

Name:

Date:

# Loci and Construction

## GCSE

Edexcel  
Mathematics  
Grade (9-1)

Mark

Score (%)

<u>37</u>
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### Materials

For this paper you must have:

- Ruler
- Pencil, Rubber, Protractor and Compass
- Scientific calculator, which you are expected to use when appropriate

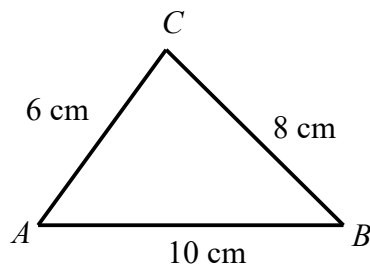
### Instructions

- Answer all questions
- Answer questions in the space provided
- All working must be shown
- Do all rough work in this book. Cross out any rough work you don't want to be marked

### Information

- The marks for the questions are shown in brackets

- 1  $ABC$  is a triangle.



$$\begin{aligned}AC &= 6 \text{ cm} \\BC &= 8 \text{ cm} \\AB &= 10 \text{ cm}\end{aligned}$$

Use ruler and compasses to construct an accurate drawing of triangle  $ABC$ .

You must show all your construction lines.

(Total for question 1 is 3 marks)

2

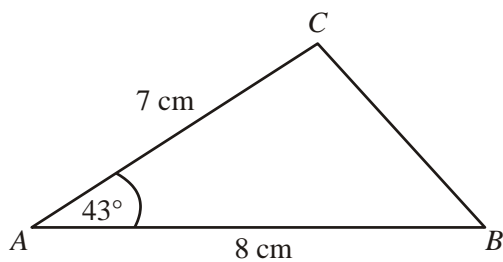


Diagram **NOT**  
accurately drawn

$ABC$  is a triangle.

$AB = 8$  cm.

$AC = 7$  cm.

Angle  $BAC = 43^\circ$ .

In the space below, make an accurate drawing of triangle  $ABC$ .

(Total for question 2 is 3 marks)

- 3 A stadium is going to be built.  
 It must be more than 10 km from town A and no more than 8 km from town B.  
 1 cm represents 2 km  
 Shade the region on the diagram where the stadium can be built.



(Total for question 3 is 2 marks)

- 4 Here is a scale drawing of an office.  
 The scale is 1 cm to 2 metres.

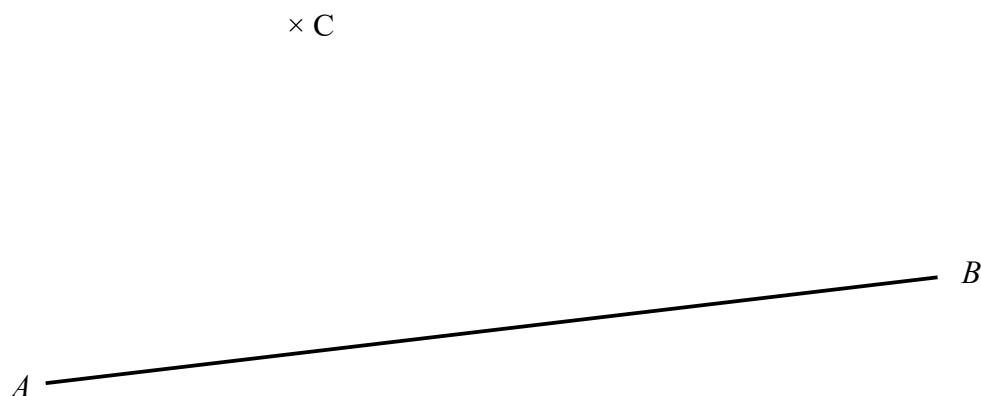


- A photocopier is going to be put in the office.
- The photocopier has to be closer to B than it is to A.
  - The photocopier also has to be less than 8 metres from C.

Show, by shading, the region where the photocopier can be put.

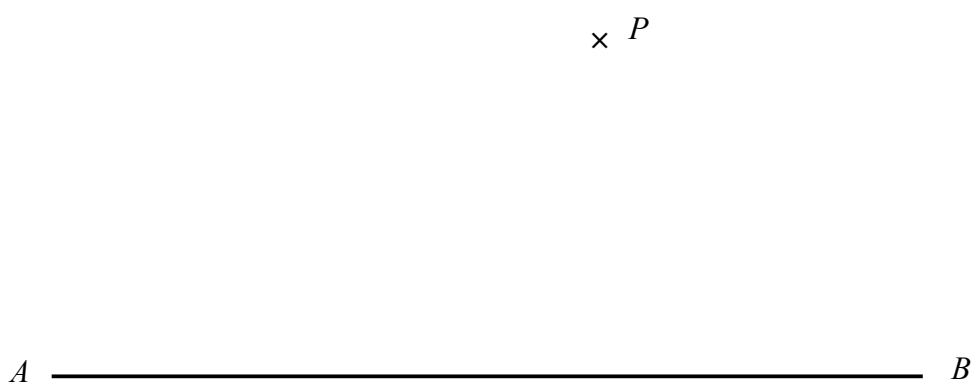
(Total for question 4 is 3 marks)

- 5 Use ruler and compasses to construct the perpendicular from point  $C$  to the line  $AB$ . You must show all your construction lines.



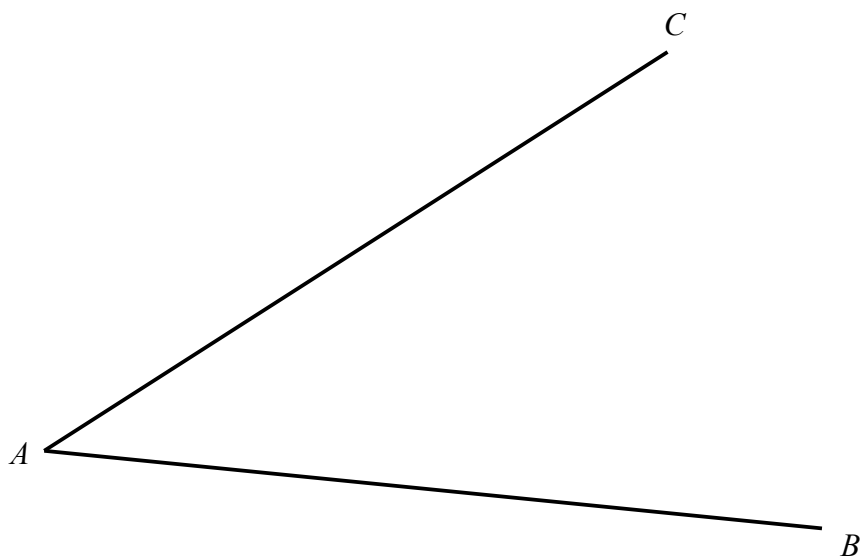
(Total for question 5 is 2 marks)

- 6 Use ruler and compasses to construct the perpendicular from point  $P$  to the line  $AB$ . You must show all your construction lines.



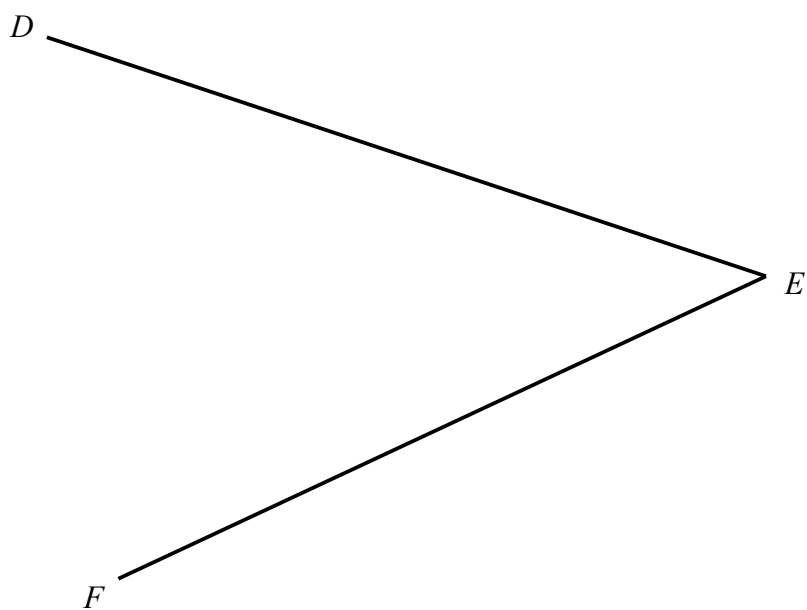
(Total for question 6 is 2 marks)

- 7 Use ruler and compasses to construct the bisector of angle  $BAC$ .  
You must show all your construction lines.



(Total for question 7 is 2 marks)

- 8 Use ruler and compasses to construct the bisector of angle  $DEF$ .  
You must show all your construction lines.



(Total for question 8 is 2 marks)

- 9 Use ruler and compasses to construct a perpendicular bisector of the line  $AB$ .  
You must show all your construction lines.



(Total for question 9 is 2 marks)

- 10 In the space below, use a ruler and compasses to construct an equilateral triangle with side length 6 cm.

You must show all your construction lines.

(Total for question 10 is 4 marks)

**11** Here is a scale drawing of a garden.  
The scale is 1 cm to 2 m

A tree is going to be planted.

- The tree must be more than 4 m from the patio.
- The tree must be more than 6 m from the pond.

Shade the region where the tree can be planted.



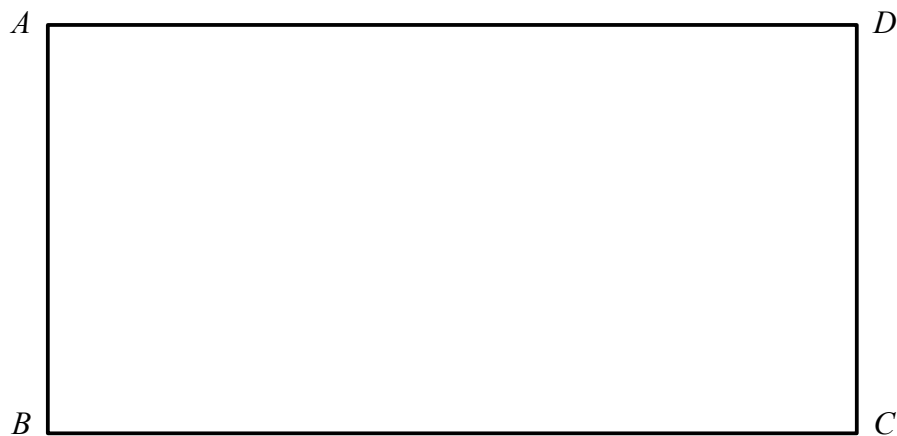
(Total for question 11 is 3 marks)

**12** Here is a scale drawing of a room.  
The scale is 1 cm to 2 m.

A chair is going to be placed in the room.

- The chair must be closer to  $AB$  than  $BC$ .
- The chair must be less than 14 m from  $D$ .

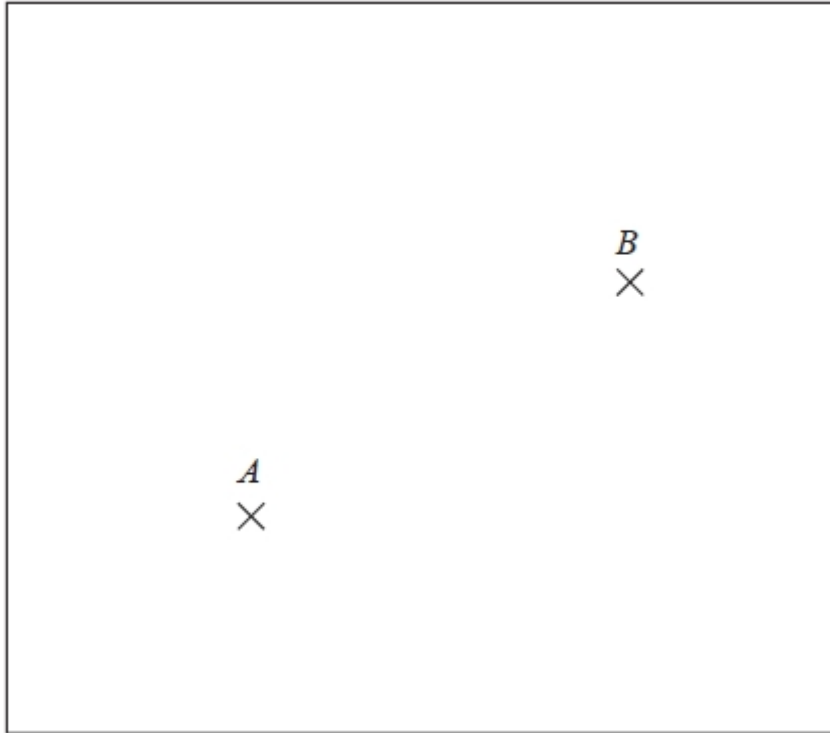
Shade the region where the chair can be placed.



(Total for question 12 is 3 marks)



- 13 The diagram shows the positions of two shops,  $A$  and  $B$ , on a map.  
The scale of the map is 1 cm represents 5 km.



Yannis wants to build a warehouse.

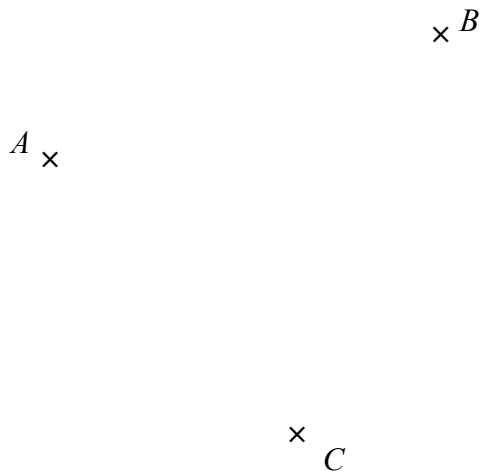
The warehouse needs to be:

- Less than 10 km from  $A$ ,
- Less than 20 km from  $B$ .

Show by shading where Yannis can build the warehouse.

(Total for question 13 is 3 marks)

- 14  $A$ ,  $B$  and  $C$  are three points on a map.  
1 cm represents 100 metres.



Point  $P$  is 300 metres from  $A$ .  
Point  $P$  is equidistant from  $B$  and  $C$ .

On the map, show the possible positions of  $P$ .

(Total for question 14 is 3 marks)