

2D Pythagoras & Trigonometry (SOHCAHTOA)

Question Paper 2

Level	IGCSE
Subject	Maths (0580)
Exam Board	Cambridge International Examinations (CIE)
Paper Type	Extended
Topic	Trigonometry
Sub-Topic	2D Pythagoras & Trigonometry (SOHCAHTOA)
Booklet	Question Paper 2

Time Allowed: 62 minutes

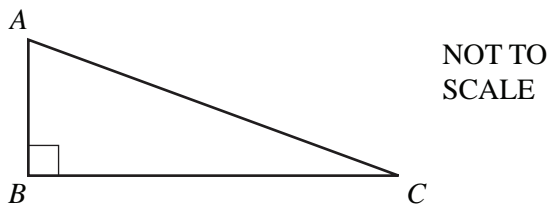
Score: /51

Percentage: /100

Grade Boundaries:

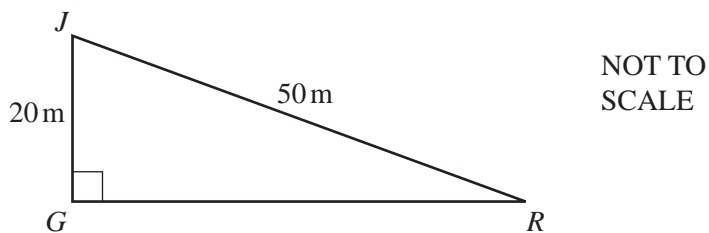
A*	A	B	C	D	E	U
>85%	75%	60%	45%	35%	25%	<25%

1 In the right-angled triangle ABC , $\cos C = \frac{4}{5}$. Find angle A .



Answer Angle $A =$ [2]

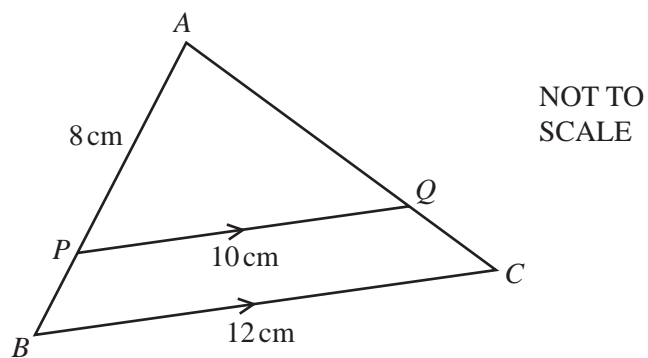
2



JGR is a right-angled triangle. $JR = 50\text{m}$ and $JG = 20\text{m}$.
Calculate angle JRG .

Answer Angle $JRG =$ [2]

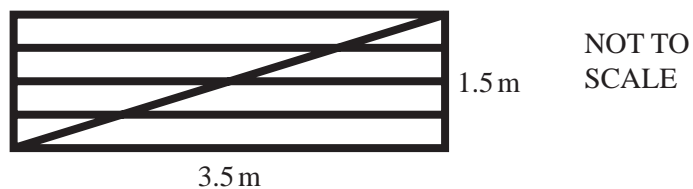
3



APB and AQC are straight lines. PQ is parallel to BC .
 $AP = 8$ cm, $PQ = 10$ cm and $BC = 12$ cm.
Calculate the length of AB .

Answer $AB =$ cm [2]

4

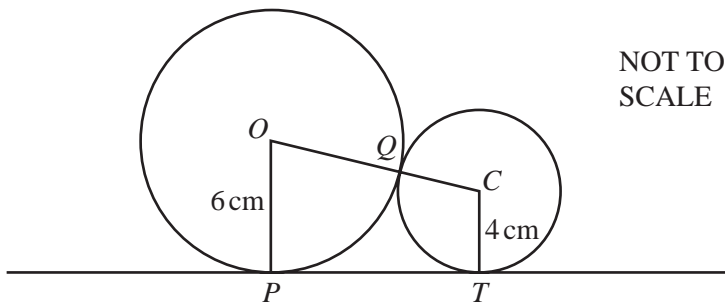


The diagram represents a rectangular gate measuring 1.5m by 3.5m.
It is made from eight lengths of wood.

Calculate the total length of wood needed to make the gate.

Answer m [3]

5



Two circles, centres O and C , of radius 6 cm and 4 cm respectively, touch at Q . PT is a tangent to both circles.

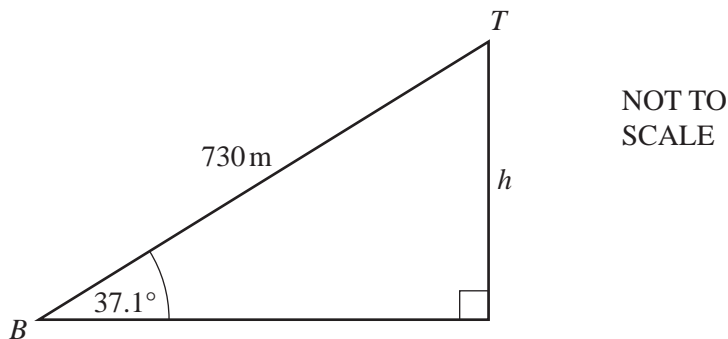
(a) Write down the distance OC .

Answer(a) $OC =$ cm [1]

(b) Calculate the distance PT .

Answer(b) $PT =$ cm [3]

6 The diagram represents the ski lift in Queenstown New Zealand.



(a) The length of the cable from the bottom, B , to the top, T , is 730 metres.

The angle of elevation of T from B is 37.1° .

Calculate the change in altitude, h metres, from the bottom to the top.

Answer(a) m [2]

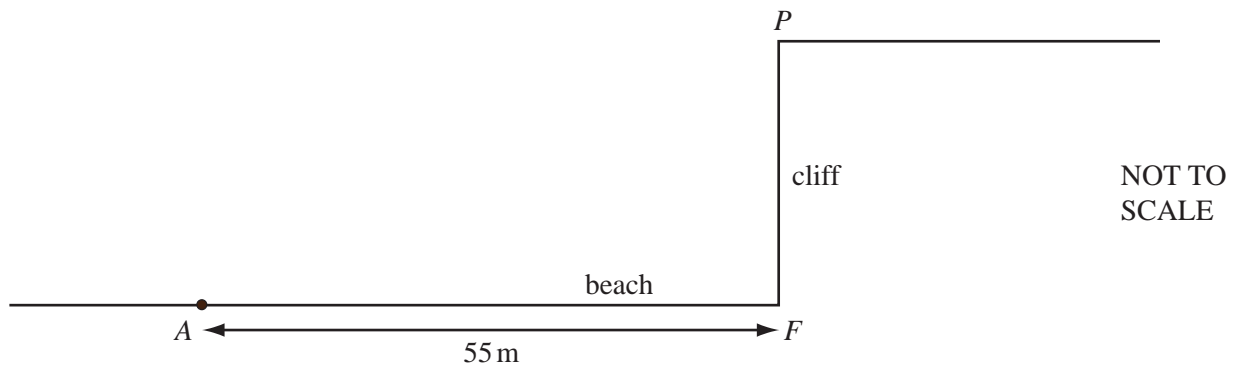
(b) The lift travels along the cable at 3.65 metres per second.

Calculate how long it takes to travel from B to T .

Give your answer in minutes and seconds.

Answer(b) min s [2]

7

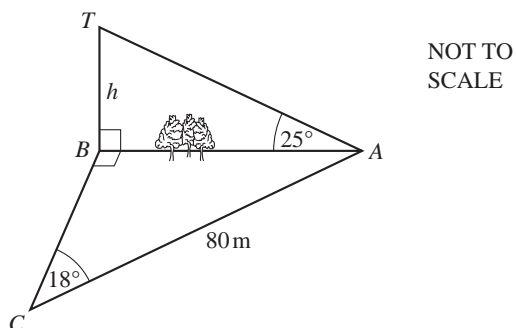


The diagram shows a point P at the top of a cliff.
The point F is on the beach and vertically below P .
The point A is 55m from F , along the horizontal beach.
The angle of elevation of P from A is 17° .

Calculate PF , the height of the cliff.

Answer $PF =$ m [3]

8



Mahmoud is working out the height, h metres, of a tower BT which stands on level ground. He measures the angle TAB as 25° . He cannot measure the distance AB and so he walks 80 m from A to C , where angle $ACB = 18^\circ$ and angle $ABC = 90^\circ$.

Calculate

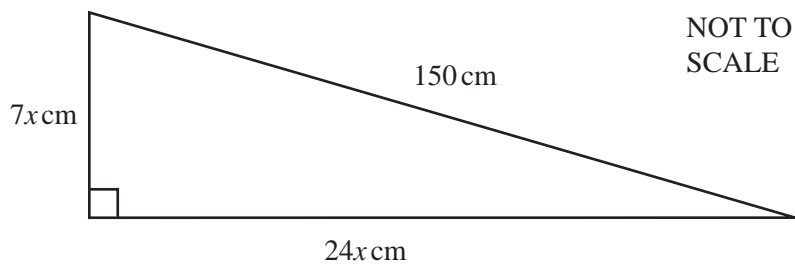
(a) the distance AB ,

Answer(a) m [2]

(b) the height of the tower, BT .

Answer(b) m [2]

9



The right-angled triangle in the diagram has sides of length $7x$ cm, $24x$ cm and 150 cm.

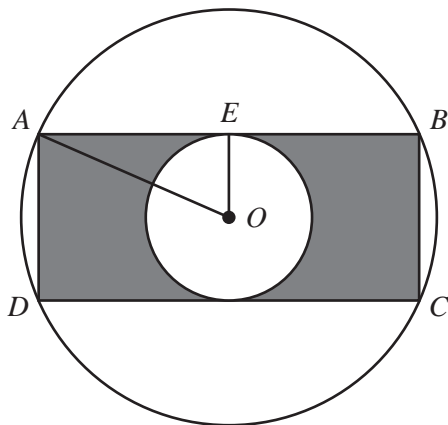
(a) Show that $x^2 = 36$.

[2]

(b) Calculate the perimeter of the triangle.

Answer(b)cm [1]

10



NOT TO
SCALE

A, B, C and D lie on a circle, centre O , radius 8 cm.
 AB and CD are tangents to a circle, centre O , radius 4 cm.
 $ABCD$ is a rectangle.

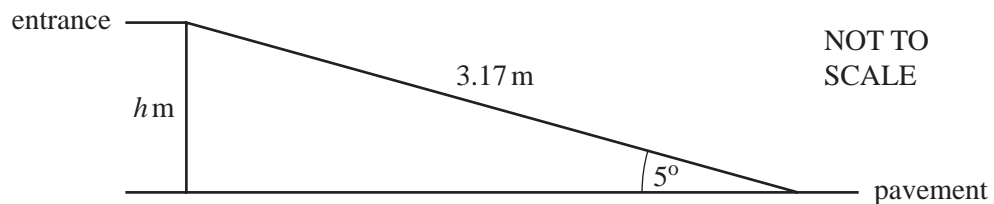
(a) Calculate the distance AE .

Answer(a) $AE = \dots\dots\dots$ cm [2]

(b) Calculate the shaded area.

Answer(b) $\dots\dots\dots$ cm² [3]

11



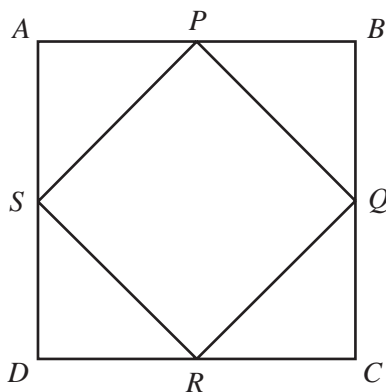
A shop has a wheelchair ramp to its entrance from the pavement.
The ramp is 3.17 metres long and is inclined at 5° to the horizontal.
Calculate the height, h metres, of the entrance above the pavement.
Show all your working.

Answer m [2]

12 Calculate the value of $(\cos 40^\circ)^2 + (\sin 40^\circ)^2$.

Answer [2]

- 13 A square $ABCD$, of side 8 cm, has another square, $PQRS$, drawn inside it. P, Q, R and S are at the midpoints of each side of the square $ABCD$, as shown in the diagram.



NOT TO SCALE

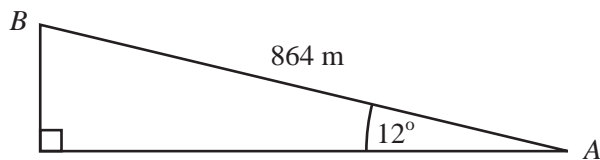
- (a) Calculate the length of PQ .

Answer (a) cm [2]

- (b) Calculate the area of the square $PQRS$.

Answer (b) cm^2 [1]

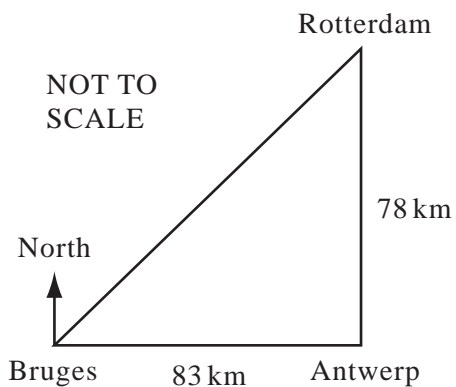
- 14 A mountain railway AB is of length 864 m and rises at an angle of 12° to the horizontal. A train is 586 m above sea level when it is at A . Calculate the height above sea level of the train when it reaches B .



NOT TO SCALE

Answer m [3]

15



Antwerp is 78 km due South of Rotterdam and 83 km due East of Bruges, as shown in the diagram.

Calculate

(a) the distance between Bruges and Rotterdam,

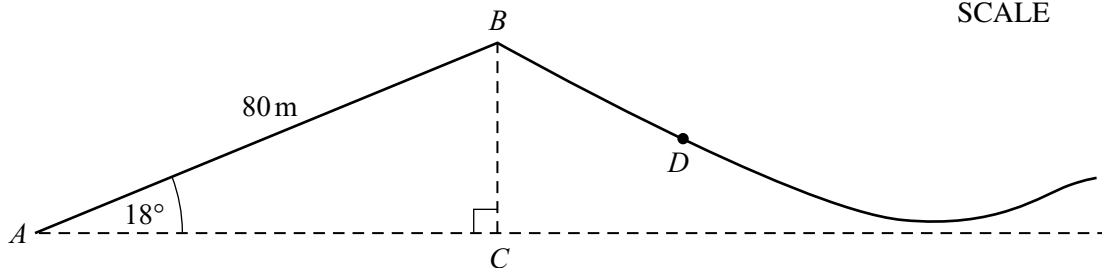
Answer(a) km [2]

(b) the bearing of Rotterdam from Bruges, correct to the nearest degree.

Answer(b) [3]

16

NOT TO
SCALE



The diagram shows the start of a roller-coaster ride at a fairground.
A car rises from A to B along a straight track.

- (a) $AB = 80$ metres and angle $BAC = 18^\circ$.
Calculate the vertical height of B above A.

Answer (a) m [2]

- (b) The car runs down the slope from B to D, a distance of s metres.
Use the formula $s = t(p + qt)$ to find the value of s , given that $p = 4$, $t = 3$ and $q = 3.8$.

Answer (b) $s =$ [2]