

FluidMaths

GCSE Mathematics (Grade 9-1)

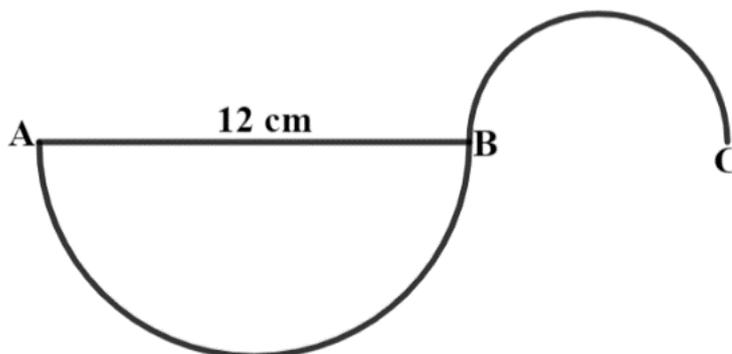
Problem Solving

Area of a Circle Set 1– Questions

Some useful strategies in problem-solving

- Read the question carefully
- Sketch a diagram where applicable
- Take note of key information
- Write down any formulae you may need
- Tackle the problem in bite-size rather than as a whole
- Concentrate on the part of the problem you understand and start from there
- Collaborate with a partner and share ideas
- Use a dictionary to find the meaning of any confusing words
- Check that your answers make sense in the context of the question

- 1 The diagram below shows two semi-circles
 AB is the diameter of the larger semi-circle
 A, B and C are in a straight line

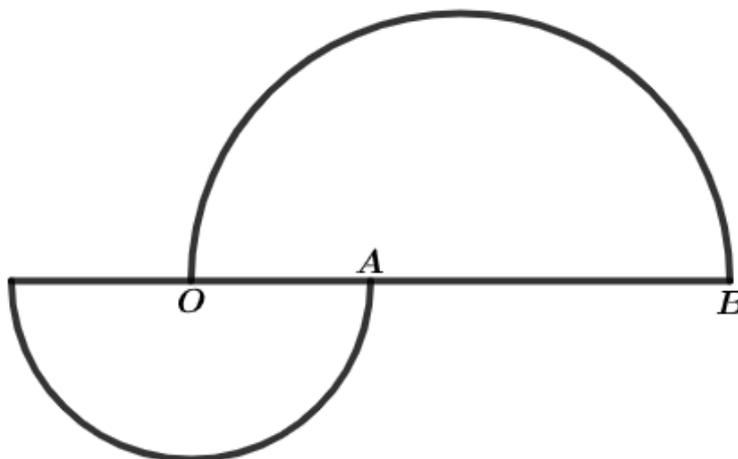


$AB = 12 \text{ cm}$

If $AB: BC = 2: 1$, what is the exact perimeter of the shape?

[4marks]

- 2 Two semi-circles are shown below



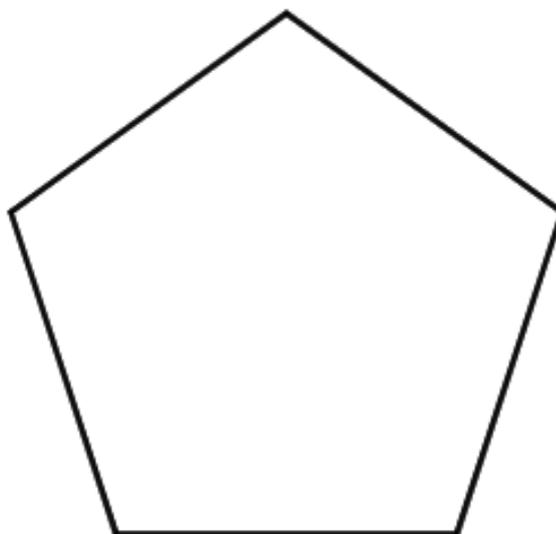
The circumference of the larger semi-circle is $18\pi \text{ cm}$

If $OA: OB = 1: 4$, calculate the perimeter of the shape

Give your answer in terms of π

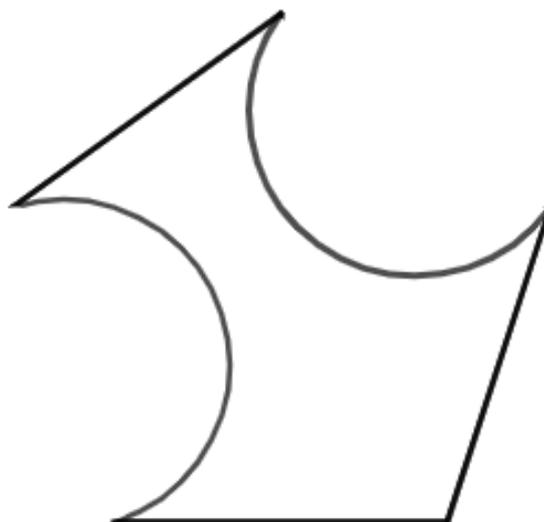
[4marks]

3 Here is a regular pentagon



The perimeter of the pentagon is 24 cm

Two semi-circles are removed from the pentagon to form the new shape below

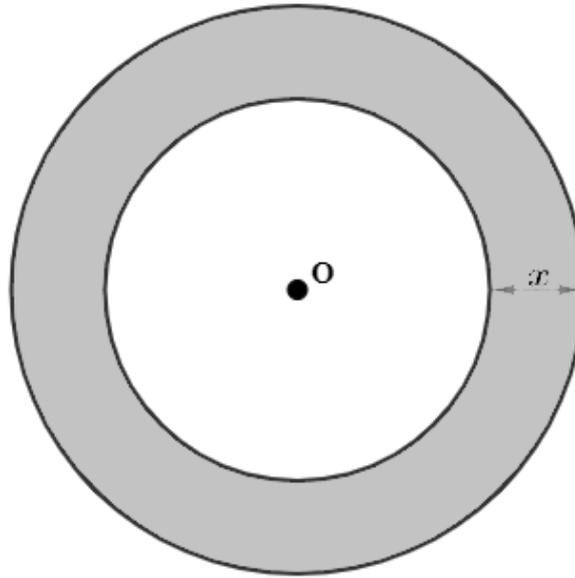


Calculate the perimeter of the new shape

Give your answer to 1 decimal place.

[3marks]

4 Here are two circles



The two circles have the same centre at O

The distance between their circumferences is x

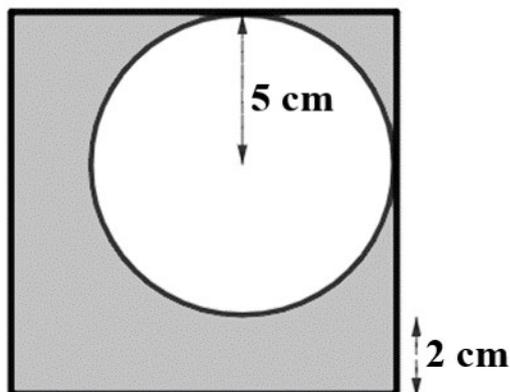
The area of the smaller circle is 48 cm^2

The area of the shaded region is 18 cm^2

Calculate the value of x to 2 decimal places.

[4marks]

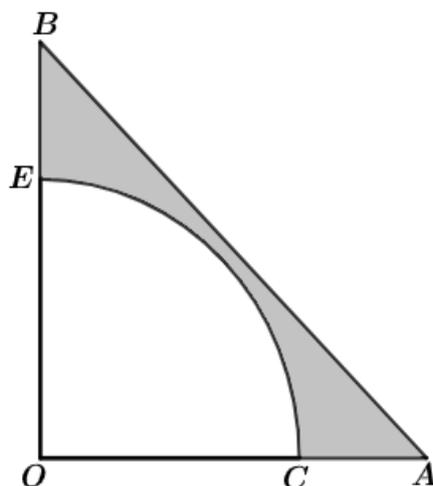
- 5 A circle of radius 5 cm is drawn inside a square so that it touches two sides of the square and is exactly 2 cm from the other two sides of the square as shown below.



What percentage of the area of the square is shaded?
Give your answer to 1 decimal place.

[5marks]

- 6 OAB is a right-angled triangle



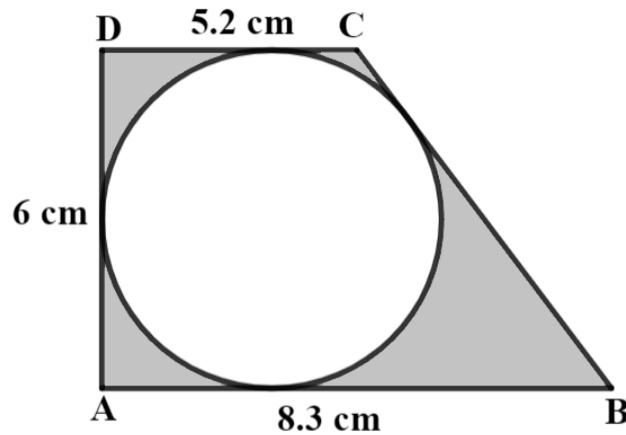
The arc CE is 5π cm

The ratio of OC: OA = 2 : 3

Calculate the size of the shaded region to 2 decimal places

[6marks]

- 7 ABCD is a trapezium
A circle is inscribed into the trapezium as shown



$$AB = 8.3 \text{ cm}$$

$$AD = 6 \text{ cm}$$

$$CD = 5.2 \text{ cm}$$

The sides of the trapezium are tangents to the circle
Calculate the shaded area to 2 decimal places.

[4marks]