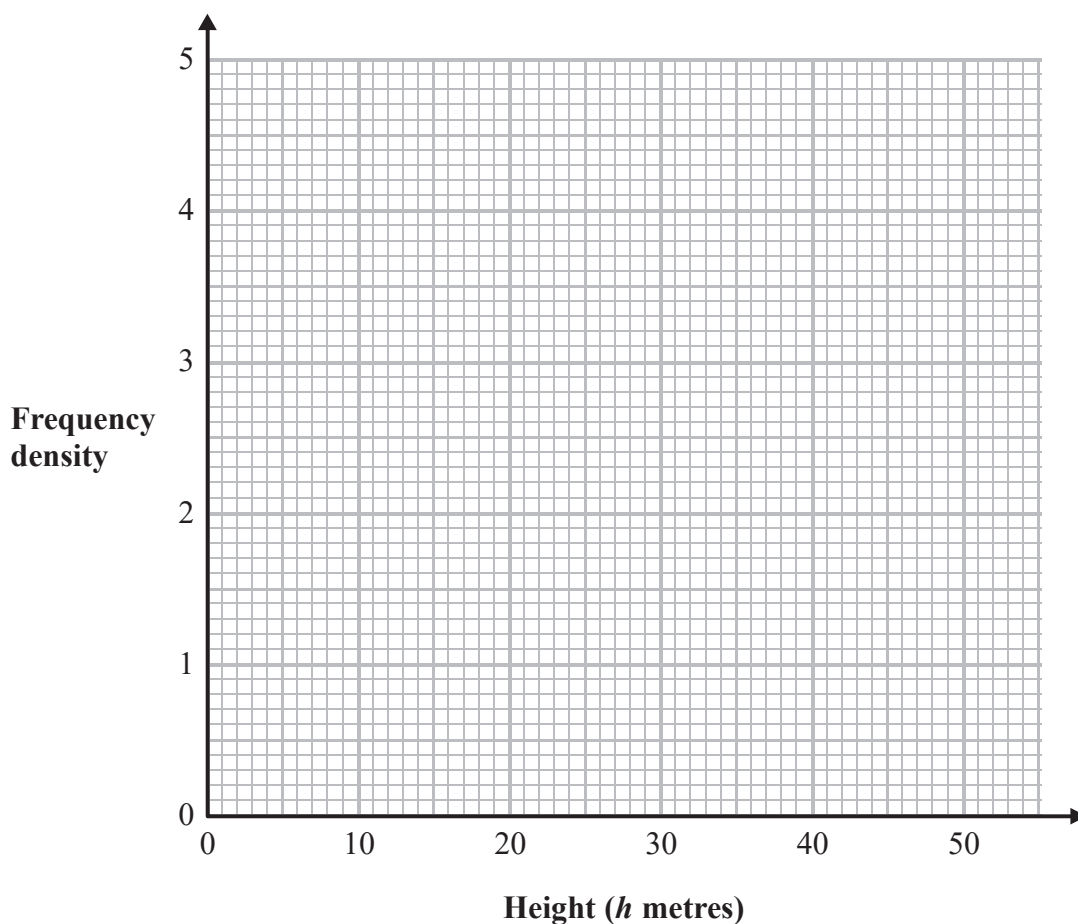
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19 The table gives information about the heights of some trees.

Height (h metres)	Frequency
$0 < h \leq 20$	15
$20 < h \leq 35$	48
$35 < h \leq 40$	21
$40 < h \leq 50$	16

On the grid, draw a histogram for this information.



(Total for Question 19 is 3 marks)



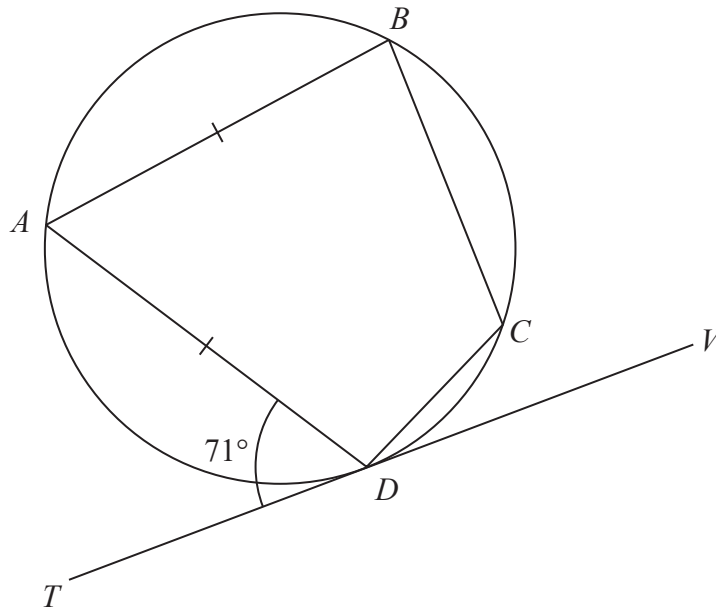


Diagram **NOT**
accurately drawn

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A , B , C and D are points on a circle.
 TDV is the tangent to the circle at D .

$$AB = AD$$

$$\text{Angle } ADT = 71^\circ$$

Work out the size of angle BCD .

Give a reason for each stage of your working.

(Total for Question 20 is 5 marks)



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21 A solid is made from a hemisphere and a cylinder.
The plane face of the hemisphere coincides with the upper plane face of the cylinder.

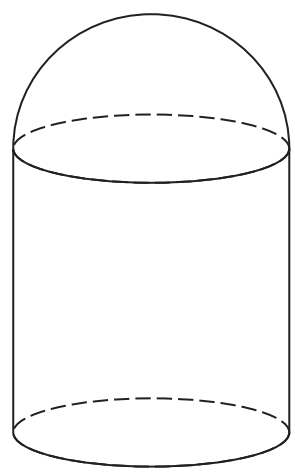


Diagram NOT accurately drawn

The hemisphere and the cylinder have the same radius.

The ratio of the radius of the cylinder to the height of the cylinder is 1 : 3

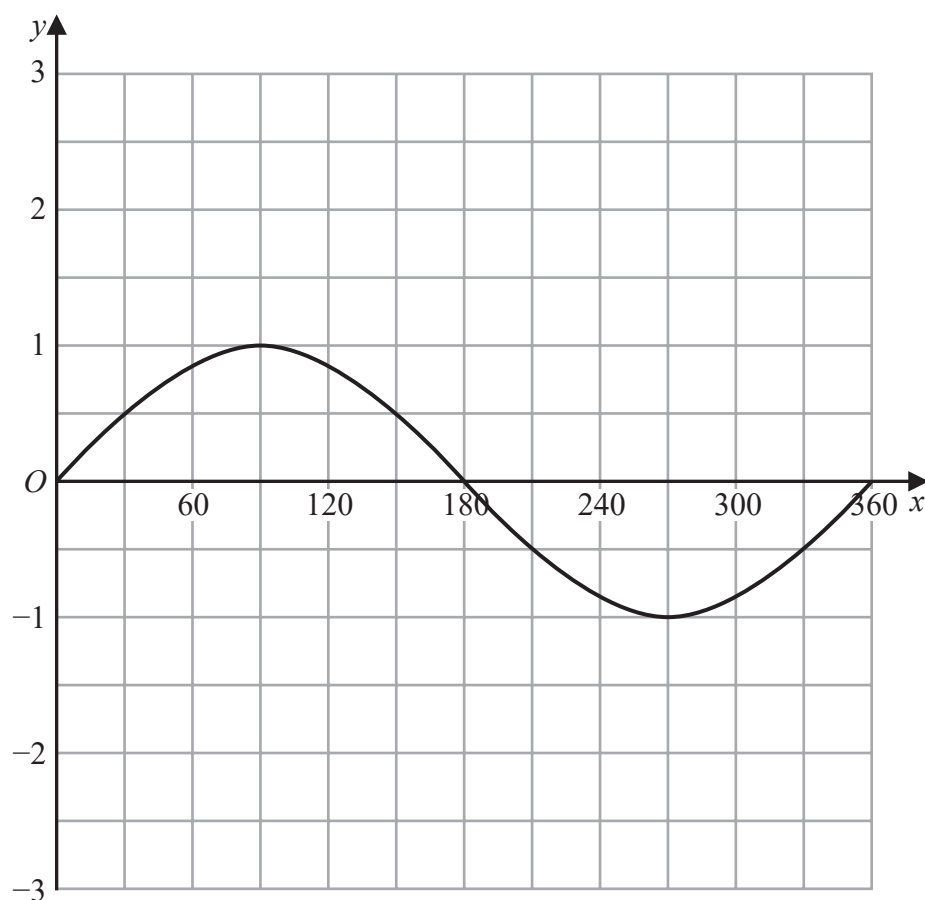
Given that the solid has volume $792\pi \text{ cm}^3$
work out the height of the solid.

..... cm

(Total for Question 21 is 5 marks)



22 The graph of $y = \sin x^\circ$ for $0 \leq x \leq 360$ is drawn on the grid.



(a) On the grid, draw the graph of $y = 2\sin(x + 30)^\circ$ for $0 \leq x \leq 360$

(2)

(b) (i) Write $x^2 - 6x + 10$ in the form $(x - a)^2 + b$ where a and b are integers.

.....
(2)

(ii) Hence, describe fully the single transformation that maps the curve with equation $y = x^2$ onto the curve with equation $y = x^2 - 6x + 10$

.....
(2)

(Total for Question 22 is 6 marks)



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23 $ABCD$ is a kite with $AB = AD$ and $CB = CD$.

B is the point with coordinates $(10, 19)$

D is the point with coordinates $(2, 7)$

Find an equation of the line AC .

Give your answer in the form $py + qx = r$ where p, q and r are integers.

.....
(Total for Question 23 is 5 marks)



- 24 A particle P is moving along a straight line that passes through the fixed point O . The displacement, s metres, of P from O at time t seconds is given by

$$s = t^3 - 6t^2 + 5t - 4$$

Find the value of t for which the acceleration of P is 3 m/s^2

$t = \dots\dots\dots$

(Total for Question 24 is 4 marks)

TOTAL FOR PAPER IS 100 MARKS

