

GCSE MATHEMATICS / FOUNDATION TIER

CIRCLES

Assignment & exam-style practice

Key skills

Circle vocabulary • Circumference • Area • Sectors
Composite shapes • Real-world problem solving

STUDENT DETAILS

Name: _____

Date: _____

80

MINUTES

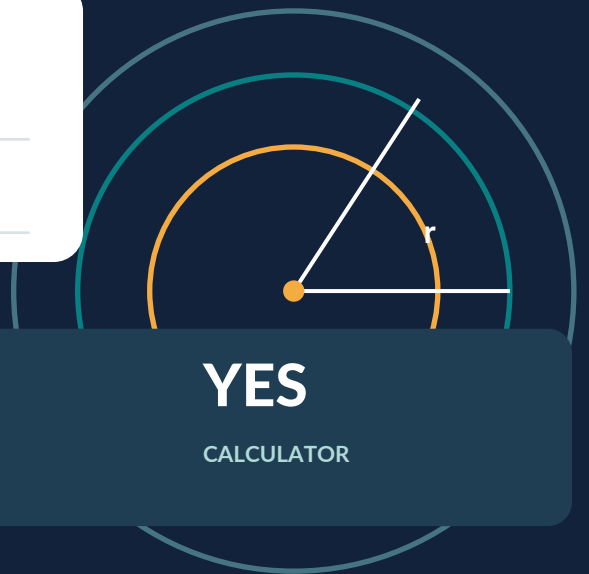
70

TOTAL MARKS

YES

CALCULATOR

Show all your working. Include units where appropriate. Use the π key.



A

Circle facts & formulae

11 marks

01

The diagram shows a circle with centre O.

Write the correct mathematical name for:

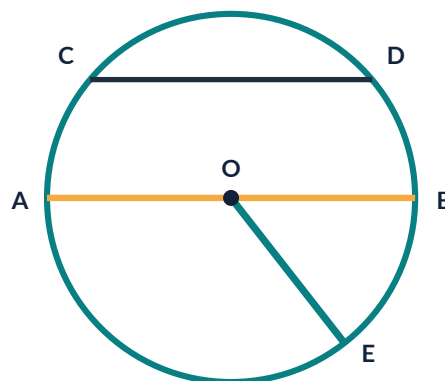
(a) OE (b) AB (c) CD (d) point O.

(a)

(b)

(c)

(d)



[4 marks]

Not drawn accurately

02

(a) A circle has diameter 18 cm. Work out its radius.

(b) A circle has radius 3.5 m. Work out its diameter.

[2 marks]

Answers (a) / (b):

03

Write down the correct formula for:

(a) the circumference of a circle (b) the area of a circle.

[2 marks]

Answers (a) / (b):

04

A circle has radius 6 cm. Work out its circumference.

Give (a) an exact answer in terms of π and (b) an answer to 3 significant figures.

[3 marks]

Answers:

B

Circumference

9 marks

05

A circular badge has diameter 9.4 cm. Calculate its circumference.
Give your answer to 3 significant figures.

[2 marks]

Answer:

06

A bicycle wheel has diameter 0.65 m. The wheel makes 25 complete turns.
Calculate how far the bicycle travels. Give your answer to the nearest metre.

[3 marks]

Answer:

07

A teacher puts ribbon around the edges of four circular display boards.
Each board has diameter 32 cm. She buys 10% extra ribbon for wastage.
How many **metres** of ribbon should she buy? Give your answer to 2 decimal places.

[4 marks]

Answer:

c

Area of a circle

11 marks

08

A circle has radius 5 cm.

(a) Write its exact area in terms of π . (b) Calculate the area to 3 significant figures.

[3 marks]

Answer:

09

A circular lawn has diameter 14 m. Work out its area.

Give your answer to 3 significant figures, including the correct units.

[3 marks]

Answer:

10

A student says, "The area of a circle with diameter 10 cm is $\pi \times 10^2 = 314 \text{ cm}^2$."

Explain the error and calculate the correct area to 3 significant figures.

[3 marks]

Answer:

11

A circular flower bed has radius 2.4 m. Work out its area to 2 decimal places.

Answer:

[2 marks]

D

Parts of circles

9 marks

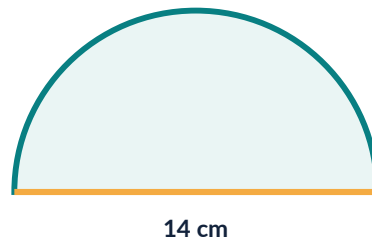
12

The diagram shows a semicircle of diameter 14 cm.

(a) Calculate its area. (b) Calculate its **full perimeter**, including the straight edge.
Give both answers to 3 significant figures.

[5 marks]

Semicircle



Answers (a) / (b):

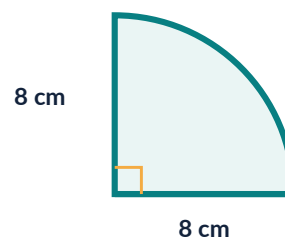
13

The diagram shows a quarter circle of radius 8 cm.

(a) Calculate its area to 2 decimal places.
(b) Calculate its full perimeter to 2 decimal places.

[4 marks]

Quarter circle



Answers (a) / (b):

E

Composite shapes

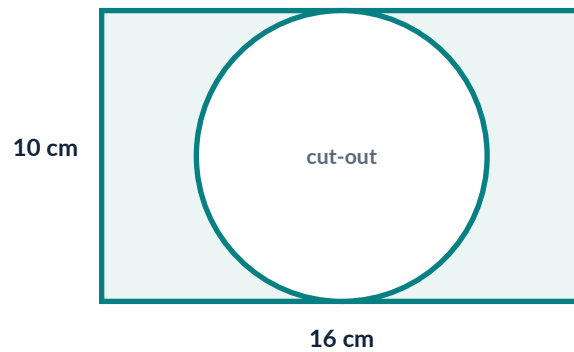
11 marks

14

A rectangle measures 16 cm by 10 cm. A circle of diameter 10 cm is cut out of it. Work out the area of the remaining shape. Give your answer to 3 significant figures.

[4 marks]

Remaining shape is shaded



Answer:

15

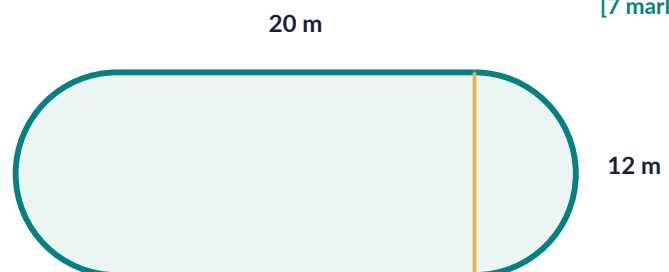
A running track is formed by a rectangle 20 m long and 12 m wide, with a semicircle attached to each **12 m end**.

(a) Calculate the perimeter of the track to 3 significant figures. [3]

(b) Calculate the area enclosed by the track to 3 significant figures. [4]

[7 marks]

Not drawn accurately



Answers (a) / (b):

F

Multi-step applications

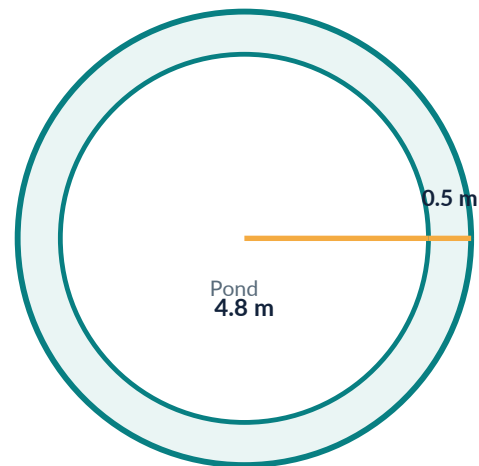
8 marks

16

A circular pond has diameter 4.8 m. A path of uniform width 0.5 m is built all the way around it. Work out the area of the path to 2 decimal places.

[4 marks]

The diagram is not to scale



Answer:

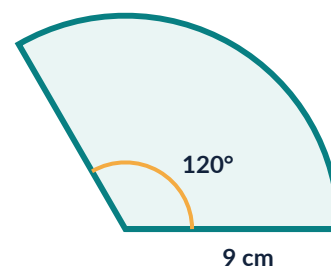
17

A sector has radius 9 cm and angle 120° at its centre.

(a) Calculate the arc length to 2 decimal places. [2]

(b) Calculate the area of the sector to 2 decimal places. [2]

[4 marks]



Answers (a) / (b):

G

Reverse & reasoning problems

11 marks

18

The circumference of a circle is 62.8 cm. Use $\pi = 3.14$.
Find the radius of the circle. Show your method.

[3 marks]

Answer:

19

Two circular pizzas have these sizes and prices:
Small: diameter 24 cm, costs £7. Large: diameter 32 cm, costs £11.
Which pizza gives more **area per £1**? Show calculations and explain your conclusion.

[5 marks]

Compare area per pound = pizza area $\div$ price

Answer:

20

A shape is made from a 6 m by 4 m rectangle and a semicircle on a 4 m
Calculate its total area. Give your answer to 3 significant figures.

[3 marks]

Answer:

