Trigonometry
Difficulty: Hard

Question Paper 1

Level	IGCSE
Subject	Maths (0580/0980)
Exam Board	CIE
Topic	Trigonometry
Paper	Paper 4
Difficulty	Hard
Booklet	Question Paper 1

Time allowed: **101 minutes**

Score: **/88**

Percentage: **/100**

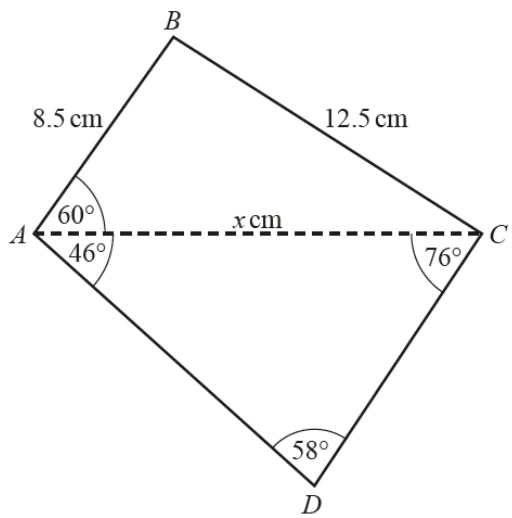
Grade Boundaries:

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

The diagram shows a quadrilateral *ABCD*.

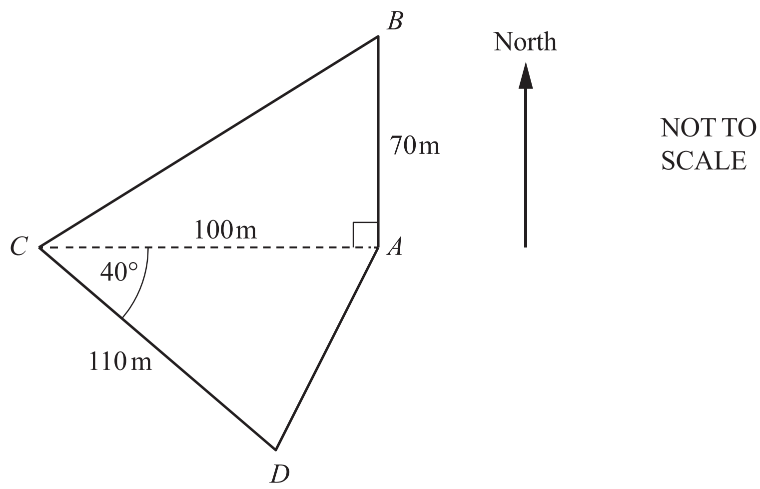
(a) The length of *AC* is x cm.

Use the cosine rule in triangle *ABC* to show that $2x^2 - 17x - 168 = 0$. [4]

(b) Solve the equation $2x^2 - 17x - 168 = 0$.
Show all your working and give your answers correct to 2 decimal places. [4]

(c) Use the sine rule to calculate the length of *CD*. [3]

(d) Calculate the area of the quadrilateral *ABCD*. [3]



The diagram shows a field *ABCD*.

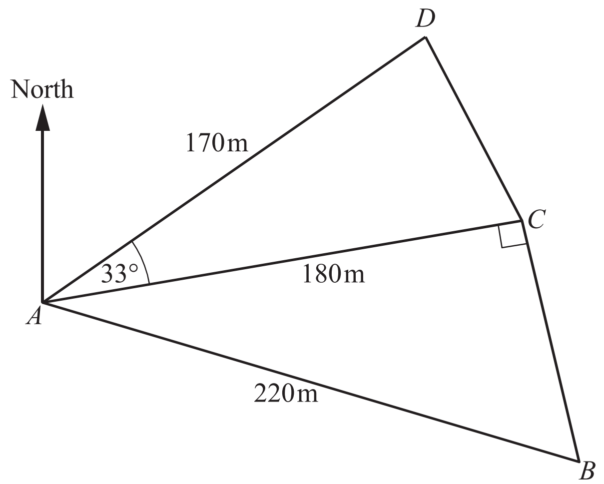
(a) Calculate the area of the field *ABCD*. [3]

(b) Calculate the perimeter of the field *ABCD*. [5]

(c) Calculate the shortest distance from A to CD. [2]

(d) B is due north of A.

Find the bearing of C from B. [3]



The diagram shows five straight footpaths in a park.
$AB = 220$ m, $AC = 180$ m and $AD = 170$ m.
Angle $ACB = 90°$ and angle $DAC = 33°$.

(a) Calculate BC. [3]

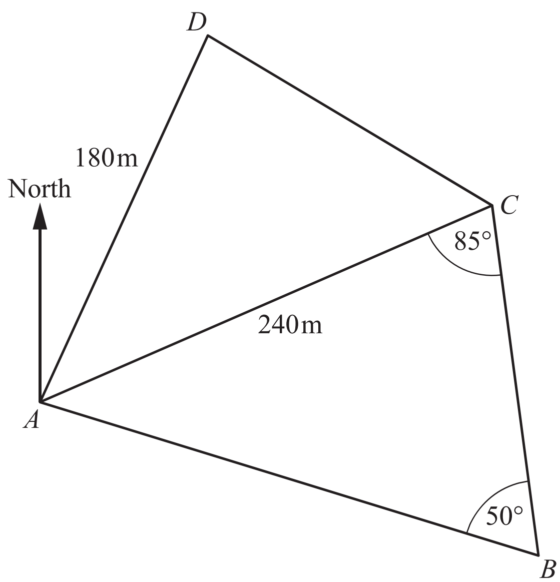
(b) Calculate CD. [4]

(c) Calculate the shortest distance from D to AC. [2]

(d) The bearing of D from A is 047°.

Calculate the bearing of B from A. [3]

(e) Calculate the area of the quadrilateral $ABCD$. [3]



NOT TO SCALE

The diagram shows a field, *ABCD*.
$AD = 180$ m and $AC = 240$ m.
Angle $ABC = 50°$ and angle $ACB = 85°$.

(a) Use the sine rule to calculate *AB*. [3]

(b) The area of triangle $ACD = 12\,000\text{m}^2$.

Show that angle $CAD = 33.75°$, correct to 2 decimal places. [3]

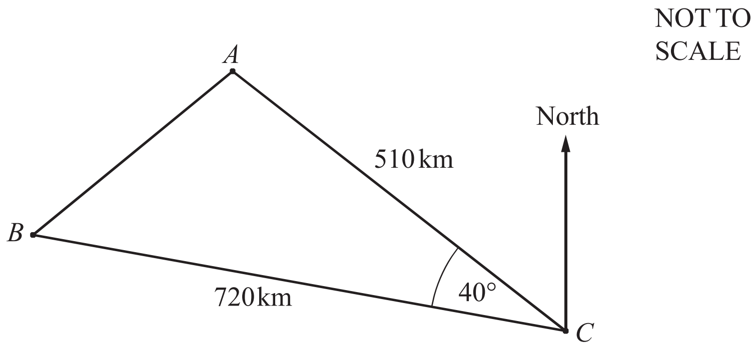
(c) Calculate BD. [5]

(d) The bearing of D from A is 030°.

Find the bearing of

(i) B from A, [1]

(ii) A from B. [2]



A plane flies from A to C and then from C to B.
$AC = 510$ km and $CB = 720$ km.
The bearing of C from A is 135° and angle $ACB = 40°$.

(a) Find the bearing of

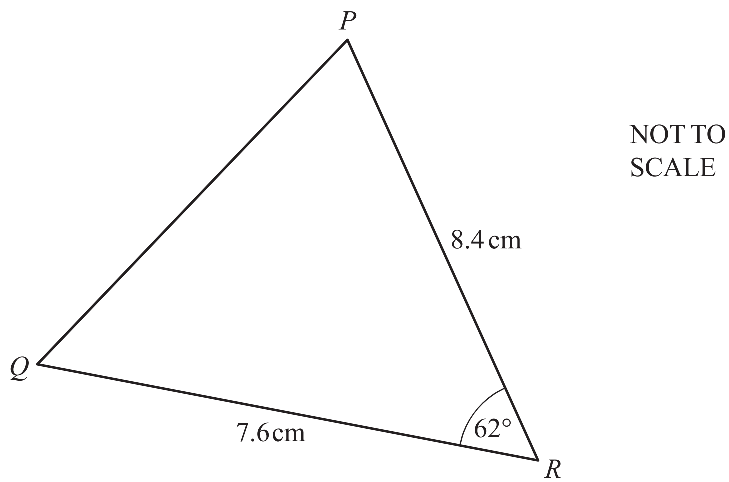
(i) B from C, [2]

(ii) C from B. [2]

(b) Calculate AB and show that it rounds to 464.7 km, correct to 1 decimal place. [4]

(c) Calculate angle ABC. [3]

(a)



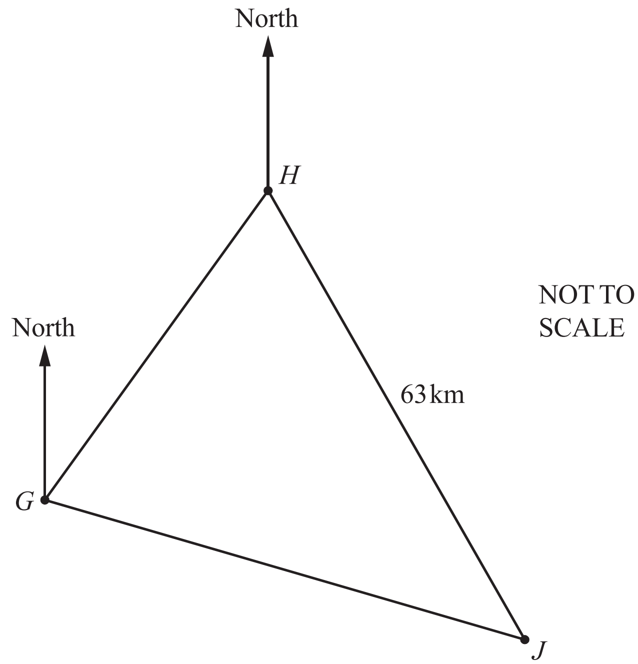
In the triangle PQR, $QR = 7.6$ cm and $PR = 8.4$ cm.
Angle $QRP = 62°$.

Calculate

(i) PQ, [4]

(ii) the area of triangle PQR. [2]

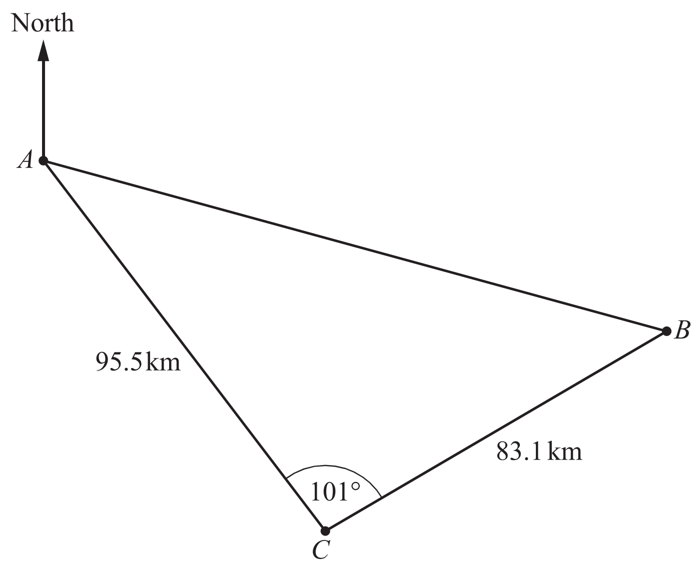
(b)



The diagram shows the positions of three small islands G, H and J.
The bearing of H from G is 045°.
The bearing of J from G is 126°.
The bearing of J from H is 164°.
The distance HJ is 63 km.

Calculate the distance GJ. [5]

The diagram shows the positions of two ships, A and B, and a coastguard station, C.



NOT TO SCALE

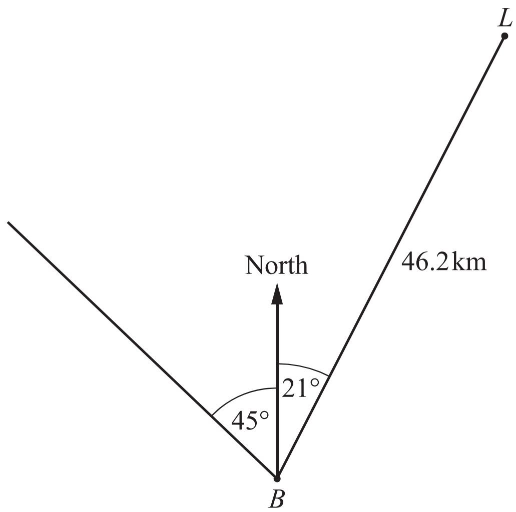
(a) Calculate the distance, AB, between the two ships.
Show that it rounds to 138km, correct to the nearest kilometre.

[4]

(b) The bearing of the coastguard station C from ship A is 146°.

Calculate the bearing of ship B from ship A. [4]

(c)



NOT TO SCALE

At noon, a lighthouse, L, is 46.2km from ship B on the bearing 021°.
Ship B sails north west.

Calculate the distance ship B must sail from its position at noon to be at its closest distance to the lighthouse.

[2]