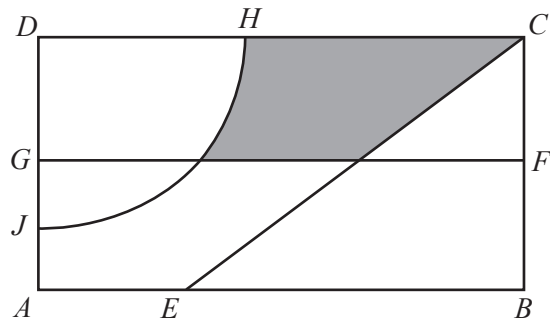


Loci & Construction



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14

NOT TO
SCALE

The diagram shows a rectangular garden divided into different areas.

FG is the perpendicular bisector of BC .

The arc HJ has centre D and radius 20 m.

CE is the bisector of angle DCB .

Write down two more statements using loci to describe the shaded region inside the garden.

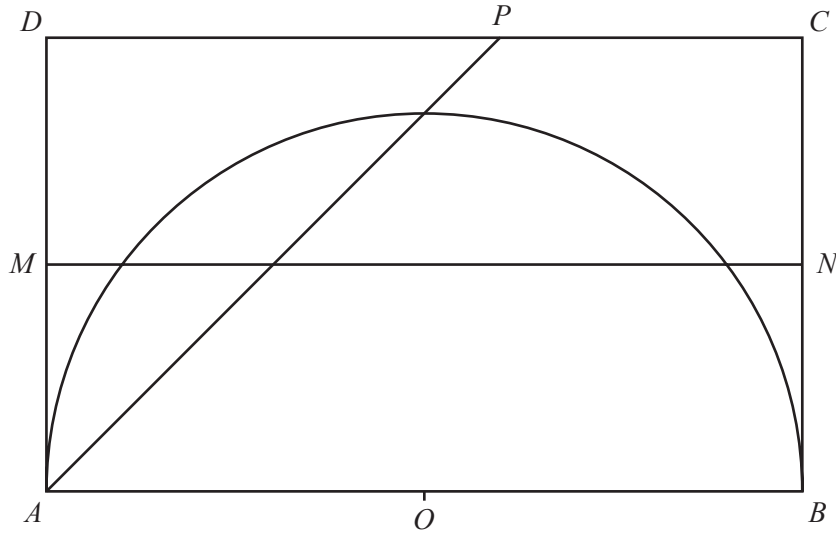
The shaded region is

- nearer to C than to B
-
- [2]

11 $ABCD$ is a rectangle with $AB = 10$ cm and $BC = 6$ cm. MN is the perpendicular bisector of BC .

AP is the bisector of angle BAD .

O is the midpoint of AB and also the centre of the semicircle, radius 5 cm.



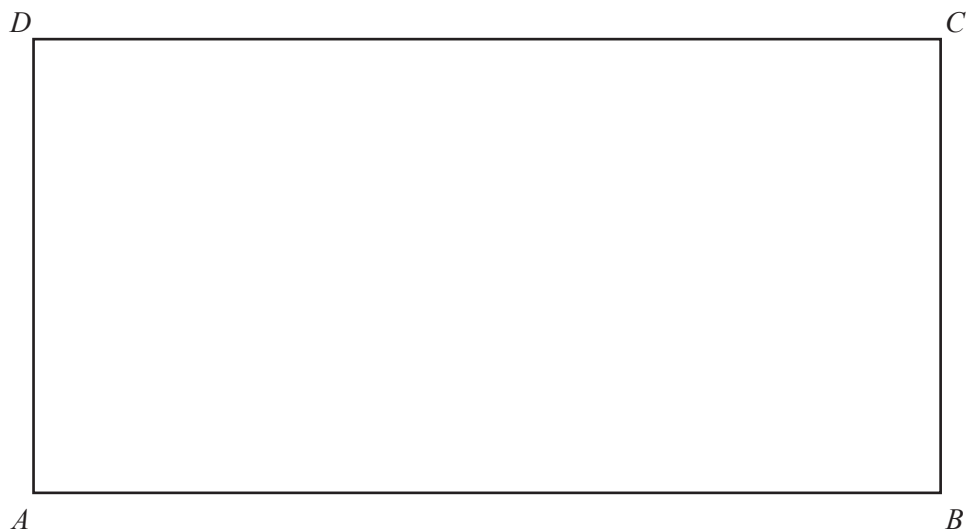
Write the letter R in the region which satisfies **all** three of the following conditions.

- nearer to AB than to AD
- nearer to C than to B
- less than 5 cm from O

[3]

For
Examiner's
Use

19

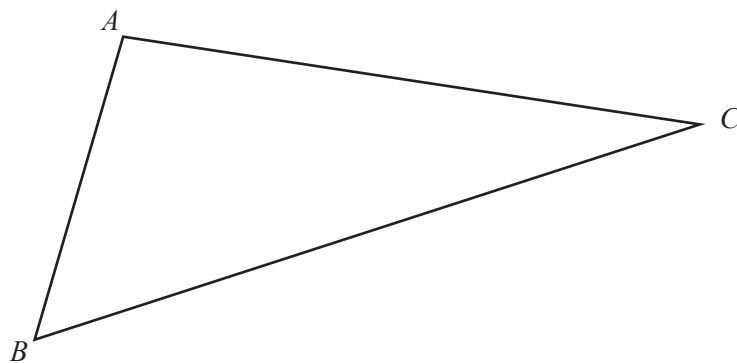


Scale: 1 cm to 8 m

The rectangle $ABCD$ is a scale drawing of a rectangular football pitch.
The scale used is 1 centimetre to represent 8 metres.

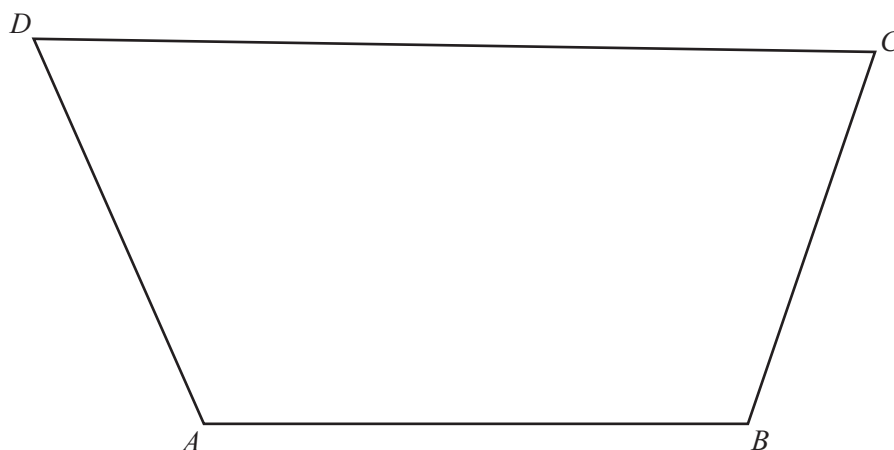
- (a) Construct the locus of points 40 m from A and inside the rectangle. [2]
 - (b) Using a straight edge and compasses only, construct the perpendicular bisector of DB . [2]
 - (c) Shade the region on the football pitch which is more than 40 m from A **and** nearer to D than to B . [1]
-

17 The diagram shows triangle ABC .



- (a) Using a straight edge and compasses only, construct the bisector of angle ABC . [2]
- (b) Draw the locus of points **inside** the triangle that are 3 cm from AC . [1]

- 20 The diagram shows the plan, $ABCD$, of a park.
The scale is 1 centimetre represents 20 metres.



Scale: 1 cm to 20 m

- (a) Find the actual distance BC .

Answer(a) m [2]

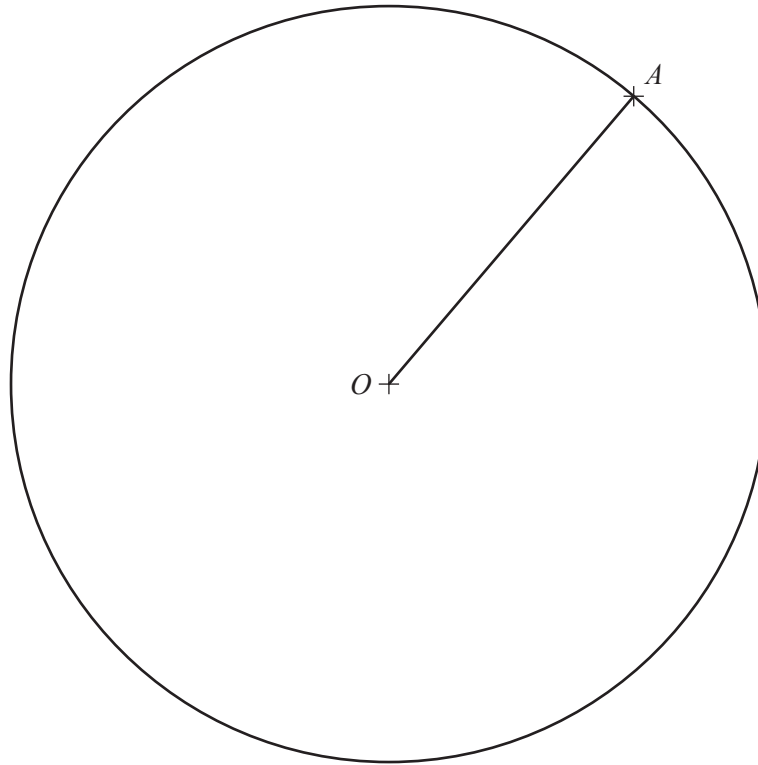
- (b) A fountain, F , is to be placed

- 160 m from C
- and
- equidistant from AB and AD .

On the diagram, **using a ruler and compasses only**, construct and mark the position of F .
Leave in all your construction lines.

[5]

Question 21 is printed on the next page.



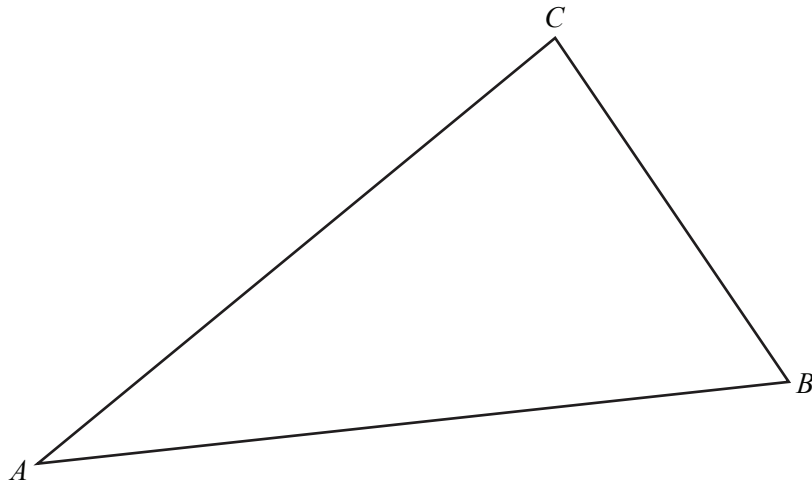
The point A lies on the circle centre O , radius 5 cm.

- (a) Using a straight edge and compasses only, construct the perpendicular bisector of the line OA . [2]

- (b) The perpendicular bisector meets the circle at the points C and D .

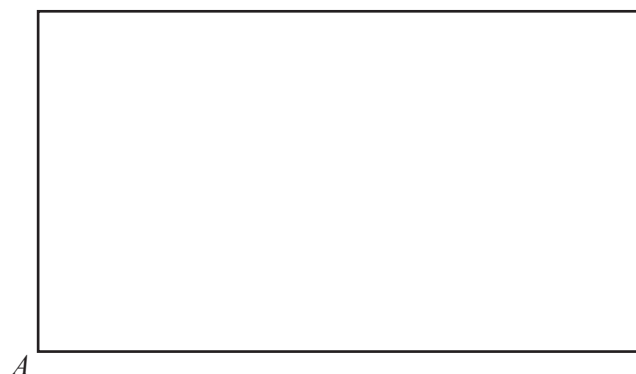
Measure and write down the size of the angle AOD .

Answer(b) Angle AOD = [1]



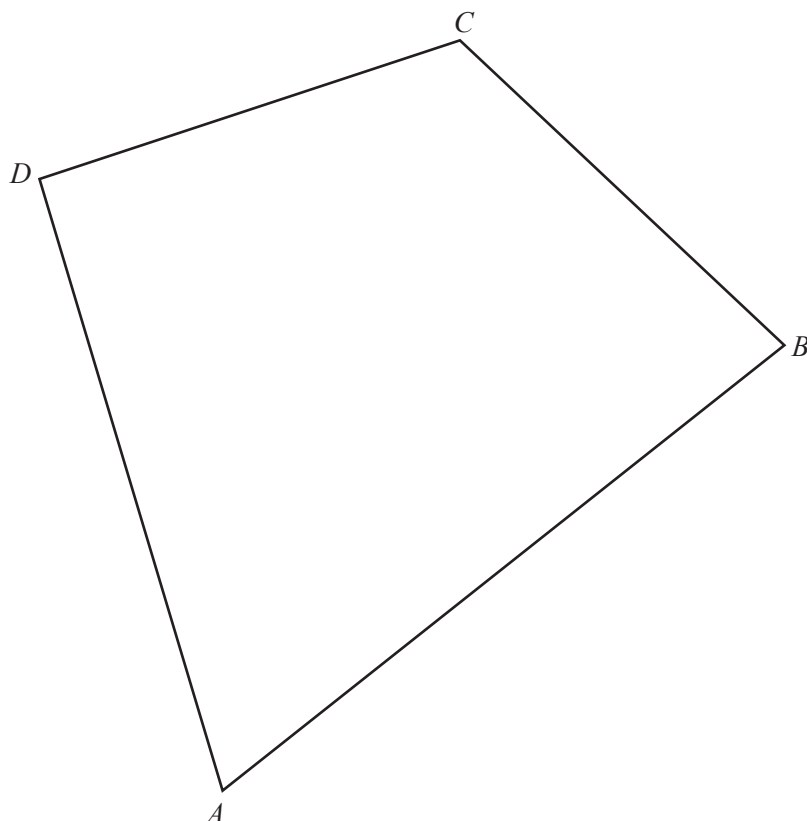
- (a) On the diagram above, **using a straight edge and compasses only**, construct
- (i) the bisector of angle ABC , [2]
 - (ii) the locus of points which are equidistant from A and from B . [2]
- (b) Shade the region inside the triangle which is nearer to A than to B **and** nearer to AB than to BC . [1]
-

Question 21 is printed on the next page.



- (a) Construct the locus of all the points which are 3 cm from vertex *A* **and** outside the rectangle. [2]
- (b) Construct, **using a straight edge and compasses only**, one of the lines of symmetry of the rectangle. [2]
-

5



The diagram shows a quadrilateral $ABCD$.

(a) Using a straight edge and compasses only, construct

(i) the perpendicular bisector of AB , [2]

(ii) the bisector of angle ADC . [2]

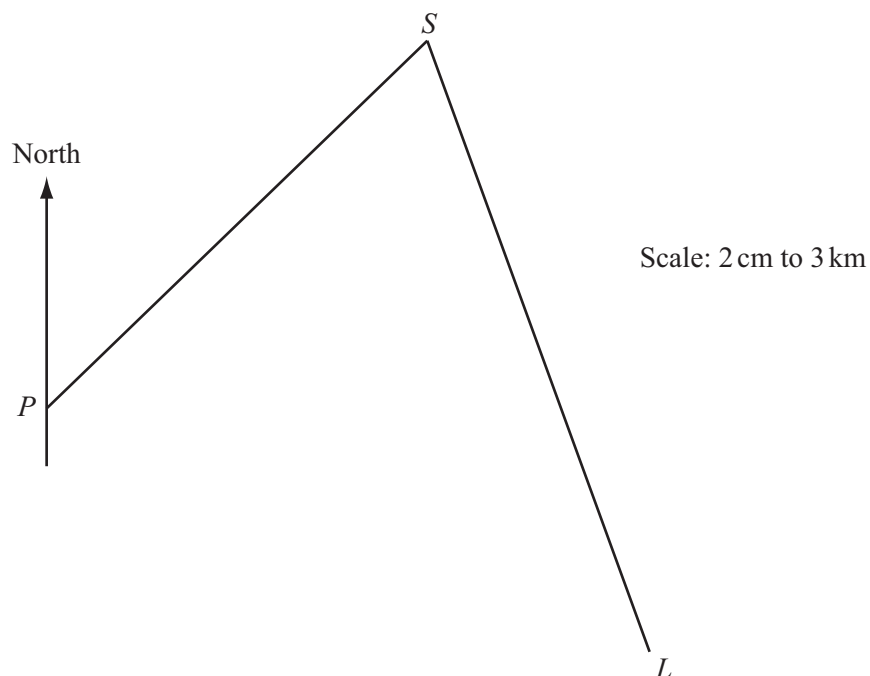
(b) Draw accurately the locus of points, inside the quadrilateral, that are 2 cm from BC . [2]

(c) Shade the region, inside the quadrilateral, which is

nearer to B than to A

and nearer to DC than to DA

and more than 2 cm from BC . [1]



In the scale drawing, P is a port, L is a lighthouse and S is a ship.
The scale is 2 centimetres represents 3 kilometres.

- (a) Measure the bearing of S from P .

Answer(a) [1]

- (b) Find the actual distance of S from L .

Answer(b) km [2]

- (c) The bearing of L from S is 160° .

Calculate the bearing of S from L .

Answer(c) [1]

(d) Work out the scale of the map in the form $1:n$.

Answer(d) 1: [2]

(e) A boat B is

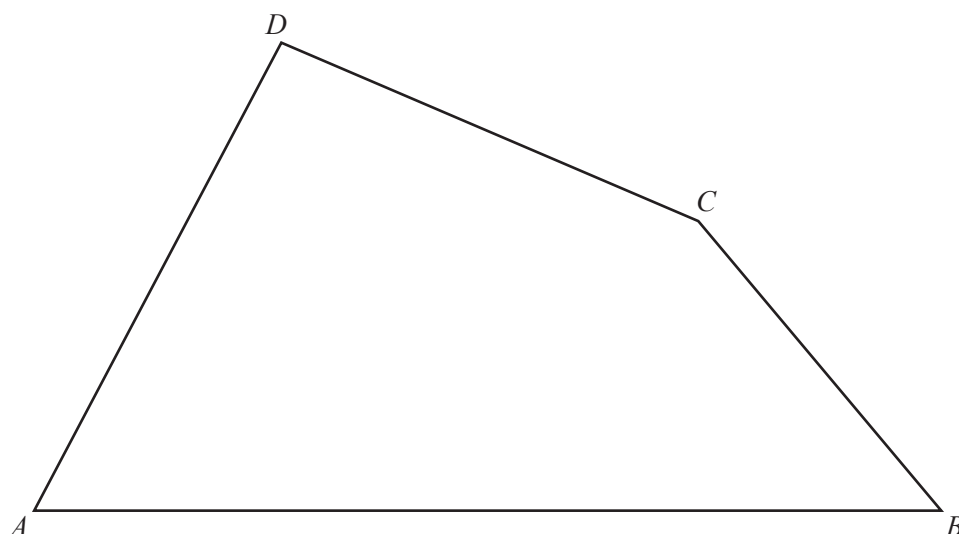
- equidistant from S and L
- and
- equidistant from the lines PS and SL .

On the diagram, **using a straight edge and compasses only**, construct the position of B . [5]

(f) The lighthouse stands on an island of area 1.5 cm^2 on the scale drawing.

Work out the actual area of the island.

Answer(f) km^2 [2]



- (a) Draw accurately the locus of points, inside the quadrilateral $ABCD$, which are 6 cm from the point D . [1]
- (b) Using a straight edge and compasses only, construct
- (i) the perpendicular bisector of AB , [2]
 - (ii) the locus of points, inside the quadrilateral, which are equidistant from AB and from BC . [2]
- (c) The point Q is equidistant from A and from B **and** equidistant from AB and from BC .
- (i) Label the point Q on the diagram. [1]
 - (ii) Measure the distance of Q from the line AB .
- Answer(c)(ii) cm [1]
- (d) On the diagram, shade the region inside the quadrilateral which is
- less than 6 cm from D
 - **and**
 - nearer to A than to B
 - **and**
 - nearer to AB than to BC . [1]

