



EXAM PAPERS PRACTICE

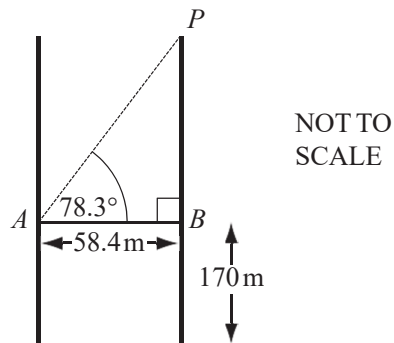
2D Pythagoras & SOHCAHTOA

Question Paper

Question 1



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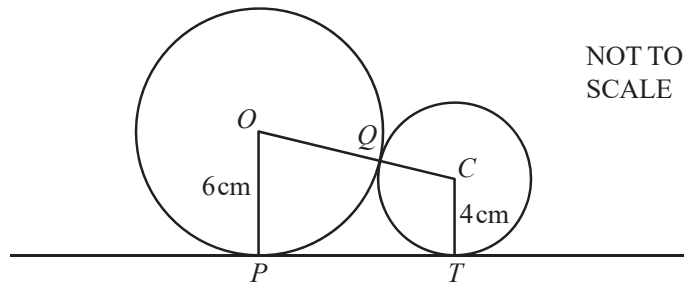


The line AB represents the glass walkway between the Petronas Towers in Kuala Lumpur. The walkway is 58.4 metres long and is 170 metres above the ground. The angle of elevation of the point P from A is 78.3° .

Calculate the height of P above the ground.

[3]

Question 2



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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 .

[1]

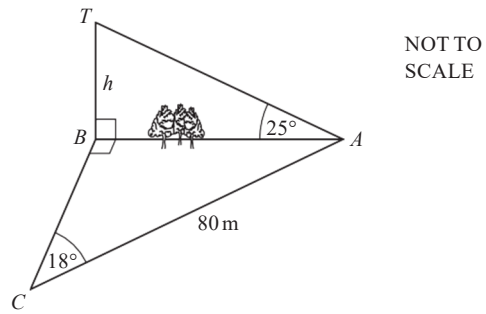
(b) Calculate the distance PT .

[3]

Question 3



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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

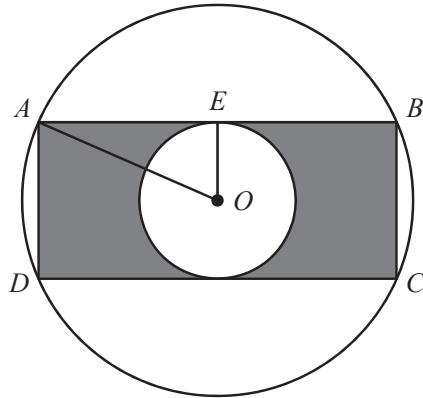
(a) the distance AB , [2]

(b) the height of the tower, BT . [2]

Question 4



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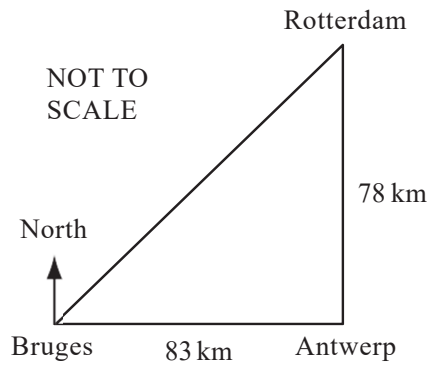
- A, B, C and D lie on a circle, centre O , radius 8 cm.
 AB and CD are tangents to a circle, centre O , radius 4 cm.
 $ABCD$ is a rectangle.
(a) Calculate the distance AE .

[2]

- (b) Calculate the shaded area.

[3]

Question 5



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

Calculate

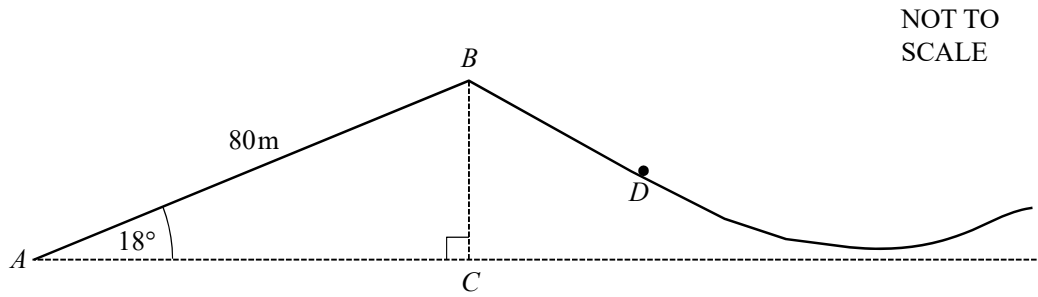
(a) the distance between Bruges and Rotterdam,

[2]

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

[3]

Question 6



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

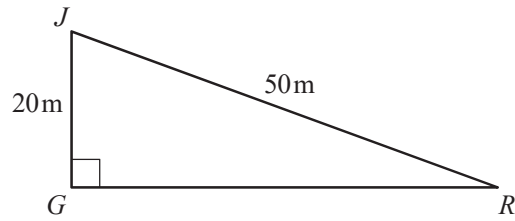
- (a) $AB = 80$ metres and angle $BAC = 18^\circ$.
Calculate the vertical height of B above A .

[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 $q = 3.8$.

[2]

Question 7

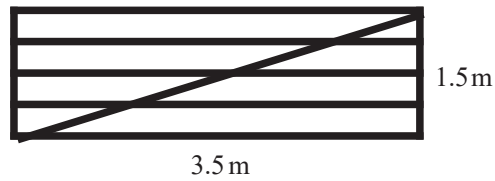


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JGR is a right-angled triangle. $JR = 50\text{m}$ and $JG = 20\text{m}$.
Calculate angle JRG .

[2]

Question 8



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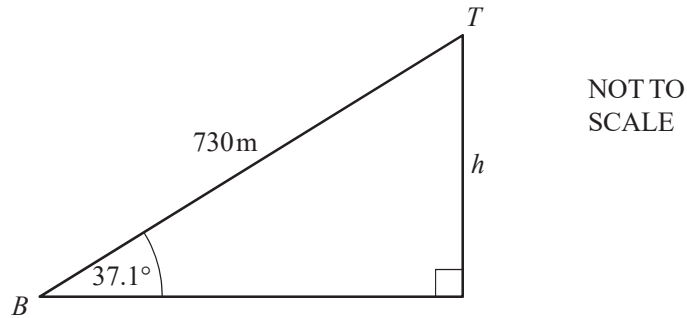
The diagram represents a rectangular gate measuring 1.5m by 3.5m.
It is made from eight lengths of wood.

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

[3]

Question 9

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.

[2]

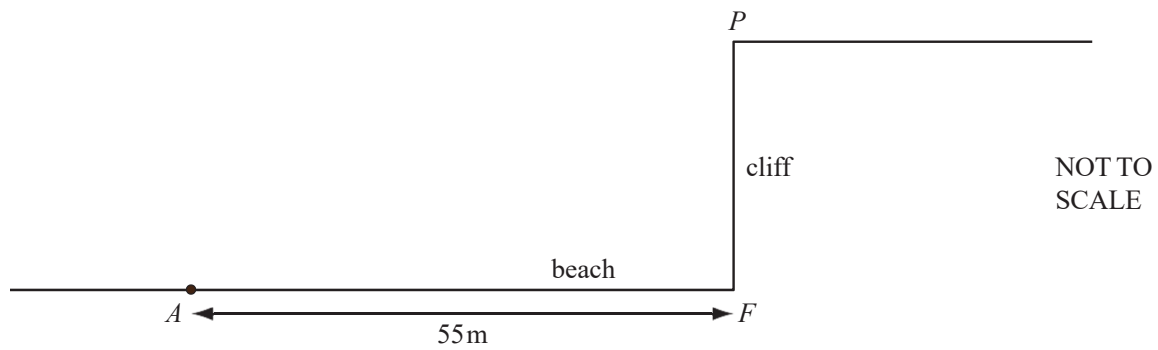
(b) The lift travels along the cable at 3.65 metres per second.

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

Give your answer in minutes and seconds.

[2]

Question 10

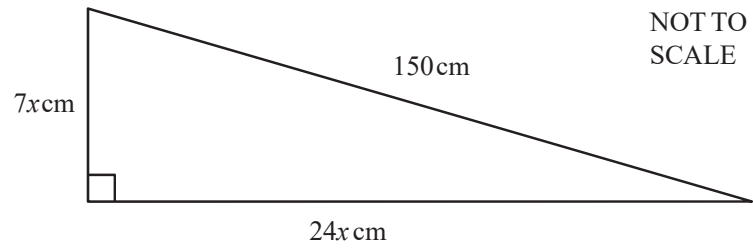


The diagram shows a point P at the top of a cliff.
The point F is on the beach and vertically below P .
The point A is 55m from F , along the horizontal beach.
The angle of elevation of P from A is 17° .

Calculate PF , the height of the cliff.

[3]

Question 11

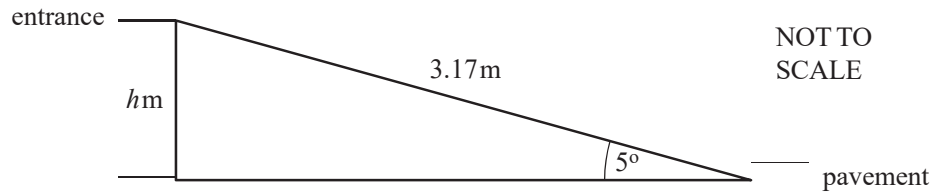


The right-angled triangle in the diagram has sides of length $7x$ cm, $24x$ cm and 150 cm.

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

(b) Calculate the perimeter of the triangle. [1]

Question 12



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.

[2]

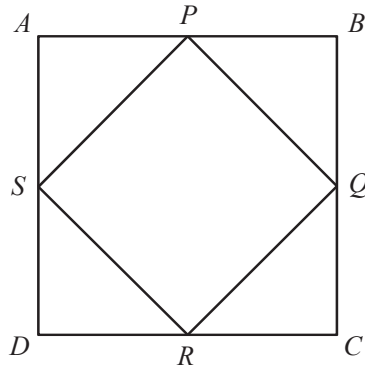
Question 13

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

[2]

Question 14

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.



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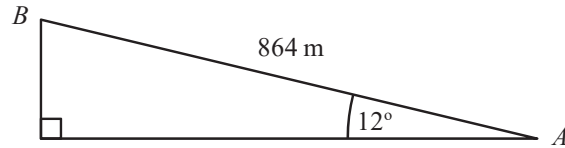
(a) Calculate the length of PQ . [2]

(b) Calculate the area of the square $PQRS$. [1]

Question 15

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 .

[3]



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