

Construction

Question Paper 3

Level	IGCSE
Subject	Maths (0580)
Exam Board	Cambridge International Examinations (CIE)
Paper Type	Extended
Topic	Geometry
Sub-Topic	Construction
Booklet	Question Paper 3

Time Allowed: 69 minutes

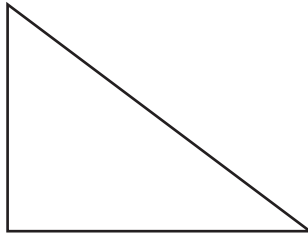
Score: /57

Percentage: /100

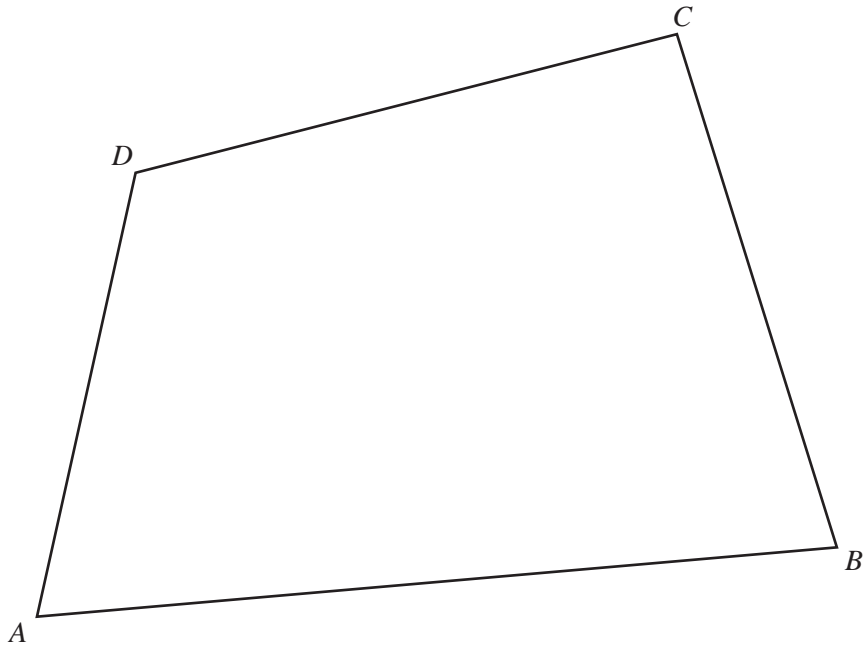
Grade Boundaries:

A*	A	B	C	D	E	U
>85%	75%	60%	45%	35%	25%	<25%

1



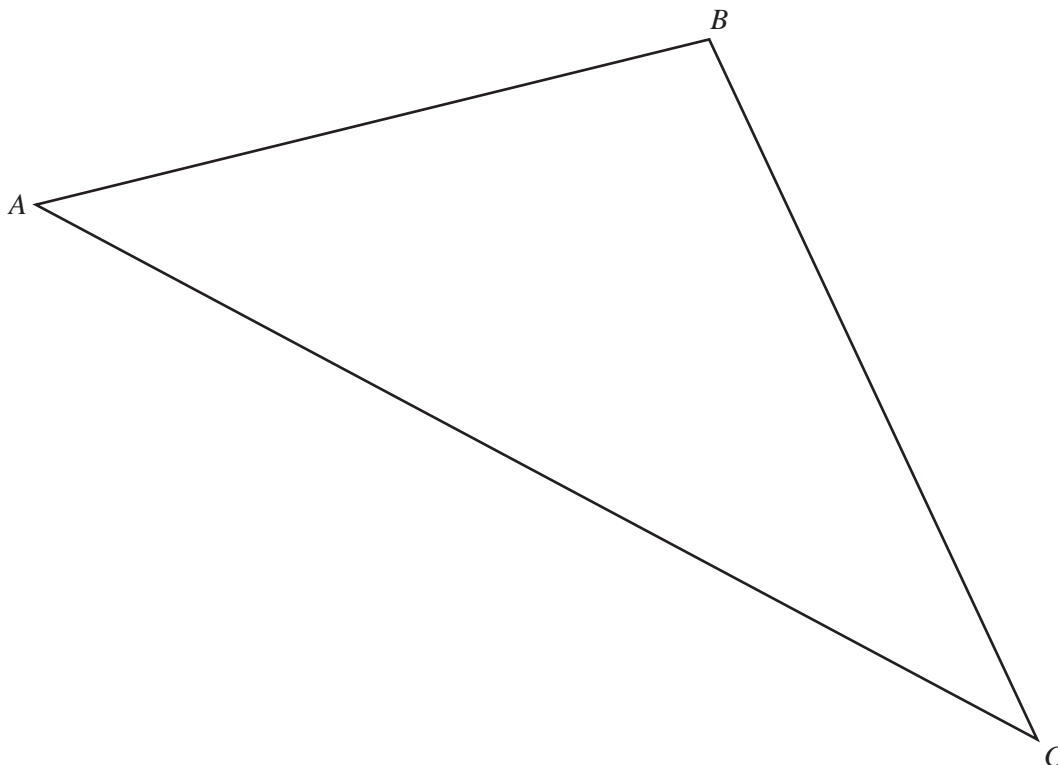
Draw, accurately, the locus of all the points **outside** the triangle which are 3 centimetres away from the triangle. [3]



The diagram shows an area of land $ABCD$ used for a shop, a car park and gardens.

- (a) Using a straight edge and compasses only, construct
- (i) the locus of points equidistant from C and from D , [2]
 - (ii) the locus of points equidistant from AD and from AB . [2]
- (b) The shop is on the land nearer to D than to C **and** nearer to AD than to AB .
Write the word SHOP in this region on the diagram. [1]
- (c) (i) The scale of the diagram is 1 centimetre to 20 metres.
The gardens are the part of the land less than 100 m from B .
Draw the boundary for the gardens. [1]
- (ii) The car park is the part of the land not used for the shop and not used for the gardens.
Shade the car park region on the diagram. [1]

3



The diagram shows a farmer's field ABC .

The farmer decides to grow potatoes in the region of the field which is

- nearer to A than to C

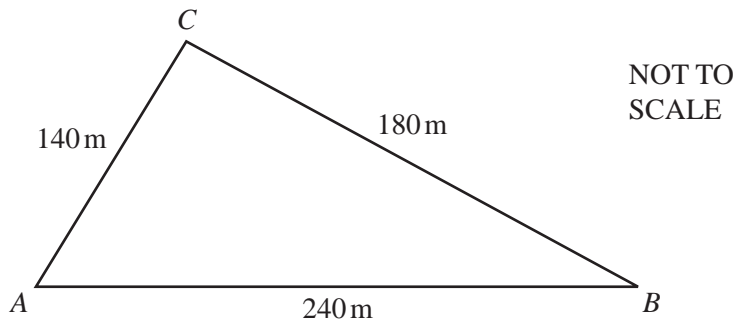
and

- nearer to AB than to AC .

Using **a straight edge and compasses only**, construct two loci accurately and shade this region on the diagram.

[5]

4



The boundary of a park is in the shape of a triangle ABC .
 $AB = 240$ m, $BC = 180$ m and $CA = 140$ m.

In part (a), show clearly all your construction arcs.

- (a) (i) Using a scale of 1 centimetre to represent 20 metres, **construct** an **accurate** scale drawing of triangle ABC . The line AB has already been drawn for you.



- (ii) Using a straight edge and compasses only, **construct** the bisector of angle ACB . [2]
 Label the point D , where this bisector meets AB . [2]
- (iii) Using a straight edge and compasses only, construct the locus of points, inside the triangle, which are equidistant from A and from D . [2]
- (iv) Flowers are planted in the park so that they are nearer to AC than to BC **and** nearer to D than to A .
 Shade the region inside your triangle which shows where the flowers are planted. [1]

In part (b), use trigonometry.

You must show your working and must NOT use any measurements from your construction in part (a).

(b) (i) Show clearly that angle ACB is 96.4° .

Answer(b)(i)

[3]

(ii) Calculate the area of the park.

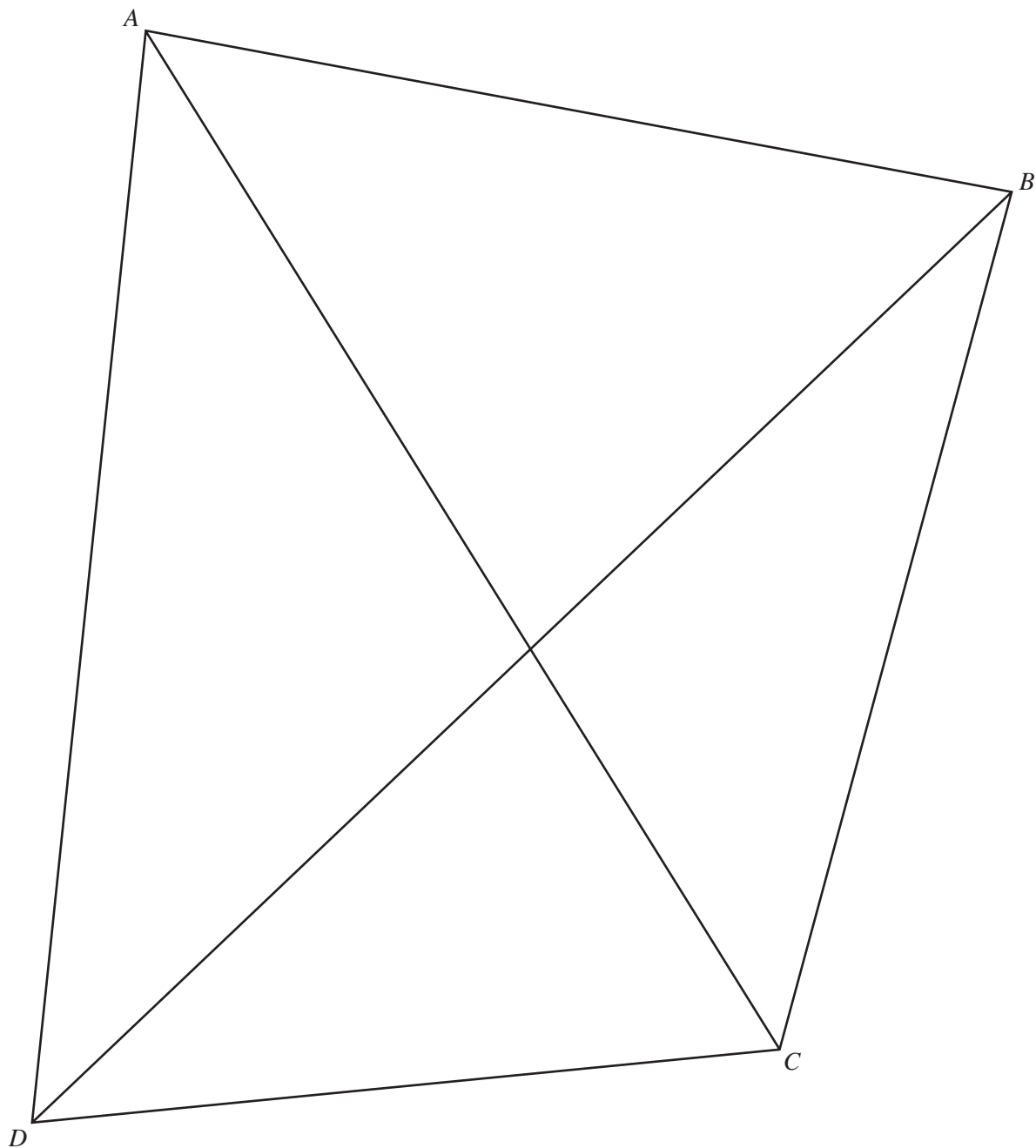
Answer(b)(ii) m^2 [2]

(iii) Use the sine rule to calculate angle ABC .

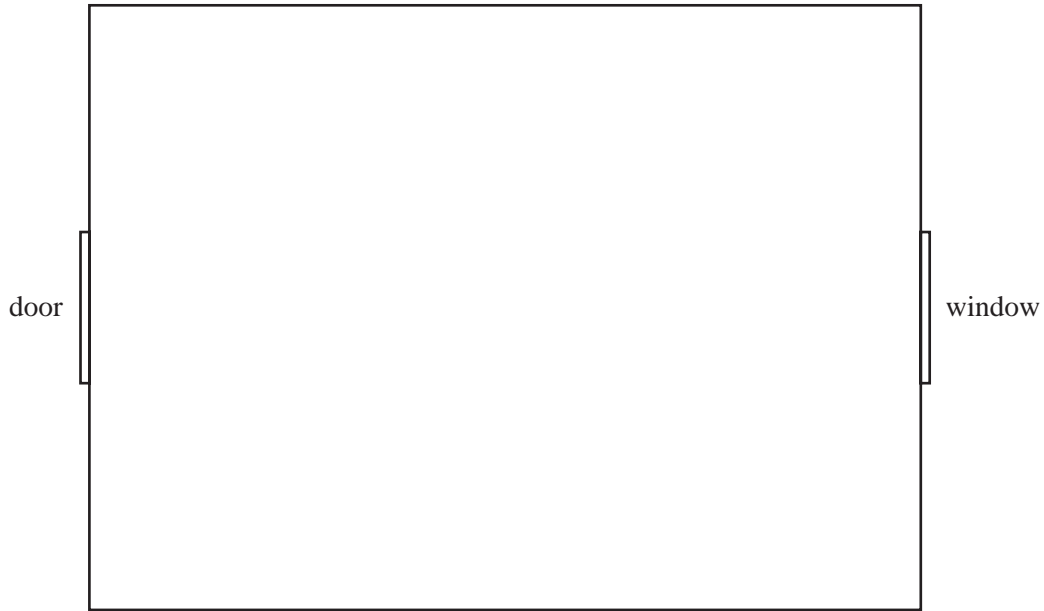
Answer(b)(iii) Angle $ABC =$ [3]

- 5 Using a straight edge and compasses only, draw the locus of all points inside the quadrilateral $ABCD$ which are equidistant from the lines AC and BD .

Show clearly all your construction arcs.

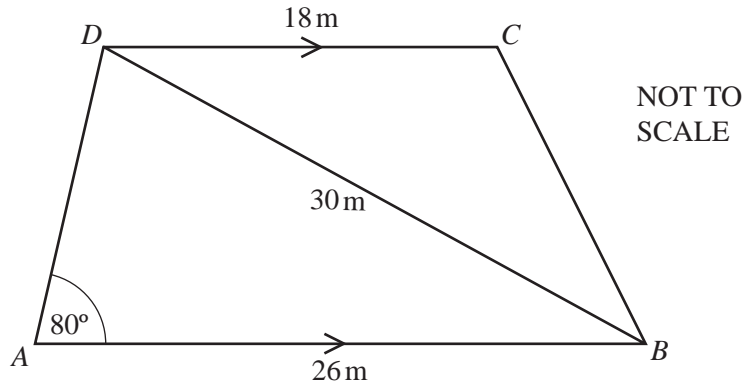


- 6 Sitora has two plants in her school classroom.
Plant A needs a lot of light and must not be more than 2.5 metres from the window.
Plant B needs very little light and must be further from the window than from the door.
For each plant, draw accurately the boundary of the region in which it can be placed.
In the diagram, 1 centimetre represents 1 metre.



[3]

7



The diagram shows the plan of a garden.

The garden is a trapezium with $AB = 26$ metres, $DC = 18$ metres and angle $DAB = 80^\circ$.

A straight path from B to D has a length of 30 metres.

- (a) (i) Using a scale of 1 : 200, draw an **accurate** plan of the garden. [3]
- (ii) **Measure** and write down the size of angle ADB and the size of angle DCB . [2]
- (iii) A second path is such that all points on it are equidistant from AB and from AD .
Using a straight edge and compasses only, construct this path on your plan. [2]
- (iv) A third path is such that all points on it are equidistant from A and from D .
Using a straight edge and compasses only, construct this path on your plan. [2]
- (v) In the garden, vegetables are grown in the region which is nearer to AB than to AD **and** nearer to A than to D .
Shade this region on your plan. [1]
- (b) Use **trigonometry**, showing all your working, to calculate
- (i) angle ADB , [3]
- (ii) the length of BC , [4]
- (iii) the area of the garden. [3]