Trigonometry

1) June 2010 V2

2 Calculate $3\sin120° - 4(\sin120°)^3$.

Answer ..... [2]

2) November 2011 V1

3 Write the following in order of size, **largest** first.

sin 158° cos 158° cos 38° sin 38°

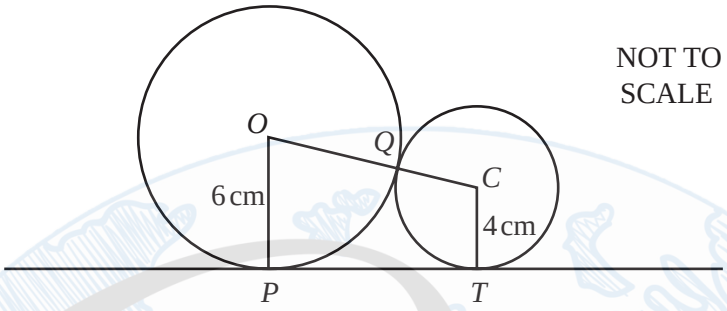
Answer ..... > ..... > ..... > ..... [2]

2*) November 2020 V2

25 Solve the equation $\tan x = 2$ for $0° \leqslant x \leqslant 360°$.

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

11



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

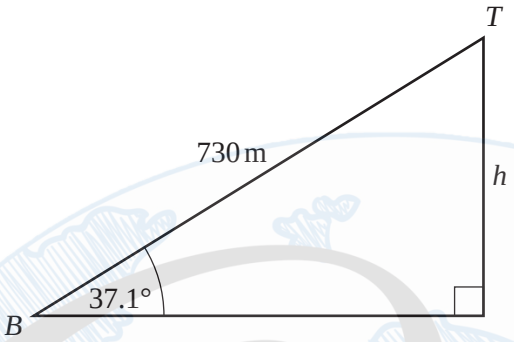
(a) Write down the distance OC

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

(b) Calculate the distance PT.

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

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



NOT TO SCALE

(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]

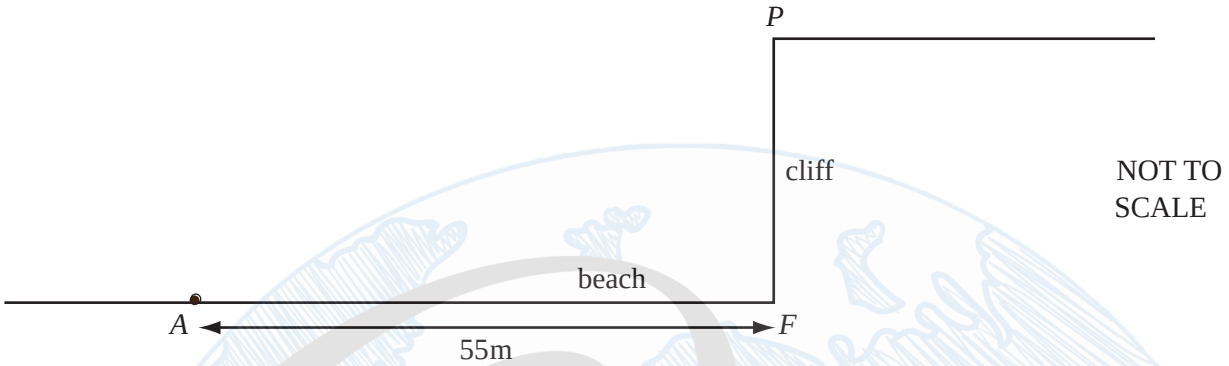
(b) The lift travels along the cable at 3.65 metres per second.

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

Give your answer in minutes and seconds.

Answer(b) ..... min ..... s [2]

11



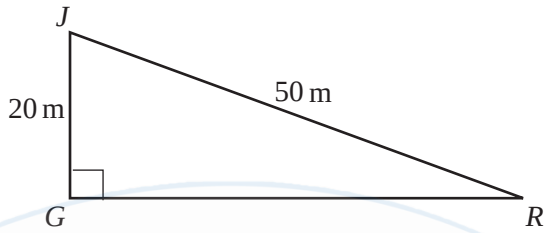
The diagram shows a point P at the top of a cliff.
The point F is on the beach and vertically below P.
The point A is 55m from F, along the horizontal beach.
The angle of elevation of P from A is 17°.

Calculate PF, the height of the cliff.

Answer PF = ... m [3]

6) November 2010 V2

5



NOT TO SCALE

JGR is a right-angled triangle. $JR = 50$m and $JG = 20$m.
Calculate angle *JRG*.

Answer Angle *JRG* = ... [2]

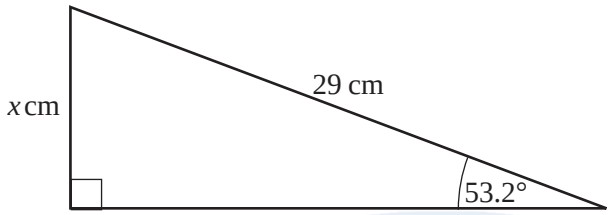
7) June 2011 V2

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

NOT TO SCALE

Answer Angle *A* = ... [2]

5

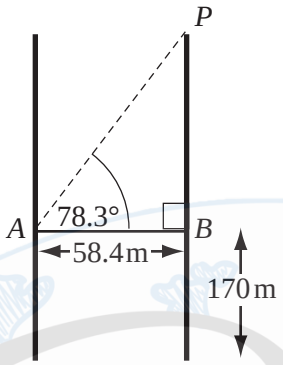


NOT TO SCALE

Calculate the value of x.

Answer x = ... [2]

9



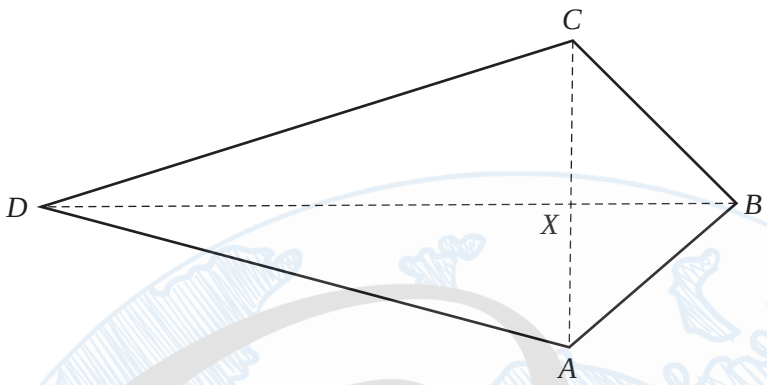
NOT TO SCALE

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.

Answer ..... m [3]

21



NOT TO SCALE

ABCD is a kite.
The diagonals *AC* and *BD* intersect at *X*.
AC = 12 cm, *BD* = 20 cm and *DX* : *XB* = 3 : 2 .

(a) Calculate angle *ABC*.

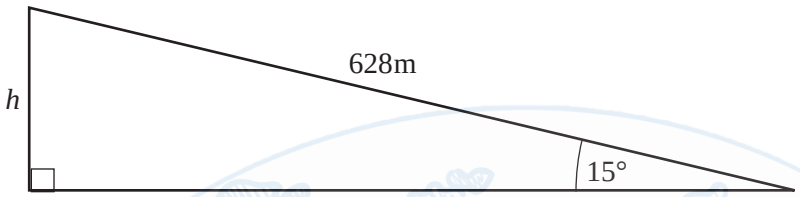
Answer(a) Angle *ABC* = ... [3]

(b) Calculate the area of the kite.

Answer(b) ..... cm^2 [2]

11) November 2013 V3

10



NOT TO SCALE

Calculate the length h.
Give your answer correct to 2 significant figures.

Answer h = ... m [3]

12) June 2014 V1

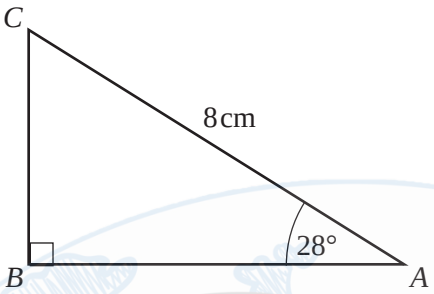
11 A triangle has sides of length 2 cm, 8 cm and 9 cm.

Calculate the value of the largest angle in this triangle.

Answer ..... [4]

13) June 2014 V2

4



NOT TO SCALE

Calculate the length of *AB*.

Answer AB = ... cm [2]

14) June 2015 V3

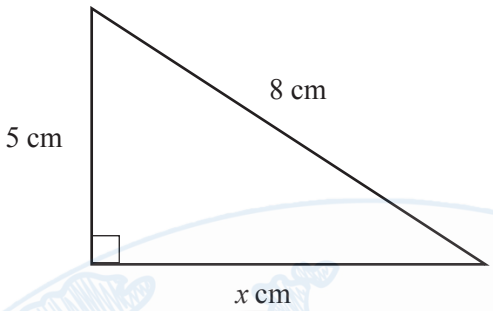
3

NOT TO SCALE

Calculate the value of *x*.

Answer x = ... [2]

11

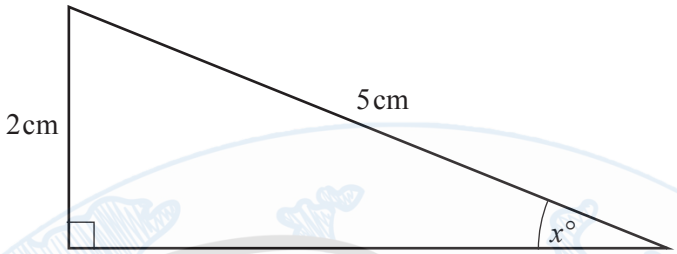


NOT TO SCALE

Calculate the value of x.

Answer x = ... [3]

9

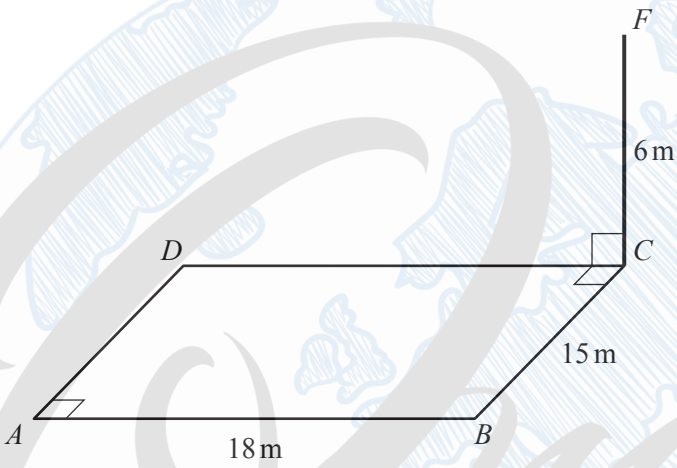


NOT TO SCALE

Calculate the value of x.

Answer x = ... [2]

18



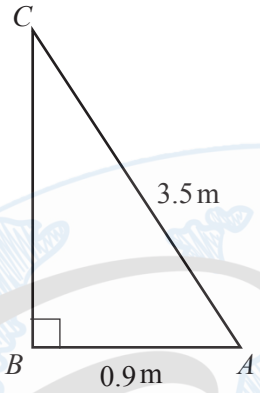
The diagram shows a rectangular playground *ABCD* on horizontal ground.
A vertical flagpole *CF*, 6 metres high, stands in corner *C*.
AB = 18 m and *BC* = 15 m.

Calculate the angle of elevation of *F* from *A*.

Answer ..... [4]

18) March 2016 V2

3



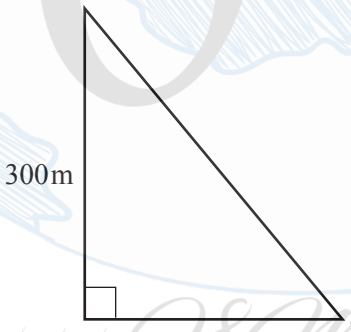
NOT TO SCALE

Calculate angle *BAC*.

Angle *BAC* = ... [2]

19) November 2016 V2

9 From the top of a building, 300 metres high, the angle of depression of a car, *C*, is 52°.

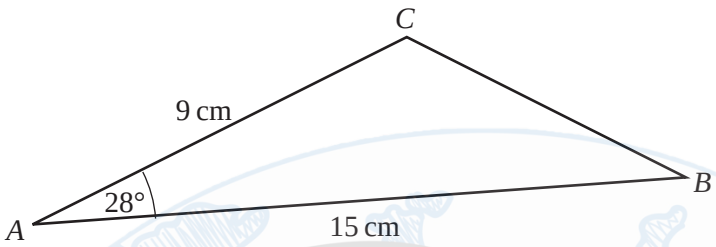


NOT TO SCALE

Calculate the horizontal distance from the car to the base of the building.

..... m [3]

6

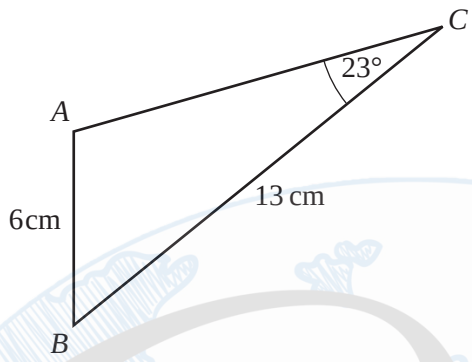


NOT TO SCALE

Calculate the area of triangle *ABC*.

Answer ..... cm^2 [2]

18

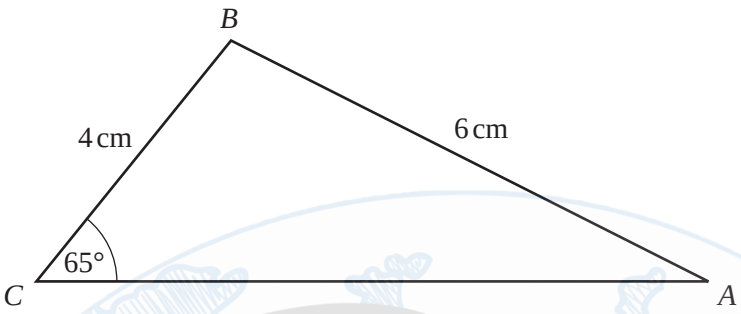


NOT TO SCALE

In triangle ABC, $AB = 6\text{cm}$, $BC = 13\,\text{cm}$ and angle $ACB = 23°$.
Calculate angle BAC, which is obtuse.

Answer Angle BAC = ... [4]

21



NOT TO SCALE

In triangle ABC, $AB = 6$ cm, $BC = 4$ cm and angle $BCA = 65°$.

Calculate

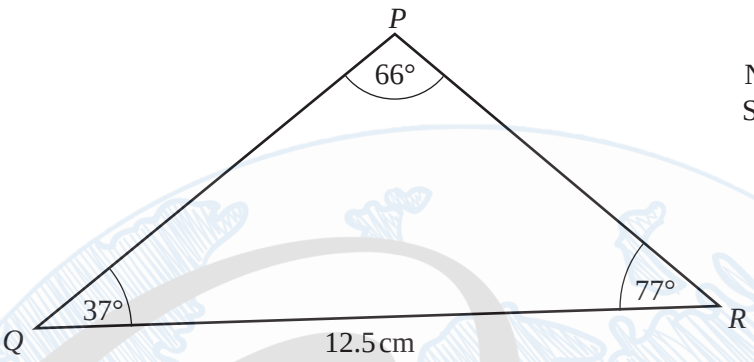
(a) angle CAB,

Answer(a) Angle CAB = ... [3]

(b) the area of triangle ABC.

Answer(b) ..... cm^2 [3]

14

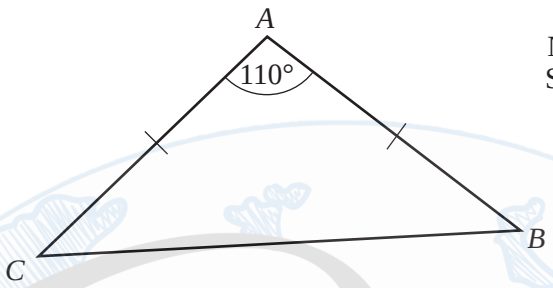


NOT TO SCALE

Calculate *PR*

Answer PR = ... cm [3]

13



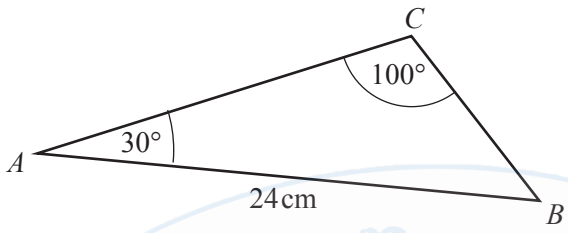
NOT TO SCALE

Triangle ABC is isosceles with $AB = AC$
Angle $BAC = 110°$ and the area of the triangle is $85\,cm^2$.

Calculate AC

Answer AC = ... cm [3]

11

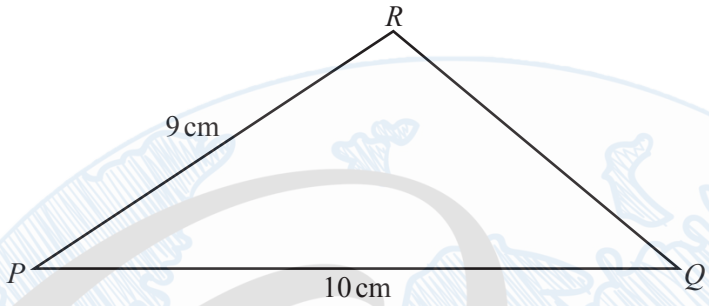


NOT TO SCALE

Use the sine rule to calculate *BC*.

Answer BC = ... cm [3]

20

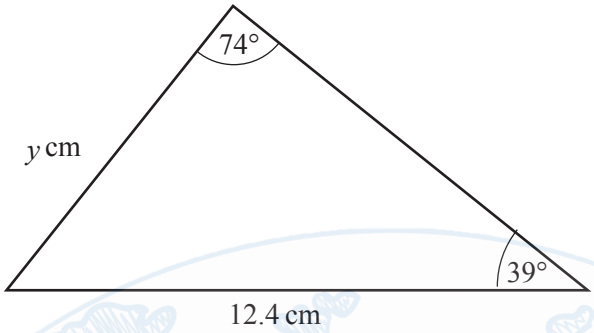


The area of triangle PQR is $38.5\,cm^2$.

Calculate the length QR.

Answer QR = ... cm [6]

13

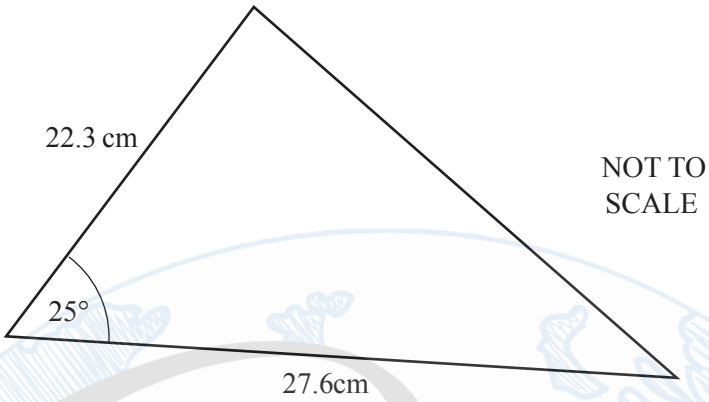


NOT TO SCALE

Calculate the value of y.

Answer y = ... [3]

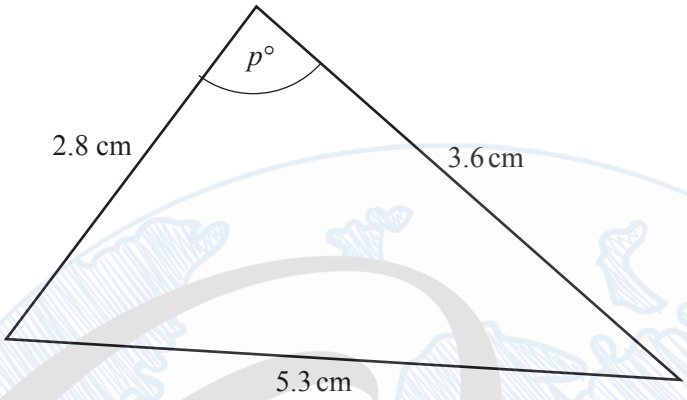
7



Calculate the area of this triangle.

cm^2 [2]

15

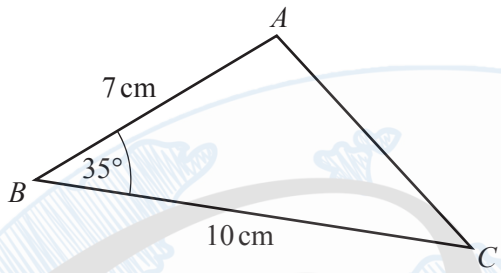


NOT TO SCALE

Find the value of p.

p = ... [4]

26



NOT TO SCALE

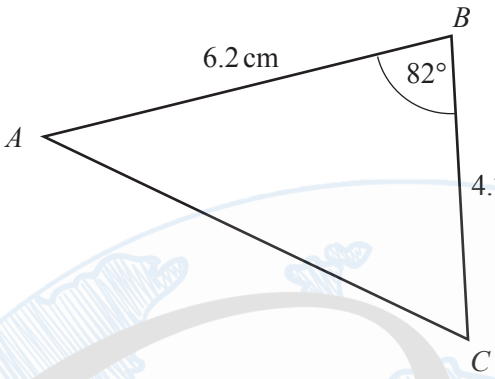
(a) Calculate the area of triangle ABC.

..... cm^2 [2]

(b) Calculate the length of AC.

AC = ... cm [4]

21 (a)

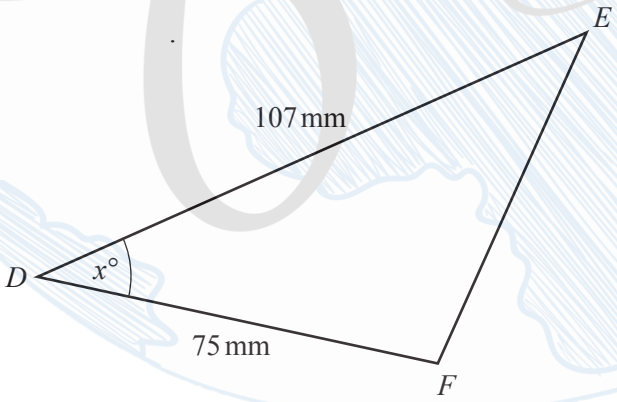


NOT TO SCALE

Calculate the area of triangle ABC.

..... cm^2 [2]

(b)



NOT TO SCALE

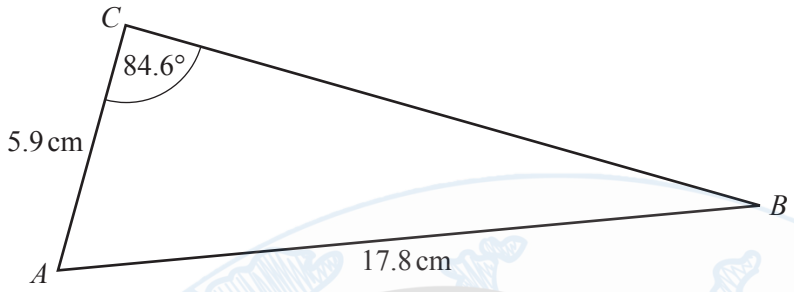
The area of triangle DEF is 2050 mm^2

Work out the value of x

x = ... [2]

32) June 2018 V1

14



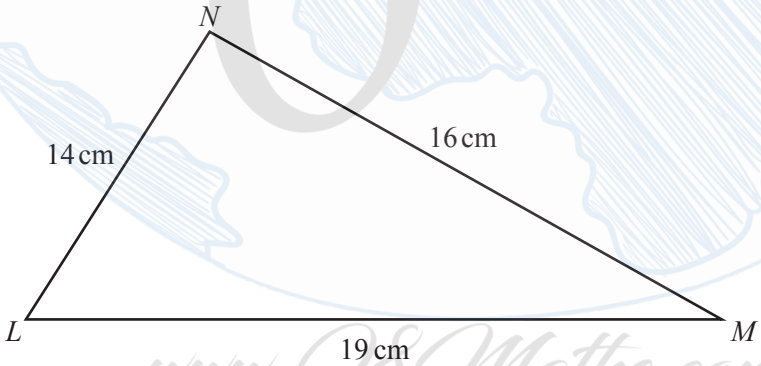
NOT TO SCALE

Use the sine rule to find angle *ABC*.

Angle *ABC* = ... [3]

33) June 2018 V1

19

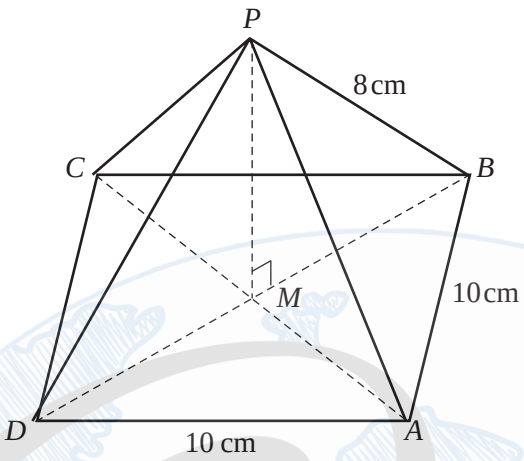


NOT TO SCALE

Calculate angle *LMN*.

Angle *LMN* = ... [4]

19



NOT TO SCALE

The diagram represents a pyramid with a square base of side 10 cm.

The diagonals AC and BD meet at M P is vertically above M and PB = 8cm.

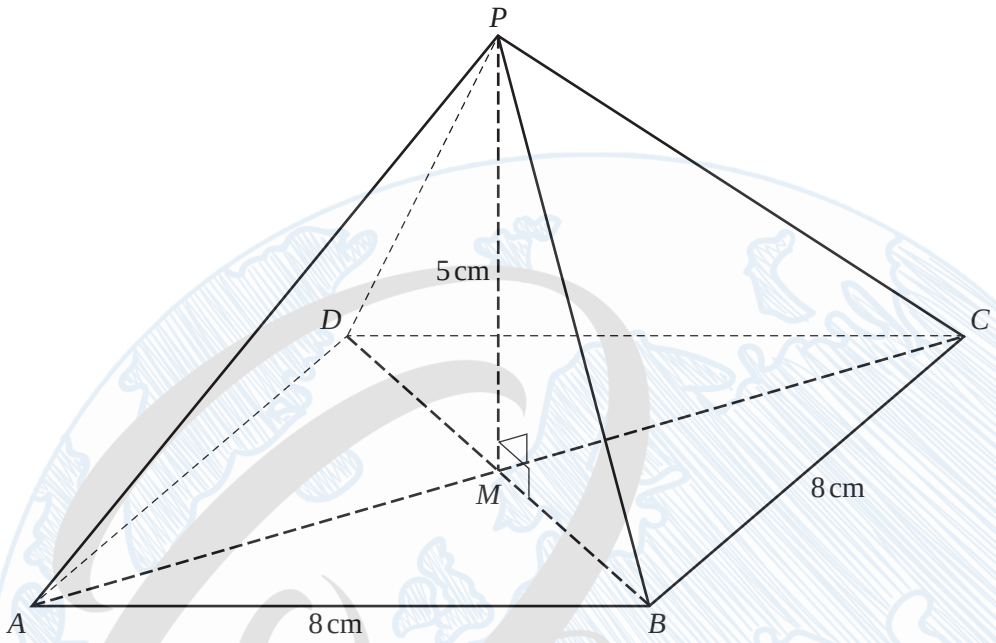
(a) Calculate the length of BD.

Answer(a) BD = ... cm [2]

(b) Calculate MP, the height of the pyramid.

Answer(b) MP = ... cm [3]

21



The diagram shows a pyramid on a square base *ABCD*.
The diagonals of the base, *AC* and *BD*, intersect at *M*.
The sides of the square are 8 cm and the vertical height of the pyramid, *PM*, is 5 cm.

Calculate

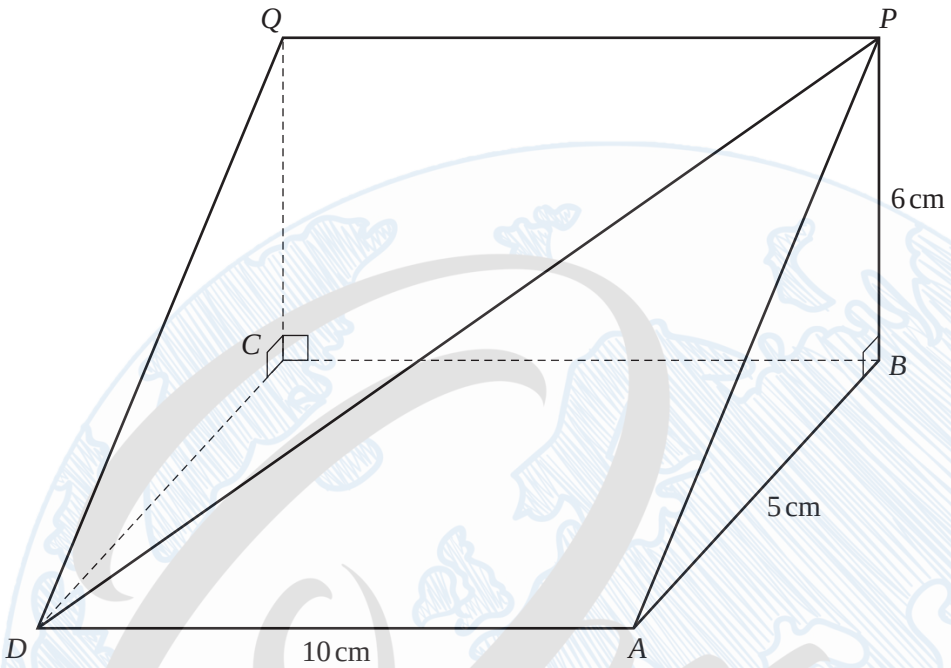
(a) the length of the edge *PB*,

Answer(a) PB = ... cm [3]

(b) the angle between *PB* and the base *ABCD*.

Answer(b) ..... [3]

24



NOT TO SCALE

The diagram shows a triangular prism.
ABCD is a horizontal rectangle with $DA = 10$ cm and $AB = 5$ cm.
BCQP is a vertical rectangle and $BP = 6$ cm.

Calculate

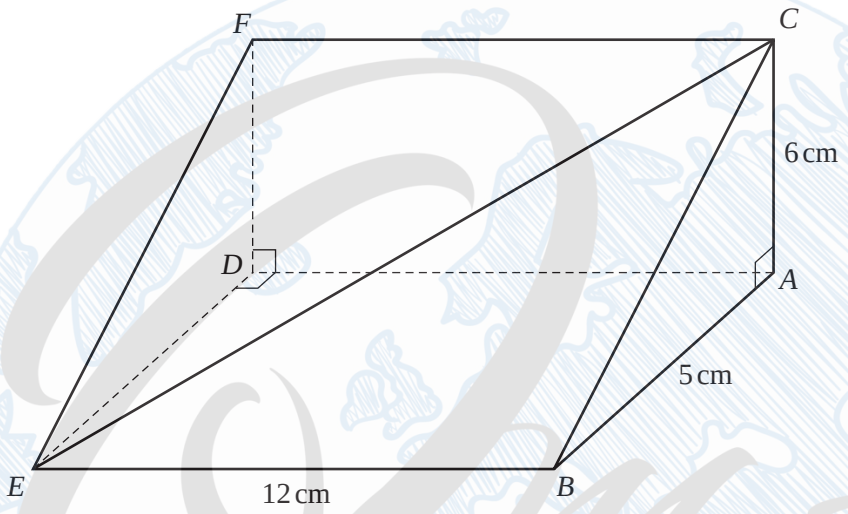
(a) the length of *DP*,

Answer(a) DP = ... cm [3]

(b) the angle between *DP* and the horizontal rectangle *ABCD*.

Answer(b) ..... [3]

23

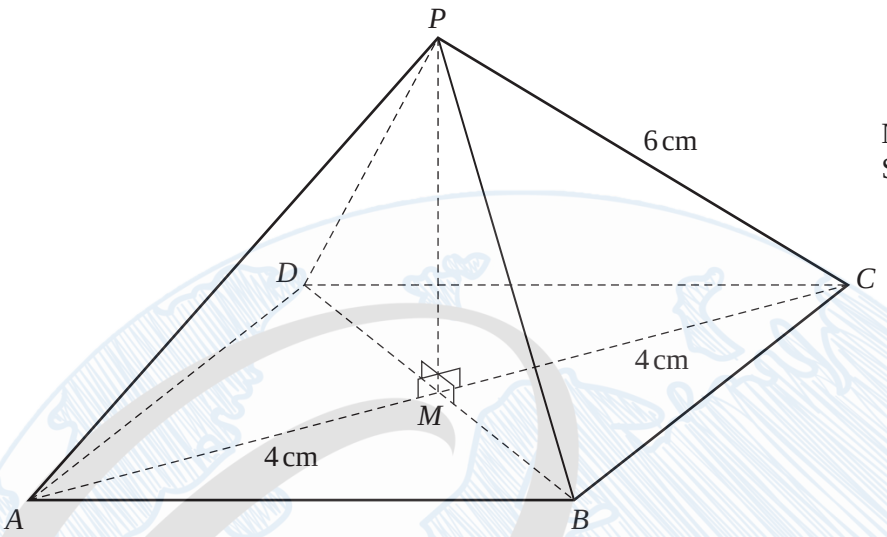


The diagram shows a triangular prism of length 12 cm.
Triangle *ABC* is a cross section of the prism.
Angle *BAC* = 90°, *AC* = 6 cm and *AB* = 5 cm.

Calculate the angle between the line *CE* and the base *ABED*.

Answer ..... [4]

21



The diagram shows a pyramid on a square base *ABCD* with diagonals, *AC* and *BD*, of length 8 cm.
AC and *BD* meet at *M* and the vertex, *P*, of the pyramid is vertically above *M*.
The sloping edges of the pyramid are of length 6 cm.

Calculate

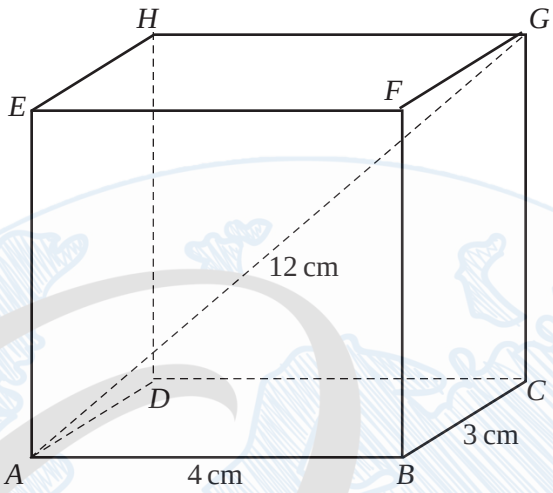
(a) the perpendicular height, *PM*, of the pyramid,

Answer(a) PM = ... cm [3]

(b) the angle between a sloping edge and the base of the pyramid.

Answer(b) ..... [3]

16



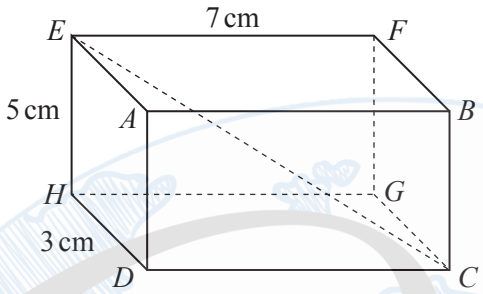
NOT TO SCALE

ABCDEFGH is a cuboid.
AB = 4 cm, *BC* = 3cm and *AG* = 12 cm.

Calculate the angle that *AG* makes with the base *ABCD*.

Answer ..... [4]

23



NOT TO SCALE

The diagram shows a cuboid.
$HD = 3$ cm, $EH = 5$ cm and $EF = 7$ cm.

Calculate

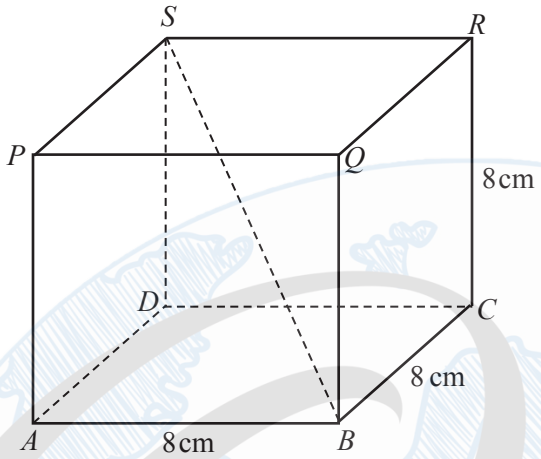
(a) the length CE,

$CE =$ ..... cm [4]

(b) the angle between CE and the base $CDHG$.

..... [3]

24



NOT TO SCALE

The diagram shows a cube of side length 8 cm.

(a) Calculate the length of the diagonal *BS*.

BS = ... cm [3]

(b) Calculate angle *SBD*.

Angle *SBD* = ... [2]