Circles

- Naming the different parts of a circle
- Finding the circumference and area of a circle
- Finding the length of an arc
- Finding the area of a sector

Keywords

You should know

explanation 1a | explanation 1b | explanation 1c | explanation 1d | online

1 Find the circumference of circles with these diameters or radii.

a diameter 9 cm **b** diameter 6.9 cm **c** radius 8 mm

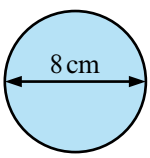
d diameter 24 m **e** radius 4.3 m **f** radius 9.15 m

2 What is the circumference of a circle of diameter 6.4 cm?

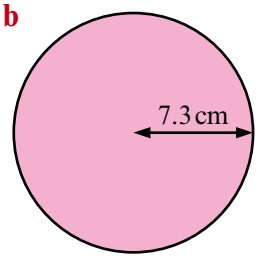
3 What is the circumference of a circle of radius 2.1 m?

4 Find the circumference of each circle.

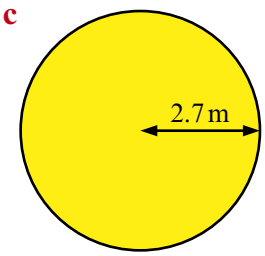
a



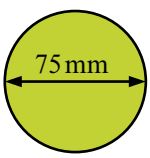
b



c



d



5 A circular tablecloth has a radius of 45 cm. What is the distance around the edge of the tablecloth? Give your answer correct to the nearest centimetre.

6 A 2p coin has a diameter of 26 mm. Jack rolls a 2p coin along the floor. The coin makes 20 complete revolutions. How far does the coin travel? Give your answer in metres.

7 Gail pushes her bike. The wheels make 150 complete revolutions. Each wheel has a radius of 28 cm. How far does the bike travel? Give your answer in metres.

8 Kylie has a circular rug of radius 1.7 m. She wants to put some edging around the whole of the edge of the rug.

a How much edging will she need?

b The edging costs 84p per metre and can only be bought in whole numbers of metres. How much will the edging cost?

9 Rob wants to measure the length of his field. He has a trundle wheel which has a radius of 20 cm. Rob walks the length of his field pushing the trundle wheel. The wheel makes 128 complete revolutions.

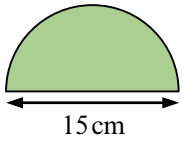
What is the length of the field? Give your answer correct to the nearest metre.

10 Jan's bicycle has wheels of diameter 66 cm. Mark's bicycle has wheels of diameter 74 cm. They each cycle so that the wheels complete 100 revolutions.

How much further than Jan does Mark travel? Give your answer in metres correct to the nearest centimetre.

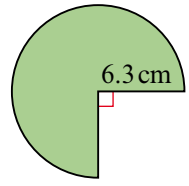
11 Work out the perimeter of each shape.

a



b

c



explanation 2a | explanation 2b | online

12 Find the area of circles with these radii or diameters.

a radius 12 cm **b** radius 7.8 m **c** diameter 6.2 cm

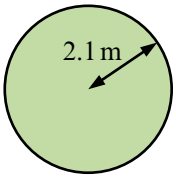
d radius 15.3 m **e** diameter 45 cm **f** diameter 6.7 m

13 Work out the area of a circle of diameter 12 cm.

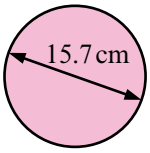
14 Work out the area of a circle of radius 3.5 cm.

15 Find the area of each circle.

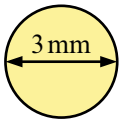
a



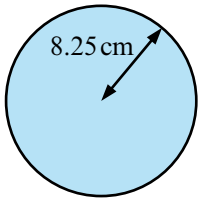
b



c



d



16 A circular pond has a diameter of 6 m. Work out the surface area of the pond.

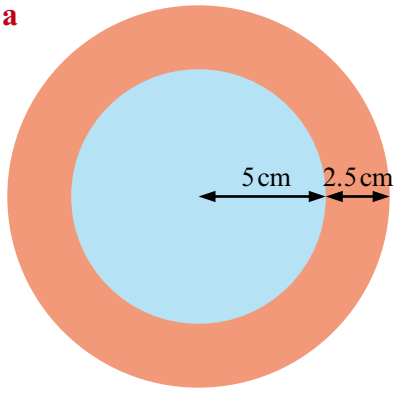
17 A circular tablecloth has a radius of 45 cm. Work out the area of the tablecloth.

18 In each design, the red circle has a radius of 7.5 cm.

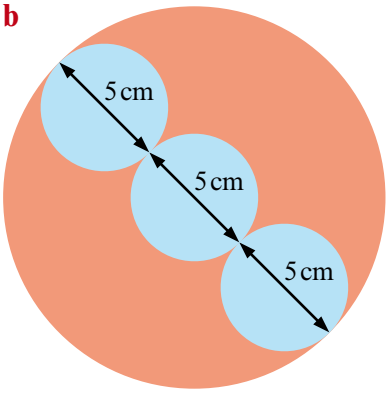
i What is the area of the blue part?

ii What is the area of the red part?

a

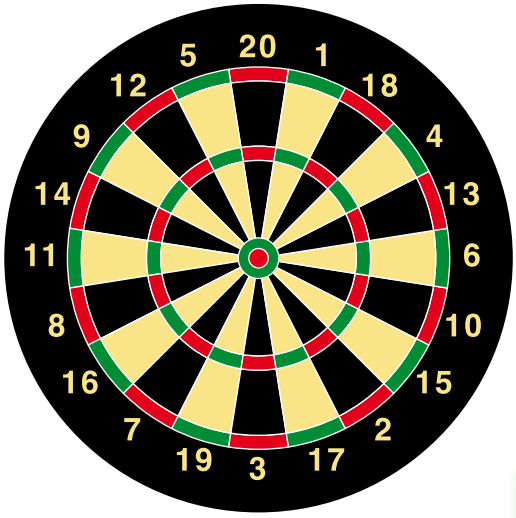


b



19 The diameter of this dartboard is 47 cm.

Work out the area of the dartboard.

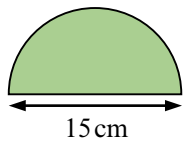


20 The diameter of a 2p coin is 26 mm. Work out the area of one side of the coin.

21 Simon has a square sheet of plastic of side length 5 m. He cuts out a cover for his fish pond, which is in the shape of a circle of radius 2.1 m. He cuts out the cover so that there is a 10 cm overlap all the way round the pond. Work out the area of the plastic that will be left over.

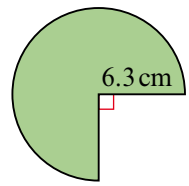
22 Work out the area of each shape.

a



b

c



explanation 3a explanation 3b

23 The circumference of a circle is 60 m. Work out the diameter of the circle.

24 The circumference of a circle is 123 cm. Work out the radius of the circle.

25 A circular plate has a circumference of 93.7 cm.
Work out the radius of the plate.

26 The area of a circle is 8350 cm^2. Work out the radius of the circle.

27 The area of a circle is 1.88 m^2. Work out the diameter of the circle.

28 Jane pushes a bicycle for 200 m.

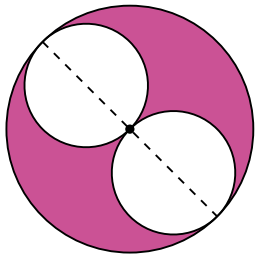
The wheels of the bicycle complete 120 revolutions.

Work out the radius of the wheels of the bicycle.

29 A tabletop is in the shape of a circle. The area of the top of the table is 3.46 m^2. Jim has a tablecloth that is 200 cm in diameter. Will the tablecloth fit the table? Give an explanation for your answer.

30 The large circle has an area of $129\,cm^2$.

What is the area of the shaded region?



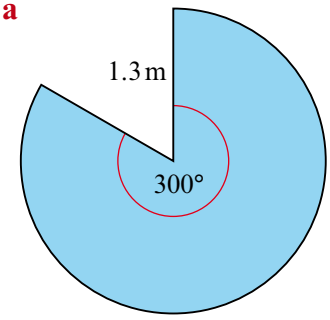
explanation 4a | explanation 4b | explanation 4c

31 Look at each sector.

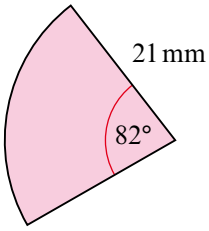
i What is the area of the sector?

ii What is the length of the arc?

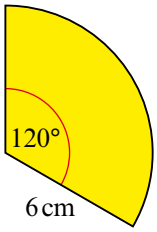
a



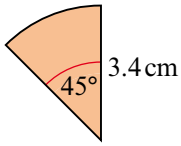
b



c

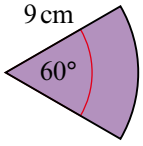


d

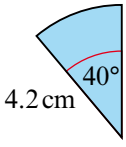


32 Work out the perimeter of each shape.

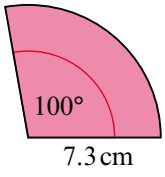
a



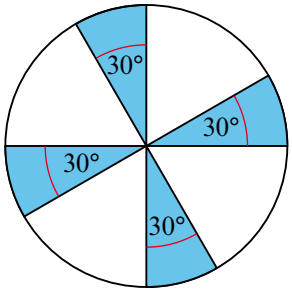
b



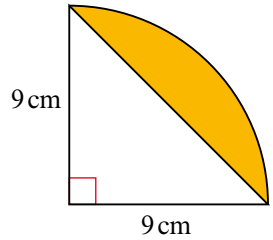
c



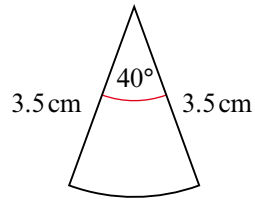
33 A company designs a pattern to use as its logo.
It is in the shape of a circle of diameter 4.5 cm.
Work out the area of the circle that is shaded.



34 Find the area of the shaded segment.

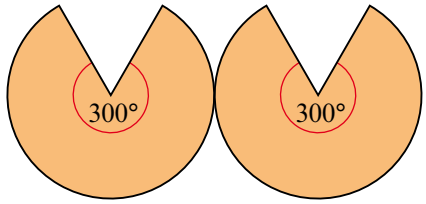


35 Harriet makes an earring out of wire. The earring is in the shape of a sector of a circle of radius 3.5 cm. Work out the length of wire used in the earring.



36 This shape consists of two sectors of a circle. Both circles have a radius of 18 cm.

What is the area of the shape? Give your answer correct to two significant figures.



37 The diagram shows a rectangle with a 45° sector of a circle, centre A.

a What is the area of the shape?

b What is the perimeter of the shape?