Trigonometry
Difficulty: Medium

Question Paper 2

Level	IGCSE
Subject	Maths (0580/0980)
Exam Board	CIE
Topic	Trigonometry
Paper	Paper 4
Difficulty	Medium
Booklet	Question Paper 2

Time allowed: **93 minutes**

Score: **/81**

Percentage: **/100**

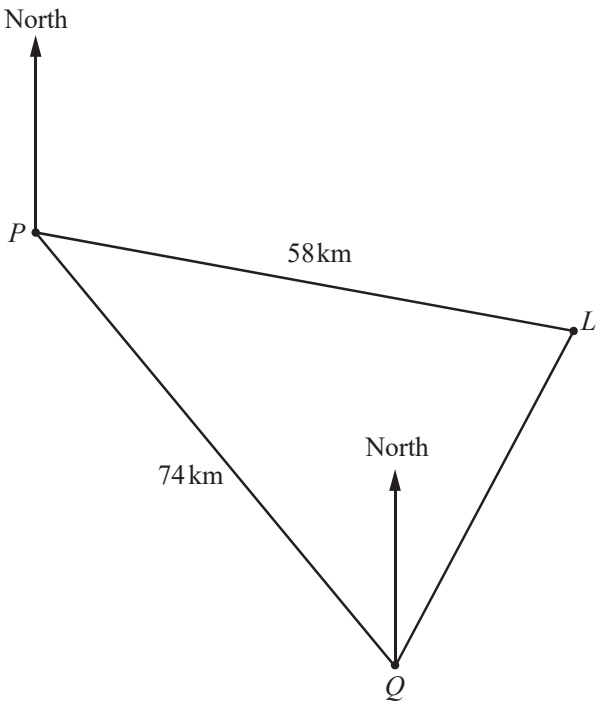
Grade Boundaries:

CIE IGCSE Maths (0580)

A*	A	B	C	D
>83%	67%	51%	41%	31%

CIE IGCSE Maths (0980)

9	8	7	6	5	4
>95%	87%	80%	69%	58%	46%



NOT TO SCALE

A ship sails from port P to port Q.
Q is 74 km from P on a bearing of 142°.
A lighthouse, L, is 58 km from P on a bearing of 110°.

(a) Show that the distance LQ is 39.5 km correct to 1 decimal place. [5]

(b) Use the sine rule to calculate angle PQL. [3]

(c) Find the bearing of

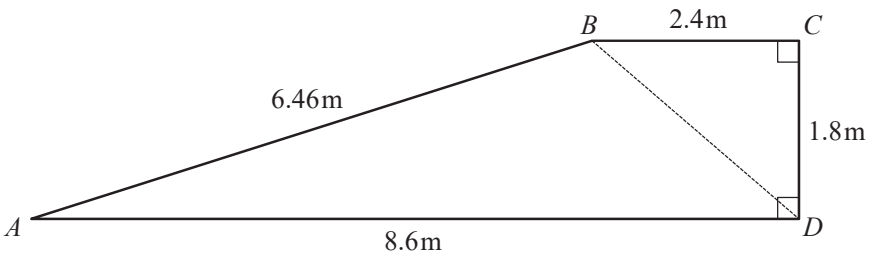
(i) P from Q, [2]

(ii) L from Q. [1]

(d) The ship takes 2 hours and 15 minutes to sail the 74 km from P to Q.

Calculate the average speed in knots.
[1 knot = 1.85 km/h] [3]

(e) Calculate the shortest distance from the lighthouse to the path of the ship. [3]



NOT TO SCALE

The diagram shows the cross section, *ABCD*, of a ramp.

(a) Calculate angle *DBC*. [2]

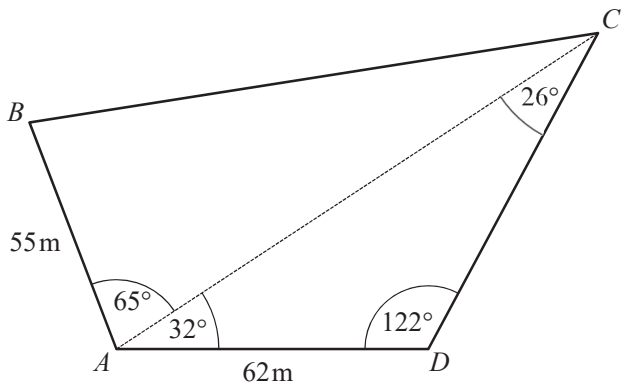
(b) (i) Show that *BD* is exactly 3 m. [2]

(ii) Use the cosine rule to calculate angle *ABD*. [4]

(c) The ramp is a prism of width 4 m.

Calculate the volume of this prism. [3]

A field, $ABCD$, is in the shape of a quadrilateral.
A footpath crosses the field from A to C.



NOT TO SCALE

(a) Use the sine rule to calculate the distance AC and show that it rounds to 119.9 m, to 1 decimal place. [3]

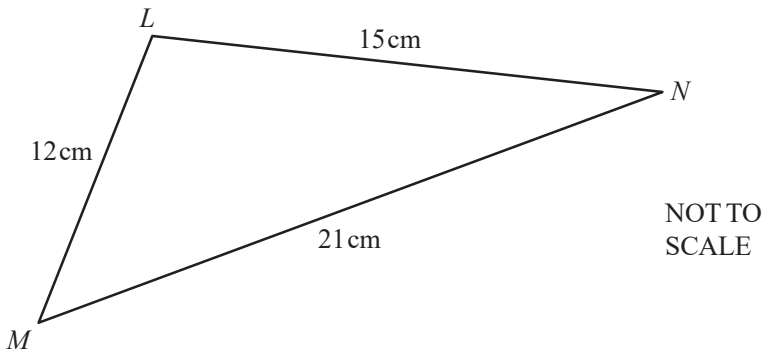
(b) Calculate the length of BC. [4]

(c) Calculate the area of triangle ACD. [2]

(d) The field is for sale at \$4.50 per square metre.

Calculate the cost of the field. [3]

(a)

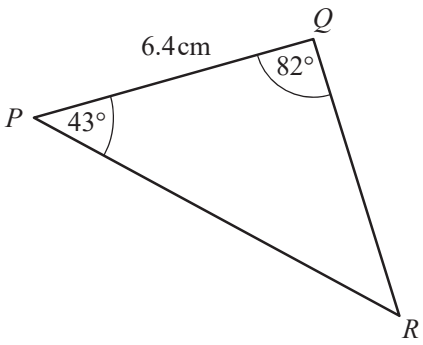


The diagram shows triangle LMN with $LM = 12$ cm, $LN = 15$ cm and $MN = 21$ cm.

(i) Calculate angle LMN.
Show that this rounds to 44.4°, correct to 1 decimal place. [4]

(ii) Calculate the area of triangle LMN. [2]

(b)

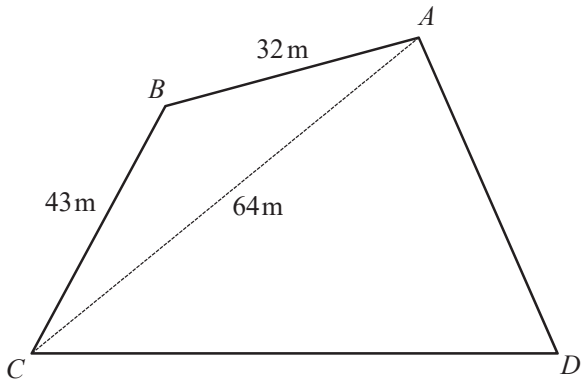


NOT TO SCALE

The diagram shows triangle PQR with $PQ = 6.4$cm, angle $PQR = 82°$ and angle $QPR = 43°$.

Calculate the length of PR. [4]

Question 5



NOT TO SCALE

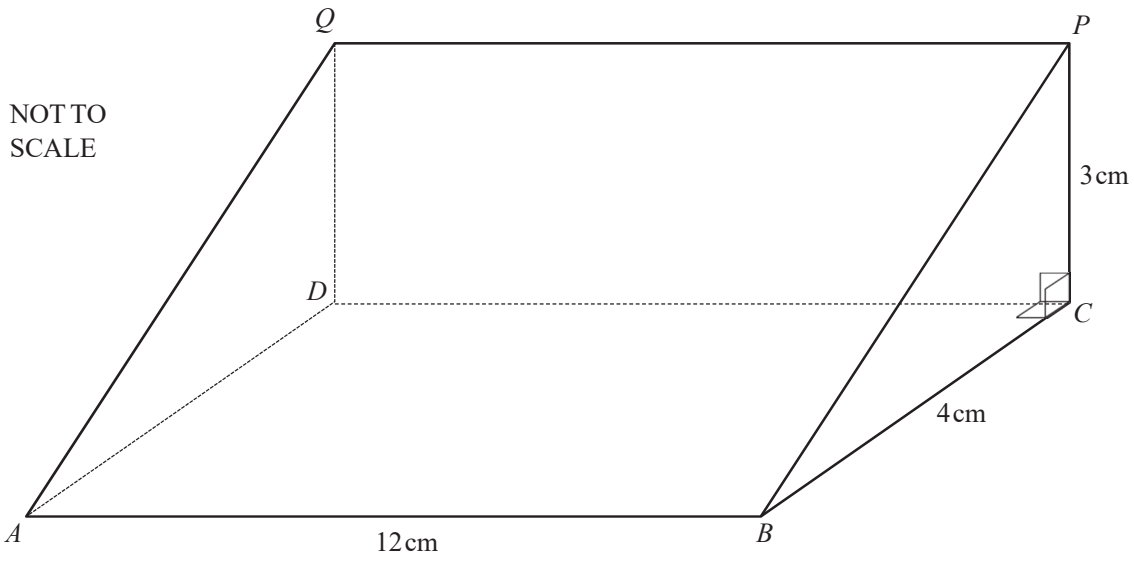
The diagram represents a field in the shape of a quadrilateral $ABCD$.
$AB = 32$ m, $BC = 43$ m and $AC = 64$ m.

(a) (i) Show clearly that angle $CAB = 37.0°$ correct to one decimal place. [4]

(ii) Calculate the area of the triangle ABC. [2]

(b) $CD = 70$ m and angle $DAC = 55°$.

Calculate the perimeter of the whole field $ABCD$. [6]



The diagram shows a triangular prism of length 12 cm.

The rectangle $ABCD$ is horizontal and the rectangle $DCPQ$ is vertical.

The cross-section is triangle PBC in which angle $BCP = 90°$, $BC = 4$ cm and $CP = 3$ cm.

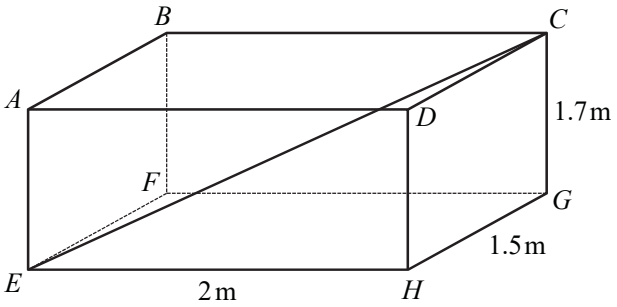
(a) (i) Calculate the length of AP. [3]

(ii) Calculate the angle of elevation of P from A. [2]

(b) (i) Calculate angle PBC. [2]

(ii) X is on BP so that angle $BXC = 120°$.

Calculate the length of XC. [3]



NOT TO SCALE

The diagram shows a box *ABCDEFGH* in the shape of a cuboid measuring 2 m by 1.5 m by 1.7 m.

(a) Calculate the length of the diagonal *EC*. [4]

(b) Calculate the angle between *EC* and the base *EFGH*. [3]

(c) (i) A rod has length 2.9 m, correct to 1 decimal place.

What is the upper bound for the length of the rod? [1]

(ii) Will the rod fit completely in the box?

Give a reason for your answer. [1]