Bearings
Difficulty: Easy

Question Paper 1

Level	IGCSE
Subject	Maths (0580/0980)
Exam Board	CIE
Topic	Trigonometry
Sub-Topic	Bearings
Paper	Paper 2
Difficulty	Easy
Booklet	Question Paper 1

Time allowed: **24 minutes**

Score: **/19**

Percentage: **/100**

Grade Boundaries:

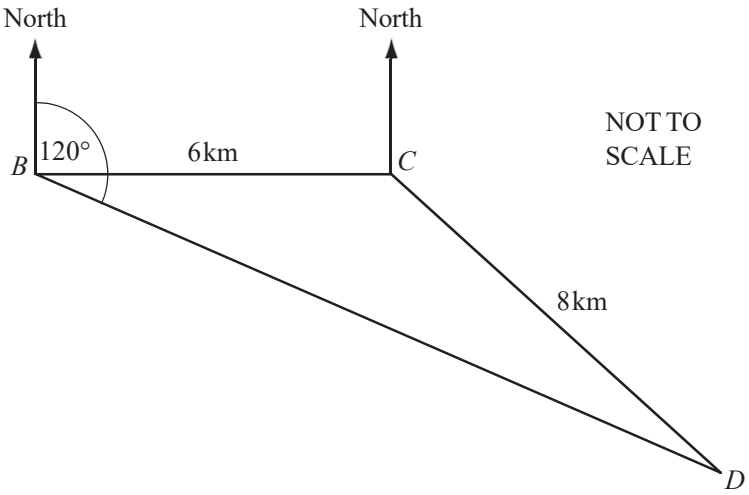
CIE IGCSE Maths (0580)

A*	A	B	C	D	E
>88%	76%	63%	51%	40%	30%

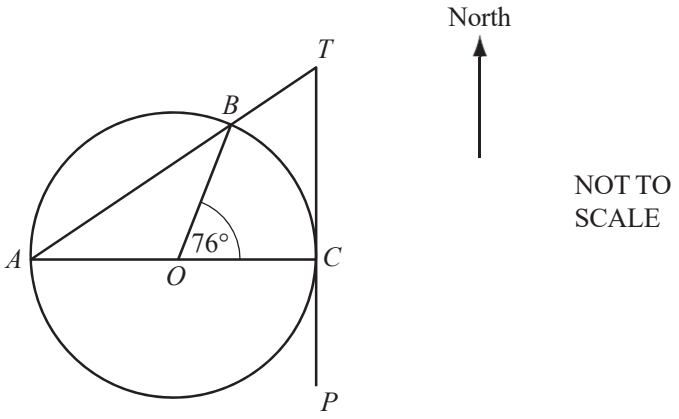
CIE IGCSE Maths (0980)

9	8	7	6	5	4	3
>94%	85%	77%	67%	57%	47%	35%

A helicopter flies from its base B to deliver supplies to two oil rigs at C and D.
C is 6 km due east of B and the distance from C to D is 8 km.
D is on a bearing of 120° from B.



Find the bearing of D from C. [5]



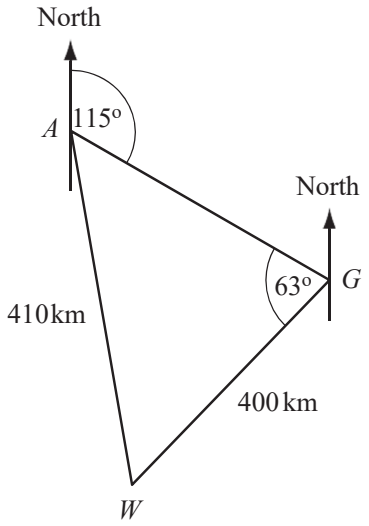
AOC is a diameter of the circle, centre O.
AT is a straight line that cuts the circle at B.
PT is the tangent to the circle at C.
Angle $COB = 76°$.

(a) Calculate angle ATC. [2]

(b) T is due north of C.

Calculate the bearing of B from C. [2]

A plane flies from Auckland (A) to Gisborne (G) on a bearing of 115°.
The plane then flies on to Wellington (W). Angle $AGW = 63°$.



NOT TO SCALE

(a) Calculate the bearing of Wellington from Gisborne.

[2]

(b) The distance from Wellington to Gisborne is 400 kilometres.
The distance from Auckland to Wellington is 410 kilometres.

Calculate the bearing of Wellington from Auckland.

[4]

Question 4

From a harbour, H, the bearing of a ship, S, is 312°. The ship is 3.5 km from the harbour.

(a) Draw a sketch to show this information.
Label H, S, the length 3.5 km and the angle 312°.

[2]

(b) Calculate how far north the ship is of the harbour.

[2]

2D Pythagoras & SOHCAHTOA
Difficulty: Easy

Question Paper 1

Level	IGCSE
Subject	Maths (0580/0980)
Exam Board	CIE
Topic	Trigonometry
Sub-Topic	2D Pythagoras & SOHCAHTOA
Paper	Paper 2
Difficulty	Easy
Booklet	Question Paper 1

Time allowed: **30 minutes**

Score: **/23**

Percentage: **/100**

Grade Boundaries:

CIE IGCSE Maths (0580)

A*	A	B	C	D	E
>88%	76%	63%	51%	40%	30%

CIE IGCSE Maths (0980)

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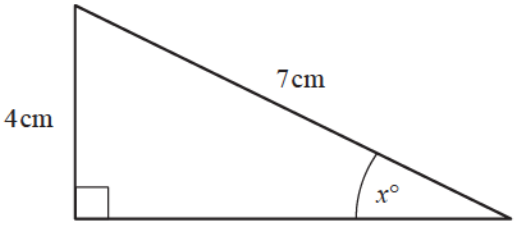
Question 1



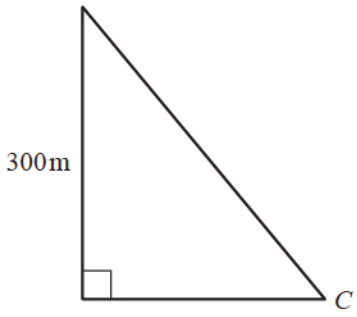
NOT TO SCALE

[2]

Calculate the value of x.

Question 2

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

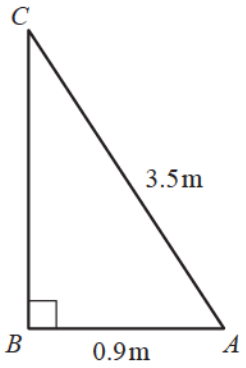


NOT TO SCALE

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

[3]

Question 3

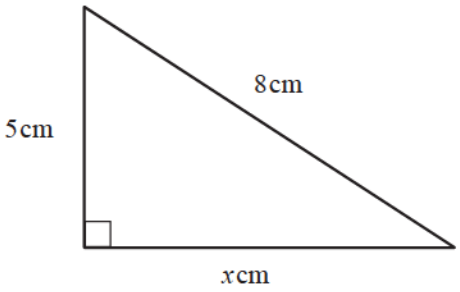


NOT TO SCALE

[2]

Calculate angle BAC.

Question 4

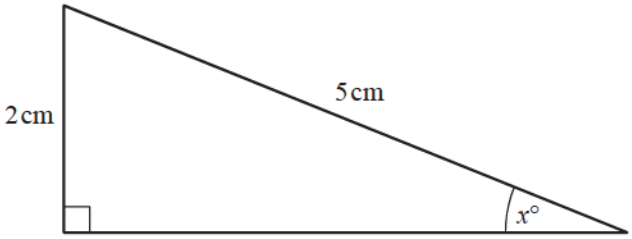


NOT TO SCALE

Calculate the value of x.

[3]

Question 5

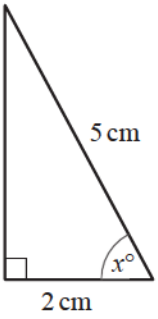


NOT TO SCALE

Calculate the value of x.

[2]

Question 6

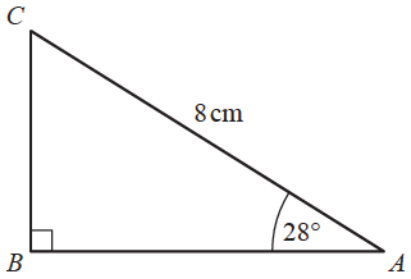


NOT TO SCALE

Calculate the value of x.

[2]

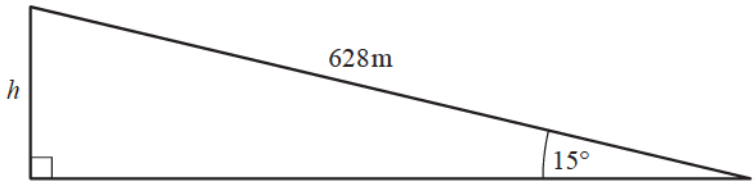
Question 7



NOT TO SCALE

Calculate the length of AB. [2]

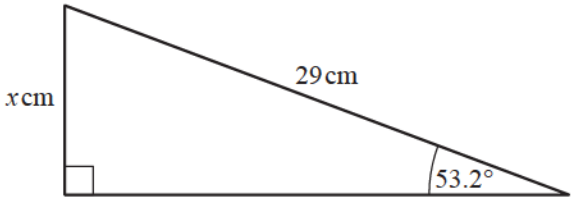
Question 8



NOT TO SCALE

Calculate the length h.
Give your answer correct to 2 significant figures. [3]

Question 9



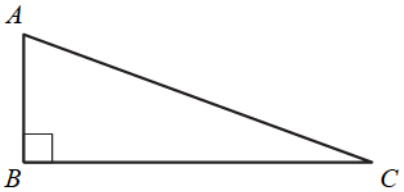
NOT TO SCALE

[2]

Calculate the value of x.

Question 10

In the right-angled triangle ABC, $\cos C = \frac{4}{5}$. Find angle A. [2]



NOT TO SCALE

2D Pythagoras & SOHCAHTOA Difficulty: Easy

Question Paper 2

Level	IGCSE
Subject	Maths (0580/0980)
Exam Board	CIE
Topic	Trigonometry
Sub-Topic	2D Pythagoras & SOHCAHTOA
Paper	Paper 2
Difficulty	Easy
Booklet	Question Paper 2

Time allowed: **32 minutes**

Score: **/25**

Percentage: **/100**

Grade Boundaries:

CIE IGCSE Maths (0580)

A*	A	B	C	D	E
>88%	76%	63%	51%	40%	30%

CIE IGCSE Maths (0980)

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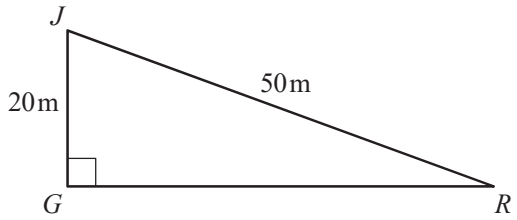
Question 1

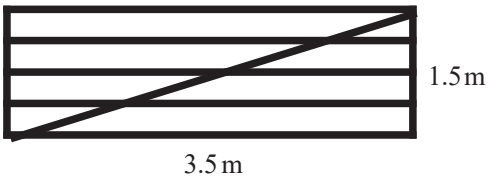


NOT TO SCALE

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

[2]

Question 2

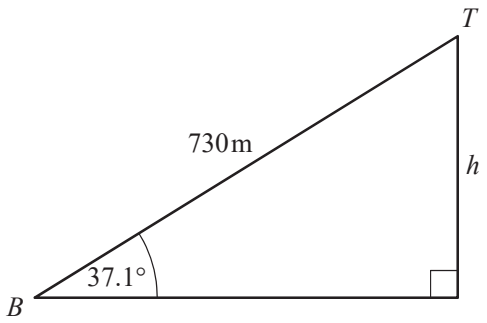


NOT TO SCALE

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]

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°.

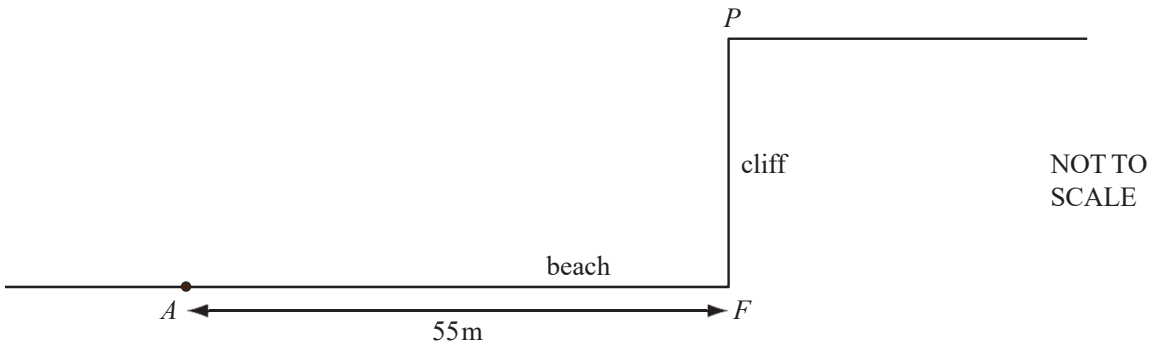
Calculate the change in altitude, h metres, from the bottom to the top. [2]

(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]

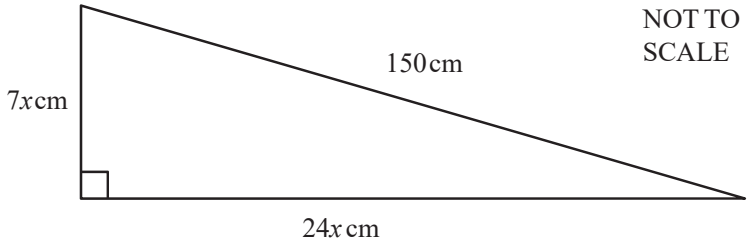
Question 4



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 5

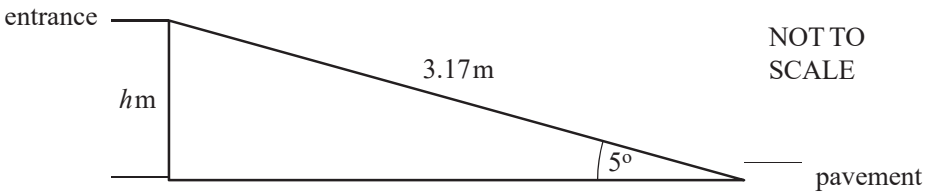


The right-angled triangle in the diagram has sides of length $7x$ cm, $24x$ cm and 150 cm.

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

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

Question 6



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.

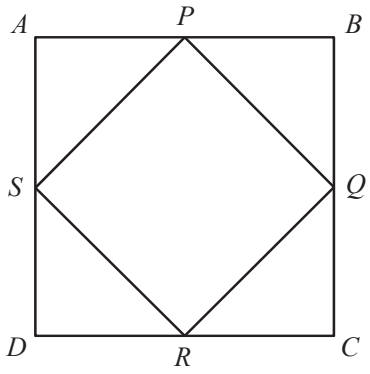
[2]

Question 7

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

[2]

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.



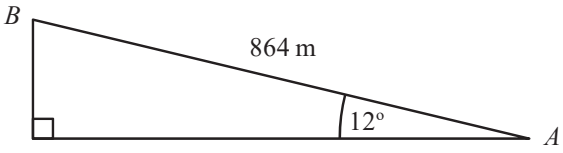
NOT TO SCALE

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

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

Question 9

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]



NOT TO SCALE

2D Pythagoras & SOHCAHTOA Difficulty: Hard

Question Paper 1

Level	IGCSE
Subject	Maths (0580/0980)
Exam Board	CIE
Topic	Trigonometry
Sub-Topic	2D Pythagoras & SOHCAHTOA
Paper	Paper 2
Difficulty	Hard
Booklet	Question Paper 1

Time allowed: **32 minutes**

Score: **/25**

Percentage: **/100**

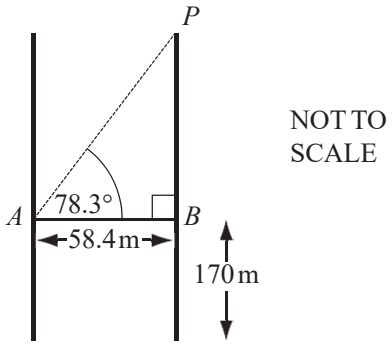
Grade Boundaries:

CIE IGCSE Maths (0580)

A*	A	B	C	D	E
>88%	76%	63%	51%	40%	30%

CIE IGCSE Maths (0980)

9	8	7	6	5	4	3
>94%	85%	77%	67%	57%	47%	35%

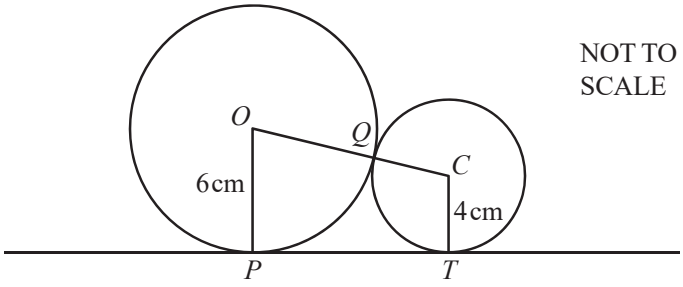


NOT TO SCALE

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. [3]

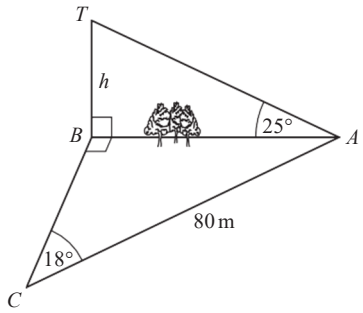
Question 2



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]



NOT TO SCALE

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° and angle ABC = 90°.

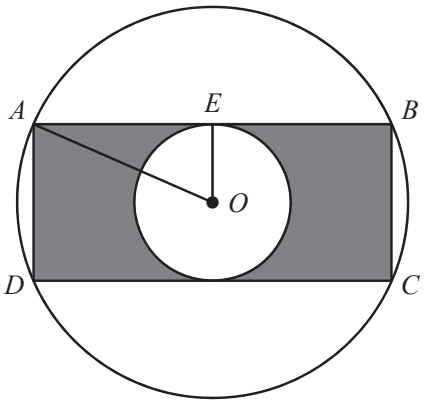
Calculate

(a) the distance AB, [2]

(b) the height of the tower, BT.

[2]

Question 4



NOT TO SCALE

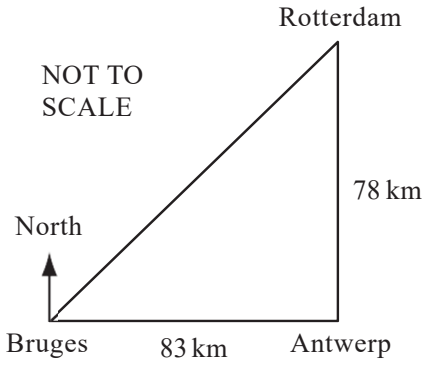
A,B,C and *D* lie on a circle, centre *O*, radius 8 cm.
AB and *CD* are tangents to a circle, centre *O*, radius 4 cm.
ABCD is a rectangle.

(a) Calculate the distance *AE*.

[2]

(b) Calculate the shaded area.

[3]



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

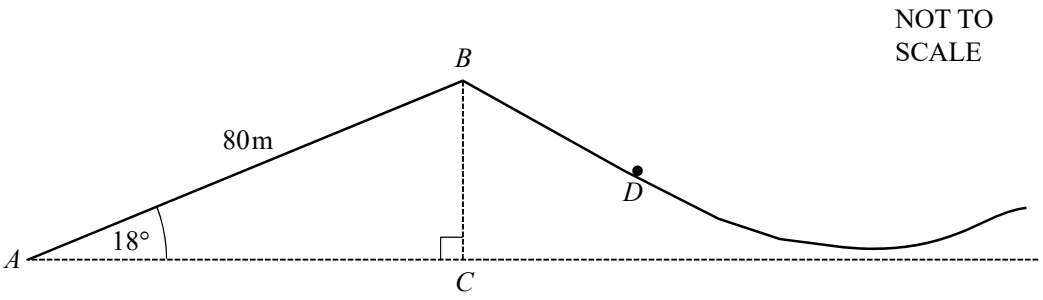
Calculate

(a) the distance between Bruges and Rotterdam,

[2]

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

[3]



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°.
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]

Sine & Cosine Rules
Difficulty: Easy

Question Paper 1

Level	IGCSE
Subject	Maths (0580/0980)
Exam Board	CIE
Topic	Trigonometry
Sub-Topic	Sine & Cosine Rules
Paper	Paper 2
Difficulty	Easy
Booklet	Question Paper 1

Time allowed: **26 minutes**

Score: **/20**

Percentage: **/100**

Grade Boundaries:

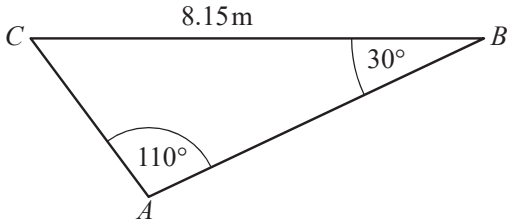
CIE IGCSE Maths (0580)

A*	A	B	C	D	E
>88%	76%	63%	51%	40%	30%

CIE IGCSE Maths (0980)

9	8	7	6	5	4	3
>94%	85%	77%	67%	57%	47%	35%

Question 1

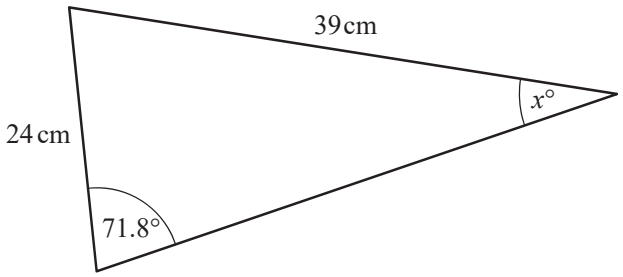


NOT TO SCALE

Calculate AC.

[3]

Question 2

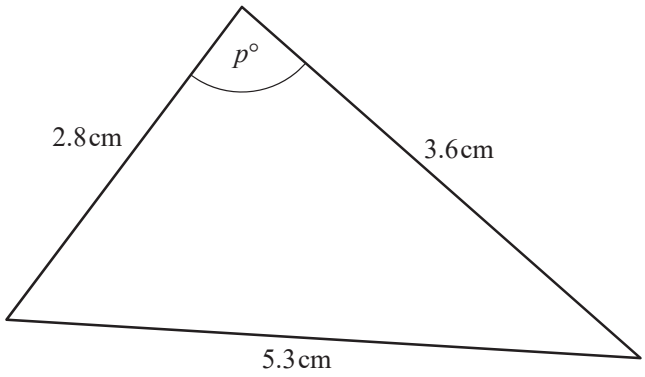


NOT TO SCALE

Find the value of x.

[3]

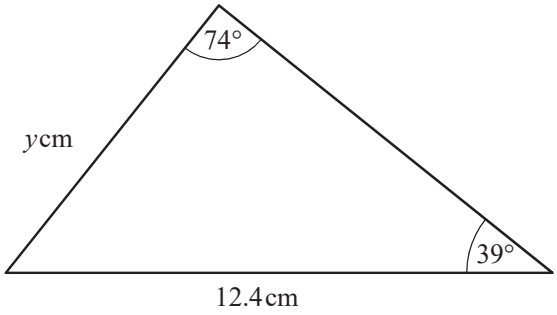
Question 3



NOT TO SCALE

Find the value of p. [4]

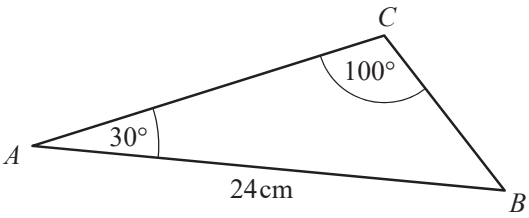
Question 4



NOT TO SCALE

Calculate the value of y. [3]

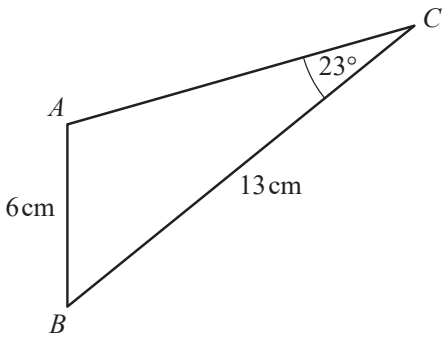
Question 5



NOT TO SCALE

Use the sine rule to calculate BC. [3]

Question 6



NOT TO SCALE

In triangle ABC, $AB = 6$ cm, $BC = 13$ cm and angle $ACB = 23°$.
Calculate angle BAC, which is obtuse. [4]

Sine & Cosine Rules
Difficulty: Hard

Question Paper 1

Level	IGCSE
Subject	Maths (0580/0980)
Exam Board	CIE
Topic	Trigonometry
Sub-Topic	Sine & Cosine Rules
Paper	Paper 2
Difficulty	Hard
Booklet	Question Paper 1

Time allowed: **36 minutes**

Score: **/28**

Percentage: **/100**

Grade Boundaries:

CIE IGCSE Maths (0580)

A*	A	B	C	D	E
>88%	76%	63%	51%	40%	30%

CIE IGCSE Maths (0980)

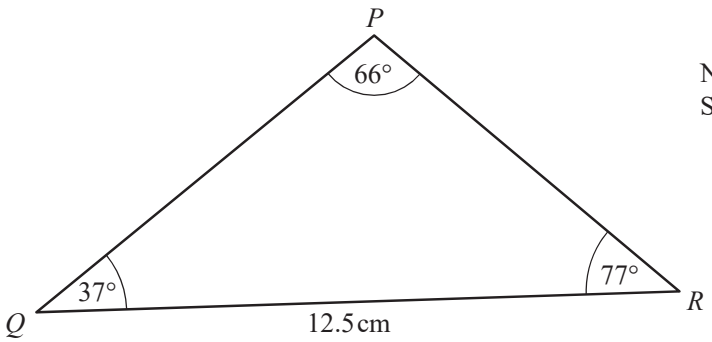
9	8	7	6	5	4	3
>94%	85%	77%	67%	57%	47%	35%

Question 1

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

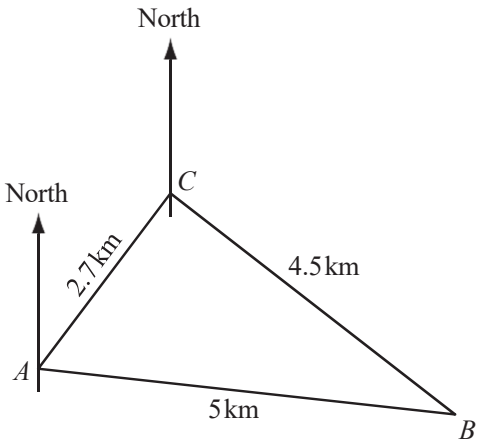
Calculate the value of the largest angle in this triangle. [4]

Question 2



NOT TO SCALE

Calculate PR. [3]



NOT TO SCALE

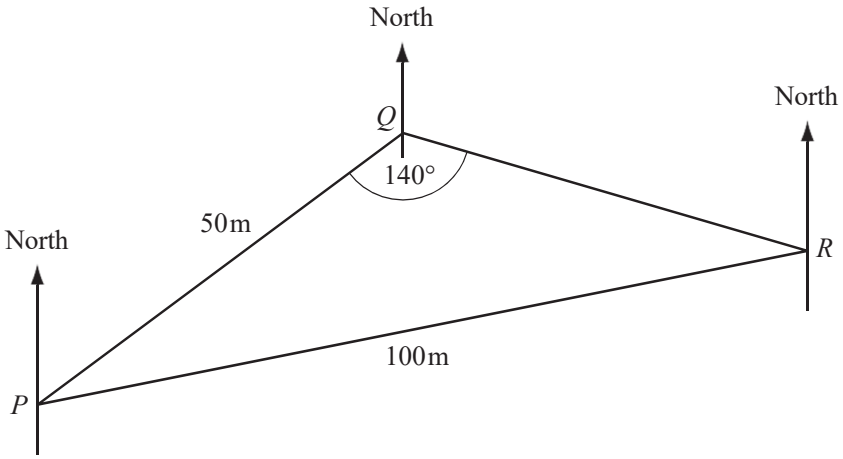
The diagram shows 3 ships A, B and C at sea.

$AB = 5$ km, $BC = 4.5$ km and $AC = 2.7$ km.

(a) Calculate angle ACB.
Show all your working. [4]

(b) The bearing of A from C is 220°.

Calculate the bearing of B from C. [1]



NOT TO SCALE

The diagram shows three points P, Q and R on horizontal ground.

$PQ = 50$ m, $PR = 100$ m and angle $PQR = 140°$.

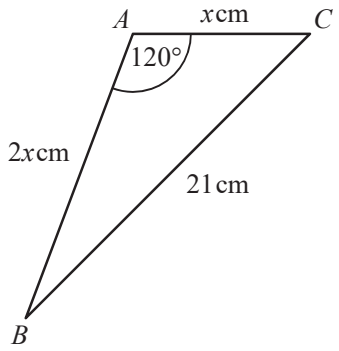
(a) Calculate angle PRQ. [3]

(b) The bearing of R from Q is 100°.

Find the bearing of P from R. [2]

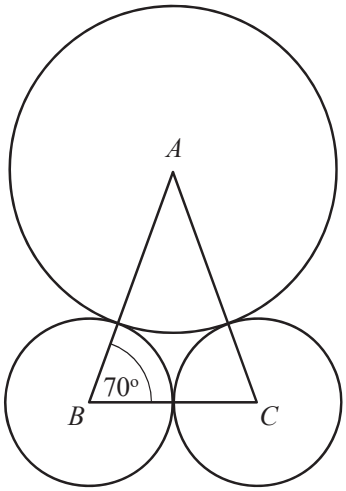
Question 5

NOT TO SCALE



In triangle ABC, $AB = 2x$ cm, $AC = x$ cm, $BC = 21$ cm and angle $BAC = 120°$.
Calculate the value of x. [3]

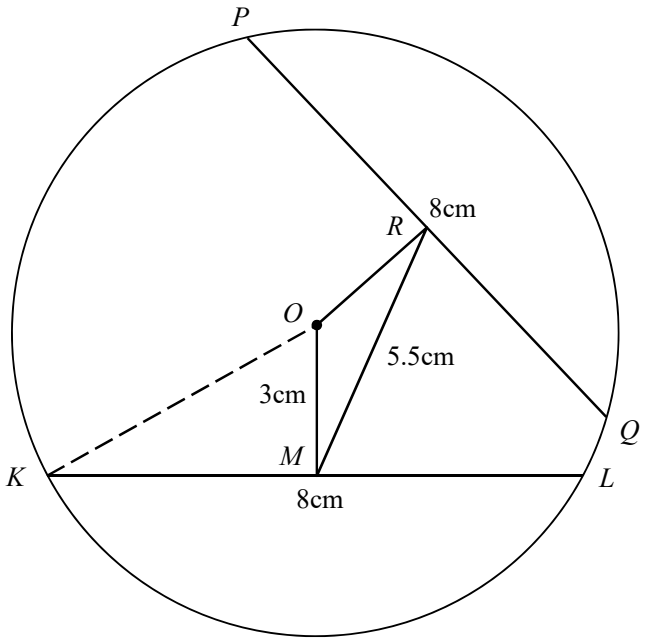
Question 6



NOT TO SCALE

The diagram shows three touching circles.
A is the centre of a circle of radius x centimetres.
B and C are the centres of circles of radius 3.8 centimetres. Angle $ABC = 70°$.
Find the value of x. [3]

NOT TO SCALE



In the circle, centre O, the chords KL and PQ are each of length 8 cm.
M is the mid-point of KL and R is the mid-point of PQ. $OM = 3$ cm.

(a) Calculate the length of OK.

[2]

(b) RM has a length of 5.5 cm. Calculate angle ROM.

[3]

Area of Triangle
Difficulty: Easy

Question Paper 1

Level	IGCSE
Subject	Maths (0580/0980)
Exam Board	CIE
Topic	Trigonometry
Sub-Topic	Area of Triangle
Paper	Paper 2
Difficulty	Easy
Booklet	Question Paper 1

Time allowed: **23 minutes**

Score: **/18**

Percentage: **/100**

Grade Boundaries:

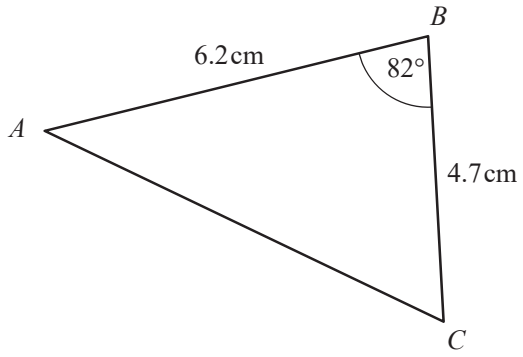
CIE IGCSE Maths (0580)

A*	A	B	C	D	E
>88%	76%	63%	51%	40%	30%

CIE IGCSE Maths (0980)

9	8	7	6	5	4	3
>94%	85%	77%	67%	57%	47%	35%

(a)

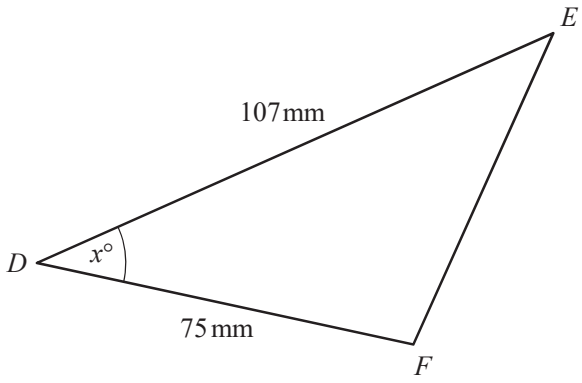


NOT TO SCALE

Calculate the area of triangle ABC.

[2]

(b)



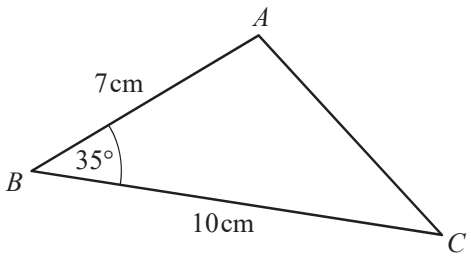
NOT TO SCALE

[2]

The area of triangle DEF is 2050mm^2.

Work out the value of x.

Question 2



NOT TO SCALE

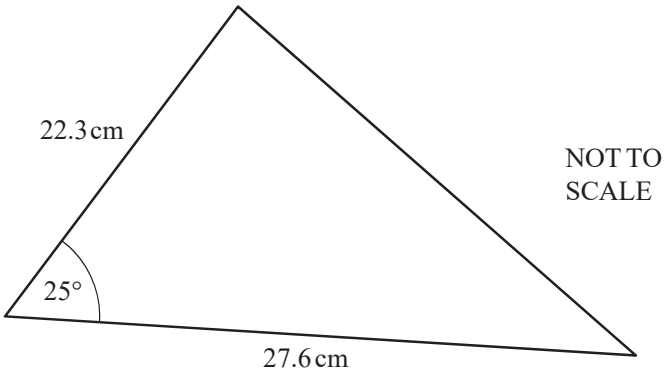
(a) Calculate the area of triangle ABC.

[2]

(b) Calculate the length of AC.

[4]

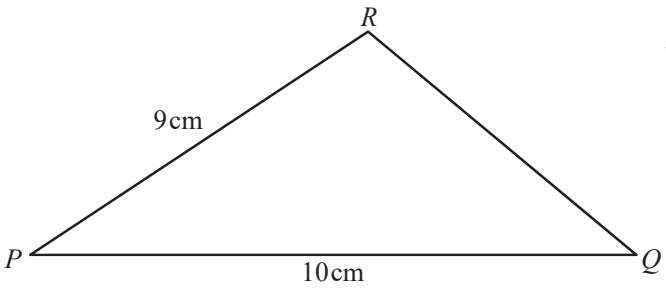
Question 3



Calculate the area of this triangle.

[2]

Question 4



NOT TO SCALE

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

Calculate the length QR.

[6]

Area of Triangle
Difficulty: Hard

Question Paper 1

Level	IGCSE
Subject	Maths (0580/0980)
Exam Board	CIE
Topic	Trigonometry
Sub-Topic	Area of Triangle
Paper	Paper 2
Difficulty	Hard
Booklet	Question Paper 1

Time allowed: **21 minutes**

Score: **/16**

Percentage: **/100**

Grade Boundaries:

CIE IGCSE Maths (0580)

A*	A	B	C	D	E
>88%	76%	63%	51%	40%	30%

CIE IGCSE Maths (0980)

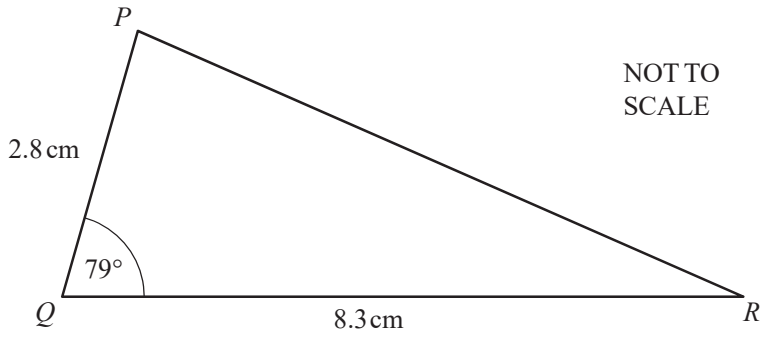
9	8	7	6	5	4	3
>94%	85%	77%	67%	57%	47%	35%

Question 1

In a triangle PQR, $PQ = 8$ cm and $QR = 7$ cm.
The area of this triangle is $17\,\text{cm}^2$.

Calculate the two possible values of angle PQR. [3]

Question 2

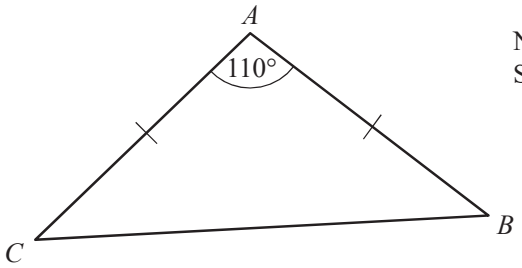


(a) Calculate the area of triangle PQR. [2]

(b) Triangle PQR is enlarged by scale factor 4.5 .

Calculate the area of the enlarged triangle. [2]

Question 3

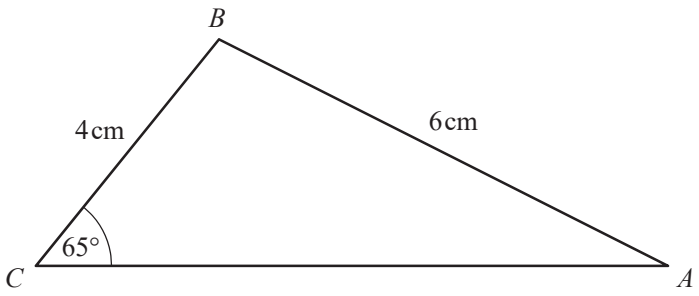


NOT TO SCALE

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

Calculate AC. [3]

Question 4



NOT TO SCALE

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

Calculate

(a) angle CAB, [3]

(b) the area of triangle ABC. [3]

3D Pythagoras & SOHCAHTOA Difficulty: Easy

Question Paper 1

Level	IGCSE
Subject	Maths (0580/0980)
Exam Board	CIE
Topic	Trigonometry
Sub-Topic	3D Pythagoras & SOHCAHTOA
Paper	Paper 2
Difficulty	Easy
Booklet	Question Paper 1

Time allowed: **31 minutes**

Score: **/24**

Percentage: **/100**

Grade Boundaries:

CIE IGCSE Maths (0580)

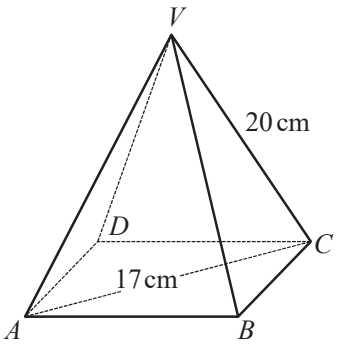
A*	A	B	C	D	E
>88%	76%	63%	51%	40%	30%

CIE IGCSE Maths (0980)

9	8	7	6	5	4	3
>94%	85%	77%	67%	57%	47%	35%

Question 1

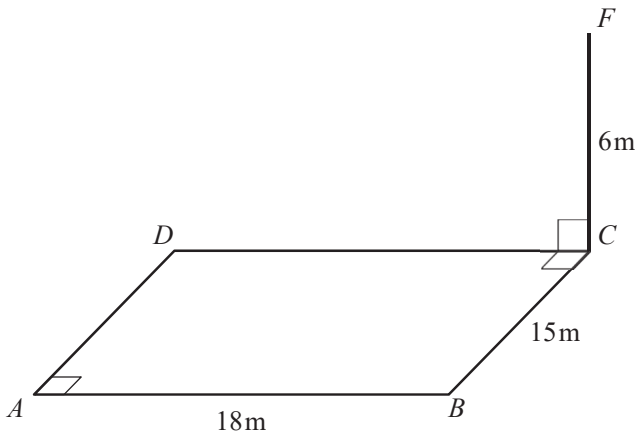
The diagram shows a pyramid with a square base $ABCD$.
All the sloping edges of the pyramid are 20 cm long and $AC = 17$ cm.



NOT TO SCALE

Calculate the height of the pyramid. [3]

Question 2

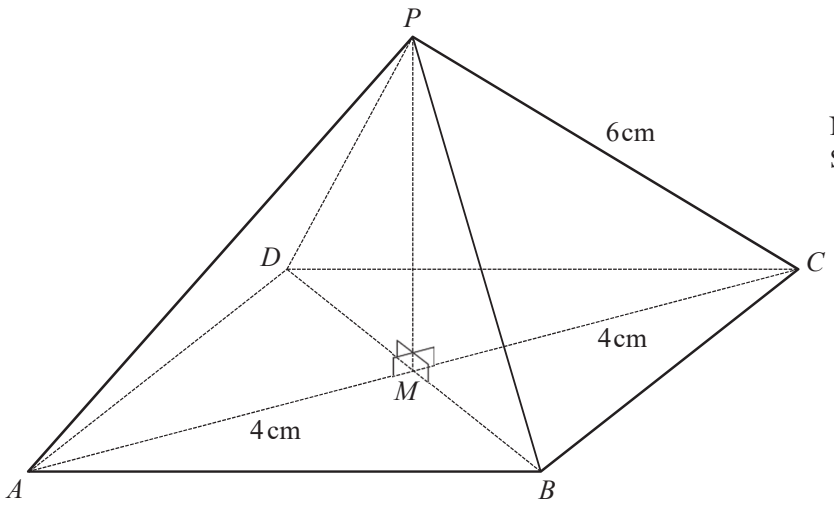


NOT TO SCALE

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.

[4]

Calculate the angle of elevation of F from A.



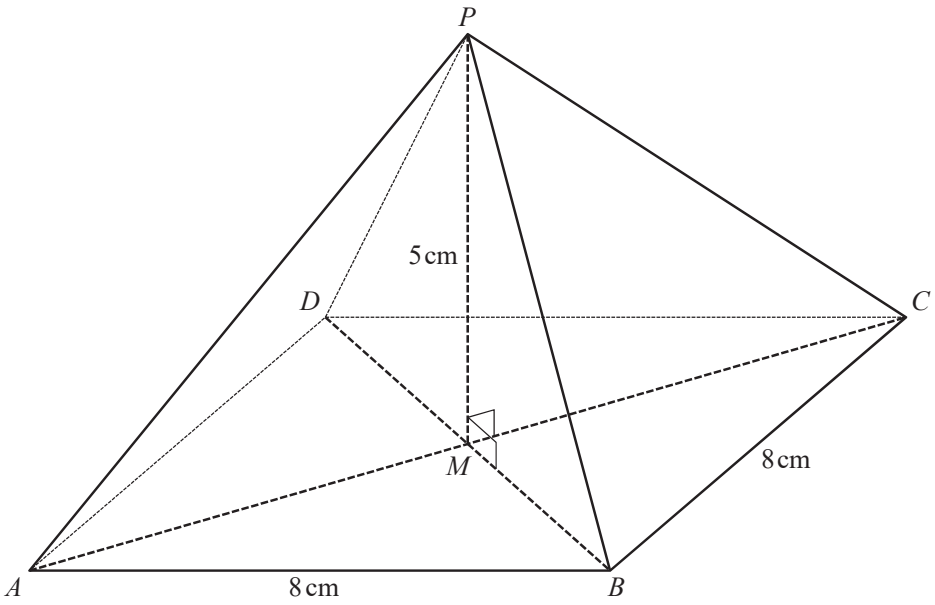
The diagram shows a pyramid on a square base $ABCD$ with diagonals, AC and BD, of length 8 cm.
AC and BD meet at M and the vertex, P, of the pyramid is vertically above M.
The sloping edges of the pyramid are of length 6 cm.

Calculate

(a) the perpendicular height, PM, of the pyramid, [3]

(b) the angle between a sloping edge and the base of the pyramid. [3]

Question 4



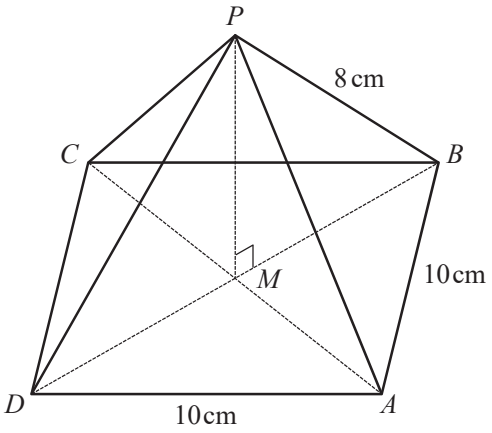
NOT TO SCALE

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*, [3]

(b) the angle between *PB* and the base *ABCD*. [3]



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 $PB = 8$cm.

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

(b) Calculate MP, the height of the pyramid. [3]

3D Pythagoras & SOHCAHTOA Difficulty: Hard

Question Paper 1

Level	IGCSE
Subject	Maths (0580/0980)
Exam Board	CIE
Topic	Trigonometry
Sub-Topic	3D Pythagoras & SOHCAHTOA
Paper	Paper 2
Difficulty	Hard
Booklet	Question Paper 1

Time allowed: **30 minutes**

Score: **/23**

Percentage: **/100**

Grade Boundaries:

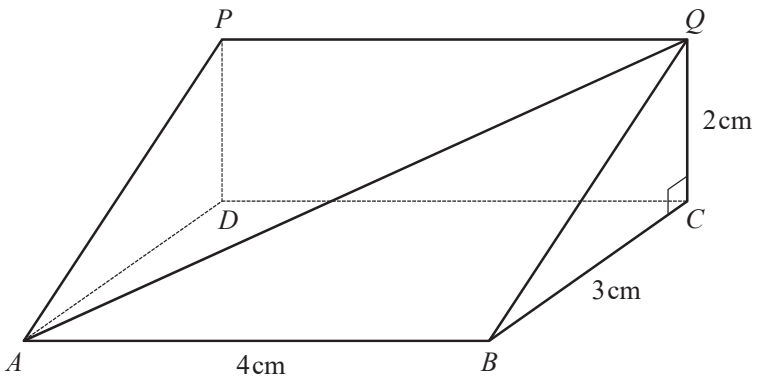
CIE IGCSE Maths (0580)

A*	A	B	C	D	E
>88%	76%	63%	51%	40%	30%

CIE IGCSE Maths (0980)

9	8	7	6	5	4	3
>94%	85%	77%	67%	57%	47%	35%

Question 1

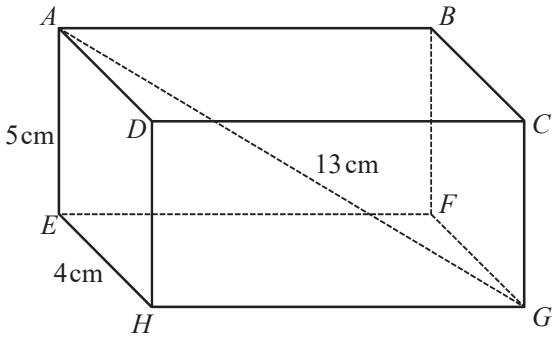


NOT TO SCALE

The diagram shows a prism of length 4 cm.
The cross section is a right-angled triangle.
$BC = 3$ cm and $CQ = 2$ cm.

Calculate the angle between the line AQ and the base, $ABCD$, of the prism. [4]

Question 2



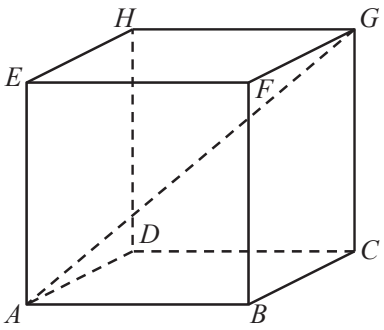
NOT TO SCALE

The diagram shows a cuboid $ABCDEFGH$.
$AE = 5$ cm, $EH = 4$ cm and $AG = 13$ cm.

Calculate the angle between the line AG and the base $EFGH$ of the cuboid. [3]

Question 3

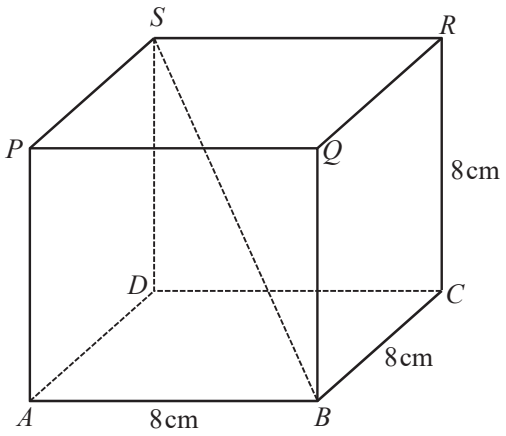
The diagram shows a cube $ABCDEFGH$ of side length 26 cm.



NOT TO SCALE

Calculate the angle between AG and the base of the cube. [4]

Question 4

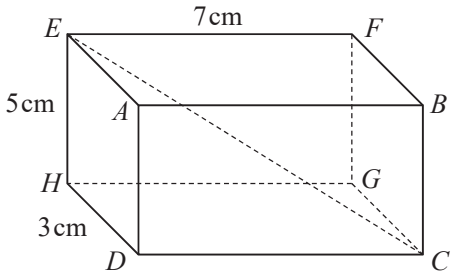


NOT TO SCALE

The diagram shows a cube of side length 8 cm.

(a) Calculate the length of the diagonal BS. [3]

(b) Calculate angle SBD. [2]



NOT TO SCALE

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

Calculate

(a) the length CE,

[4]

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

[3]

3D Pythagoras & SOHCAHTOA Difficulty: Hard

Question Paper 2

Level	IGCSE
Subject	Maths (0580/0980)
Exam Board	CIE
Topic	Trigonometry
Sub-Topic	3D Pythagoras & SOHCAHTOA
Paper	Paper 2
Difficulty	Hard
Booklet	Question Paper 2

Time allowed: **28 minutes**

Score: **/22**

Percentage: **/100**

Grade Boundaries:

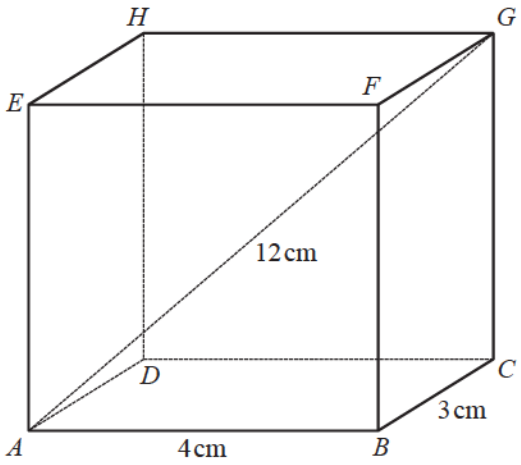
CIE IGCSE Maths (0580)

A*	A	B	C	D	E
>88%	76%	63%	51%	40%	30%

CIE IGCSE Maths (0980)

9	8	7	6	5	4	3
>94%	85%	77%	67%	57%	47%	35%

Question 1

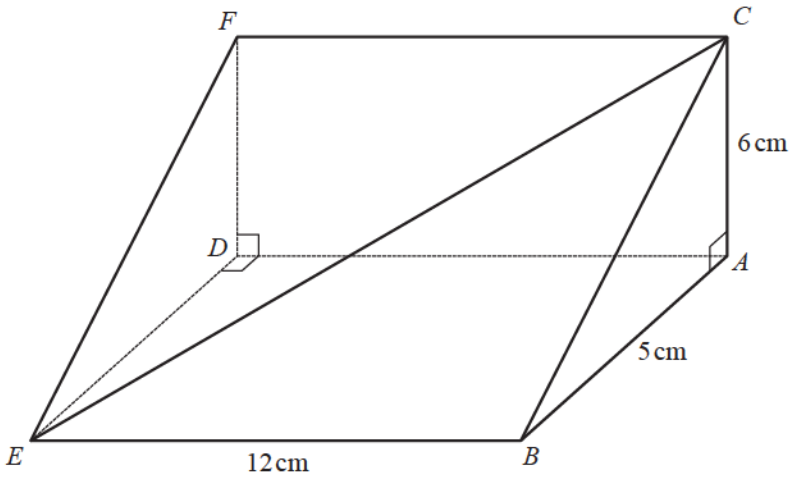


NOT TO SCALE

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

Calculate the angle that AG makes with the base $ABCD$. [4]

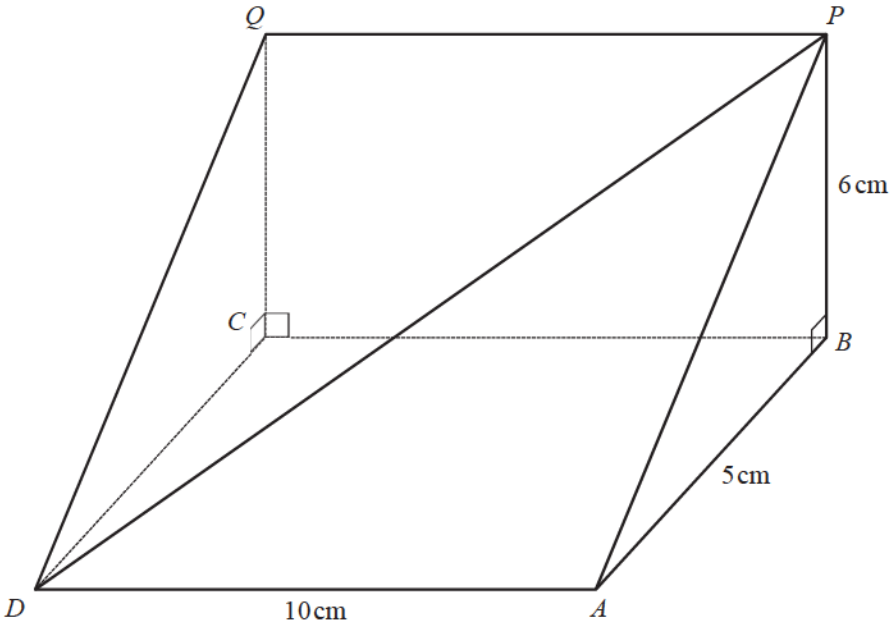
Question 2



NOT TO SCALE

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 $ABED$. [4]



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.

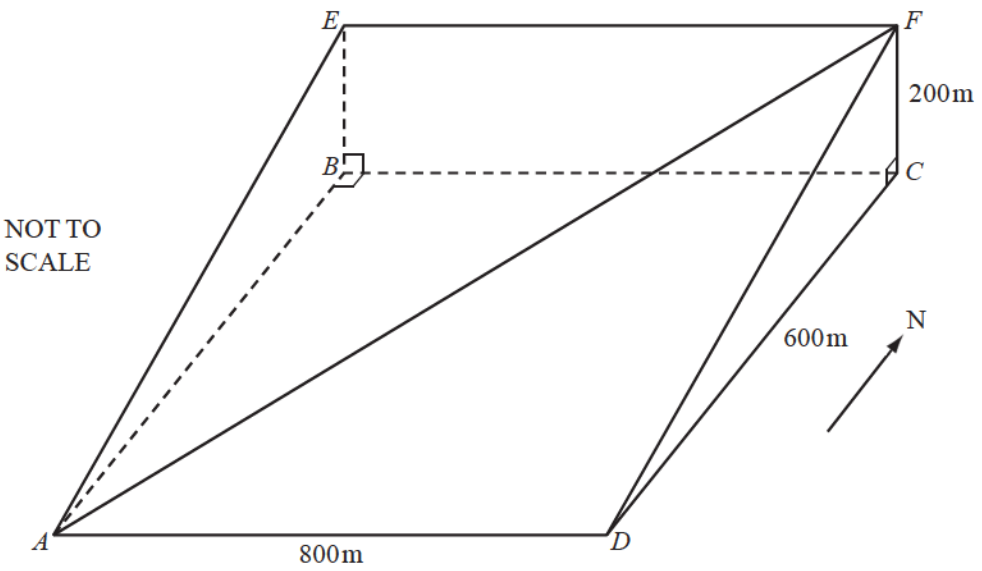
Calculate

(a) the length of DP,

[3]

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

[3]



ABCD, *BEFC* and *AEFD* are all rectangles.
ABCD is horizontal, *BEFC* is vertical and *AEFD* represents a hillside.
AF is a path on the hillside.
AD = 800 m, *DC* = 600 m and *CF* = 200 m.

(a) Calculate the angle that the path *AF* makes with *ABCD*. [5]

(b) In the diagram *D* is due south of *C*.
Jasmine walks down the path from *F* to *A* in bad weather. She cannot see the path ahead.
The compass bearing she must use is the bearing of *A* from *C*.
Calculate this bearing. [3]