Mensuration of 2-D Shapes

Question Paper 3

Level	IGCSE
Subject	Maths
Exam Board	Edexcel
Topic	Shape, Space and Measures
Sub Topic	Mensuration of 2-D Shapes
Booklet	Question Paper 3

Time Allowed: **64 minutes**

Score: **/53**

Percentage: **/100**

Grade Boundaries:

9	8	7	6	5	4	3	2	1
>90%	80%	70%	60%	50%	40%	30%	20%	10%

1   The wheel of the Singapore Flyer is a circle with a diameter of
150 metres.

   (a) Calculate the circumference of the wheel.
       Give your answer correct to the nearest metre.
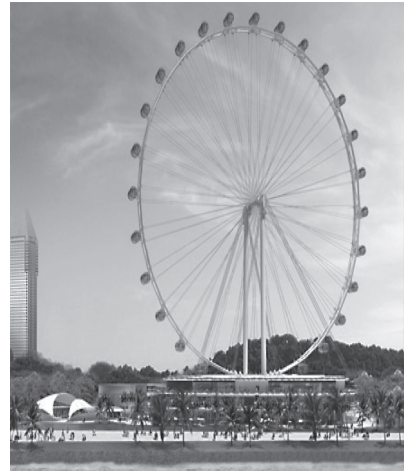
.... metres

(2)

The wheel takes 30 minutes to rotate once.

   (b) Work out the average speed of a point on the circumference of the wheel as it
       rotates once.
       Give your answer in metres per second correct to 3 significant figures.

.... metres per second

(3)

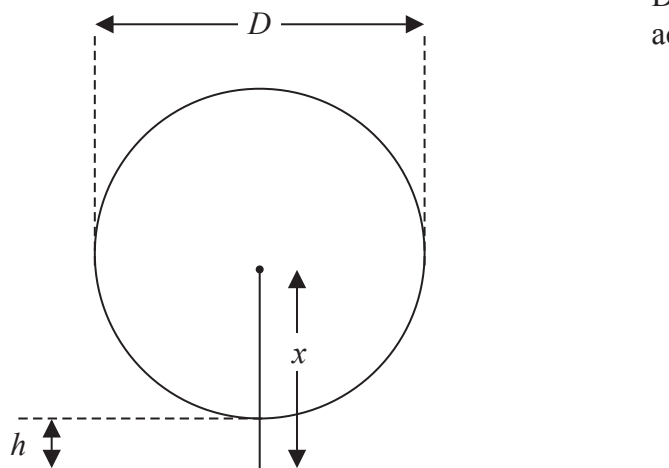The diagram shows a giant wheel above horizontal ground.

Diagram **NOT** accurately drawn

The wheel is a circle of diameter D metres.
The lowest point of the wheel is h metres above the ground.
The centre of the wheel is x metres above the ground.

(c) Express h in terms of D and x

....

(2)

(Total for Question 1 is 7 marks)

2 *ABCD* is a kite.
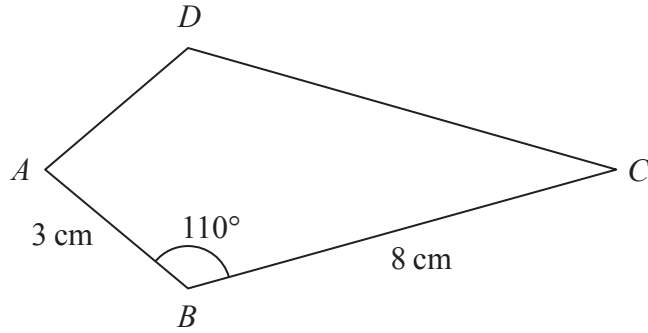
Diagram **NOT**
accurately drawn

AB = 3 cm
BC = 8 cm
Angle *ABC* = 110°

Calculate the area of the kite *ABCD*.
Give your answer correct to 3 significant figures.

.... cm²

(Total for Question 2 is 3 marks)

3 The diagram shows a circular pond, of radius r metres, surrounded by a circular path.
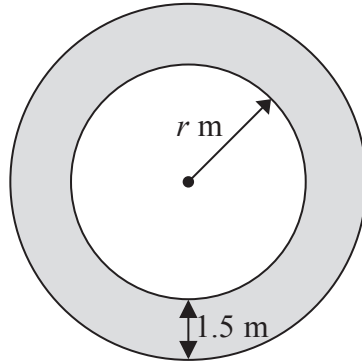The circular path has a constant width of 1.5 metres.

Diagram **NOT**
accurately drawn

r m

1.5 m

The area of the path is $\dfrac{1}{10}$ the area of the pond.

(a) Show that $2r^2 - 60r - 45 = 0$

(3)

(b) Calculate the area of the pond.
Show your working clearly.
Give your answer correct to 3 significant figures.

.... m^2

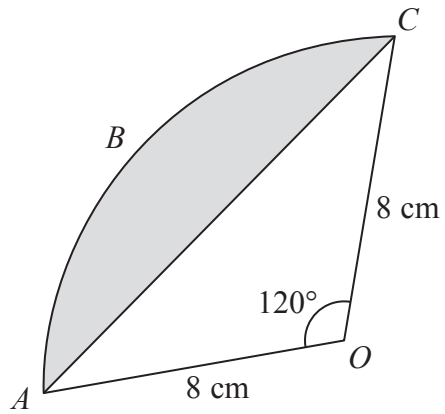(5)

(Total for Question 3 is 8 marks)

4

Diagram **NOT** accurately drawn

ABC is an arc of a circle with centre *O* and radius 8 cm.
AC is a chord of the circle.
Angle *AOC* = 120°

Calculate the perimeter of the shaded segment.
Give your answer correct to 3 significant figures.

.... cm

(Total for Question 4 is 5 marks)

5 The diagram shows a rectangle.
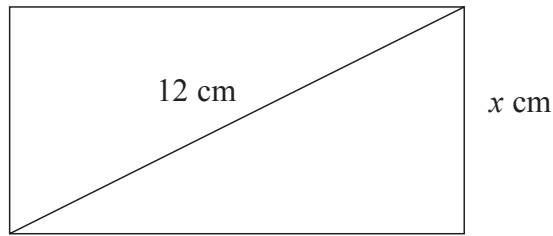
12 cm

x cm

Diagram **NOT**
accurately drawn

The width of the rectangle is *x* cm.
The length of a diagonal of the rectangle is 12 cm.

The perimeter of the rectangle is 28 cm.

Find the possible values of *x*.
Give your values correct to 3 significant figures.
Show your working clearly.

(Total for Question 5 is 7 marks)

6 Here are a rectangle and a square.
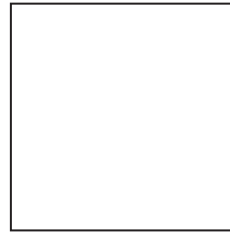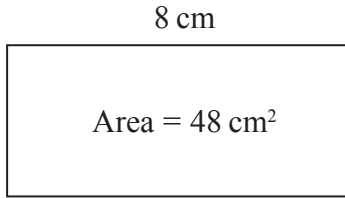
8 cm

Area = 48 cm²

Diagram **NOT**
accurately drawn

The rectangle has length 8 cm and area 48 cm²
The perimeter of the square is the same as the perimeter of the rectangle.

Calculate the area of the square.

.... cm²

(Total for Question 6 is 4 marks)

7

A   20 cm   B

Diagram **NOT**
accurately drawn

10 cm

F   E   D   C
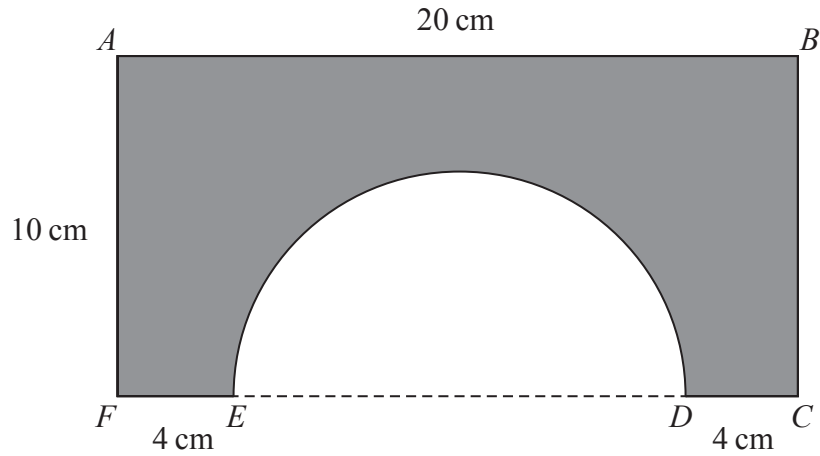4 cm   4 cm

The shaded shape is made by cutting a semicircle from a rectangular piece of card, *ABCF*, as shown in the diagram.

FEDC is a straight line.
The centre of the semicircle lies on *ED*.
AF = *BC* = 10 cm,   *AB* = 20 cm,   *FE* = *DC* = 4 cm.

Work out the perimeter of the shaded shape.
Give your answer correct to 3 significant figures.

.... cm

(Total for Question 7 is 3 marks)

8 *ABC* is a triangle.

   AB = 12 cm
   AC = 14 cm
   The area of triangle *ABC* is 72 cm²

   Find, in degrees, the two possible sizes of angle *BAC*.
   Give your answers correct to the nearest degree.

(Total for Question 8 is 4 marks)
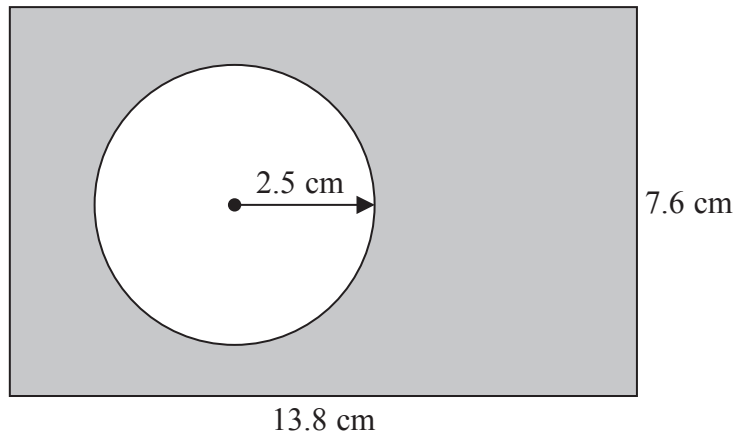
9 The diagram shows a circle inside a rectangle.

Diagram **NOT** accurately drawn

2.5 cm

7.6 cm

13.8 cm

Work out the area of the shaded region.
Give your answer correct to 3 significant figures.

.... cm²

(Total for Question 9 is 3 marks)

10 The diagram shows a pentagon.

Diagram **NOT**
accurately drawn

12 cm   12 cm

105°   105°

8 cm   8 cm

13 cm
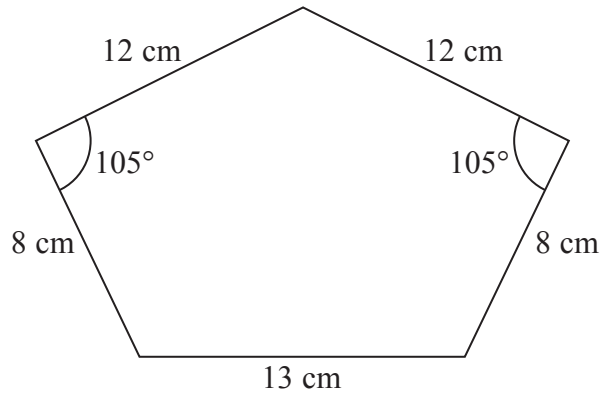
Work out the area of the pentagon.
Give your answer correct to 3 significant figures.

.... cm²

(Total for Question 10 is 6 marks)
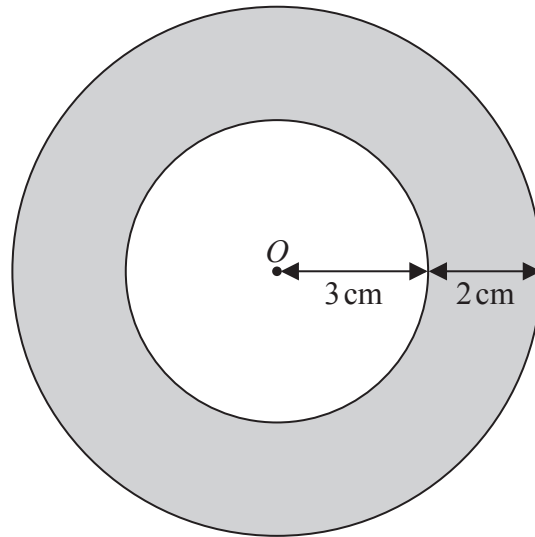
11   Here are two circles.

Diagram **NOT**
accurately drawn

The circles have the same centre *O*.
The radius of the inner circle is 3 cm.
The width of the shaded region between the inner circle and outer circle is 2 cm.

Work out the area of the shaded region.
Give your answer correct to 3 significant figures.

....cm^2

(Total for Question 11 is 3 marks)