Name:

Exam Style Questions

Circumference

Corbettmaths

Equipment needed: Pen, Calculator

Guidance

1. Read each question carefully before you begin answering it.
2. Check your answers seem right.
3. Always show your workings

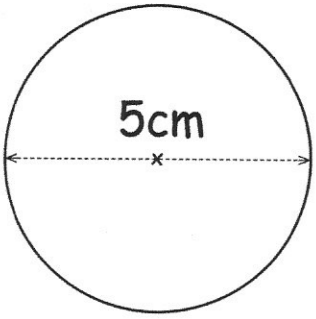
Video Tutorial

www.corbettmaths.com/contents

Video 60

Answers and Video Solutions

1. Shown below is a circle with diameter 5cm.



Calculate the circumference of the circle.
Give your answer to 1 decimal place.

$\pi \times 5 = 15.7079...$

15.7 .....cm

(2)

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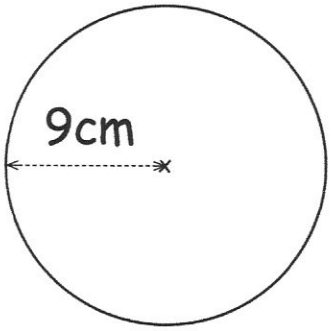
2. Shown below is a circle with radius 9cm.



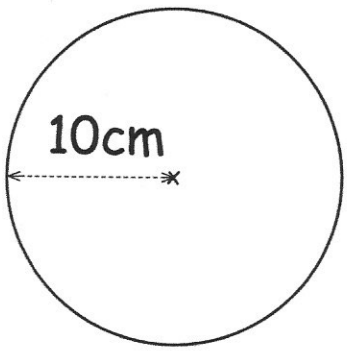
Work out the circumference of the circle.
Give your answer to 1 decimal place.

$\pi \times 18 = 56.54...$

56.5 .....cm

(2)

3. Shown below is a circle with radius 10cm.

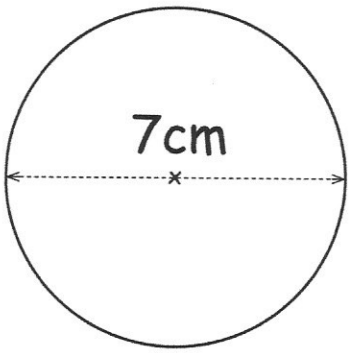


Work out the circumference of the circle.
Give your answer in terms of π

$\pi \times 20 = 20\pi$

.....20π.....cm
(2)

4. Shown below is a circle with diameter 7cm.



Work out the circumference of the circle.
Give your answer in terms of π

$\pi \times 7 = 7\pi$

.....7π.....cm
(2)

5. A circular mirror has a diameter of 1.3m.

Work out the circumference of the mirror.

$\pi \times 1.3 = 4.084...$

4.084 ..... m

(2)

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6. A tin of baked beans has diameter 7.5cm.

What is the circumference of circle with diameter 7.5cm?

$\pi \times 7.5 = 23.5619...$

23.562 ..... cm

(2)

7. Use $\pi = 3.14$ to work out the circumference of a circle of diameter 4cm.

3.14×4

$$\begin{array}{r} 3.14 \\ \times\ 4 \\ \hline 12.56 \end{array}$$

12.56 .....cm

(2)

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8. A circular plate has circumference of 37.7cm
Calculate the diameter of the plate.

$37.7 \div \pi = 12.00028\ldots$

12 .....cm

(2)

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9. A circular pond has radius of 6m.
Calculate the circumference of the pond.

Give your answer in terms of π

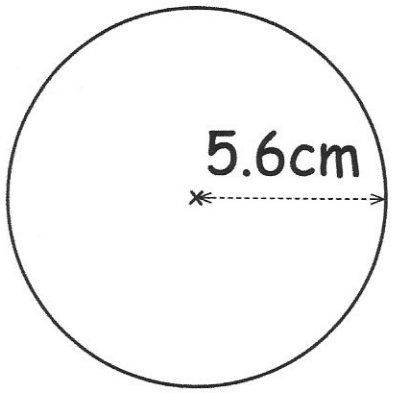
$6 \times 2 = 12$

$\pi \times 12 = 12\pi$

12π .....m

(2)

10. A circle has radius 5.6cm.



$5.6 \times 2 = 11.2$

(a) Work out the circumference of the circle.

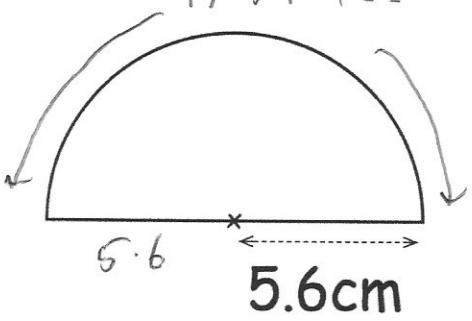
$\pi \times 11.2$

$= 35.1858...$

35.186 .....cm

(2)

A semicircle has radius 5.6cm



(b) Work out the perimeter of the semicircle.

$35.185... \div 2 = 17.592...$

$17.592... + 5.6 + 5.6 =$

28.793 .....cm

(2)

11. The circumference of a circle measures 19.5cm.

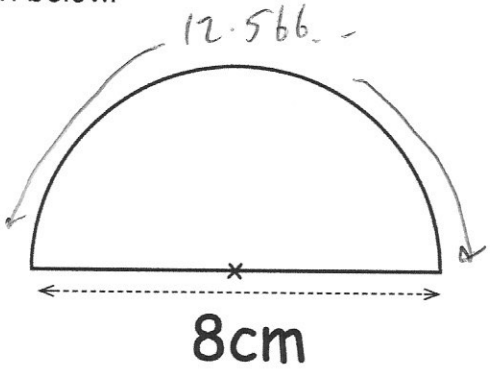
Work out the length of the diameter of the circle.

$19.5 \div \pi = 6.207...$

6.207 .....cm

(2)

12. A semicircle is shown below.



Work out the perimeter of the semicircle.

$\pi \times 8 = 25.1327...$

$25.1327... \div 2 = 12.566...$

$12.566... + 8 = 20.566...$

20.566 .....cm

(3)

13. The circumference of a circle measures 4m.

Work out the length of the radius of the circle.

$400 \div \pi = 127.3239545$

$127.323... \div 2 = 63.6619..$

63.662 .....cm

(2)

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14. Georgina has 1 metre of pink ribbon.
She wants to wrap it around a tree trunk with diameter 32 centimetres.

Will she be able to wrap the ribbon around the tree trunk?
Explain your answer.

100 cm

$\pi \times 32 = 100.53..$ cm

$100.53..$ cm > 100 cm

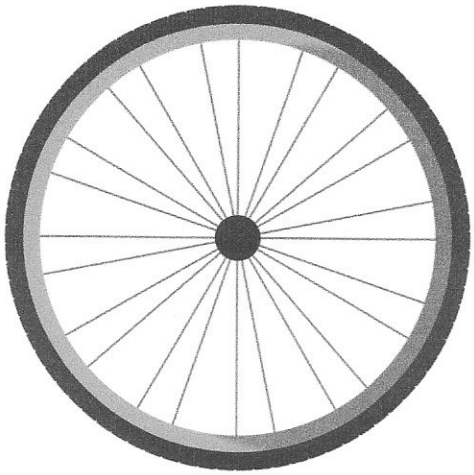
No, Georgina does not have enough ribbon.

.....

.....

(2)

15. James has a bicycle.
Each wheel has diameter 45cm.



James cycles his bicycle in a straight line in the playground.
The front wheel makes 15 complete revolutions.

How far does the bicycle travel?
Give your answer in metres.

$\pi \times 45 = 141.3716...$ cm

$141.3716... \times 15 = 2120.575...$ cm

$2120.575... \div 100 = 21.205...$ m

21.206
.....m
(4)

16. A circular wheel has a diameter of 30cm.
The wheel rolls a distance of 60m.

6000cm

Calculate the number of complete revolutions completed.

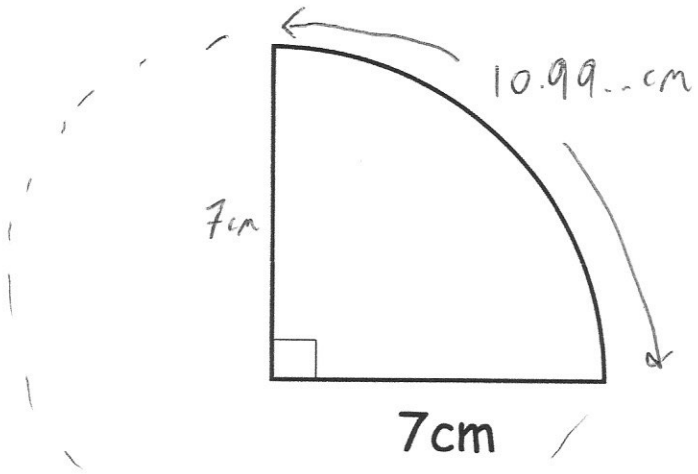
$\pi \times 30 = 94.247...$ cm

$6000 \div 94.247... = 63.66...$ revolutions

63

(4)

17.



Work out the perimeter of a quarter-circle with radius 7cm.

$\pi \times 14 = 43.98...$

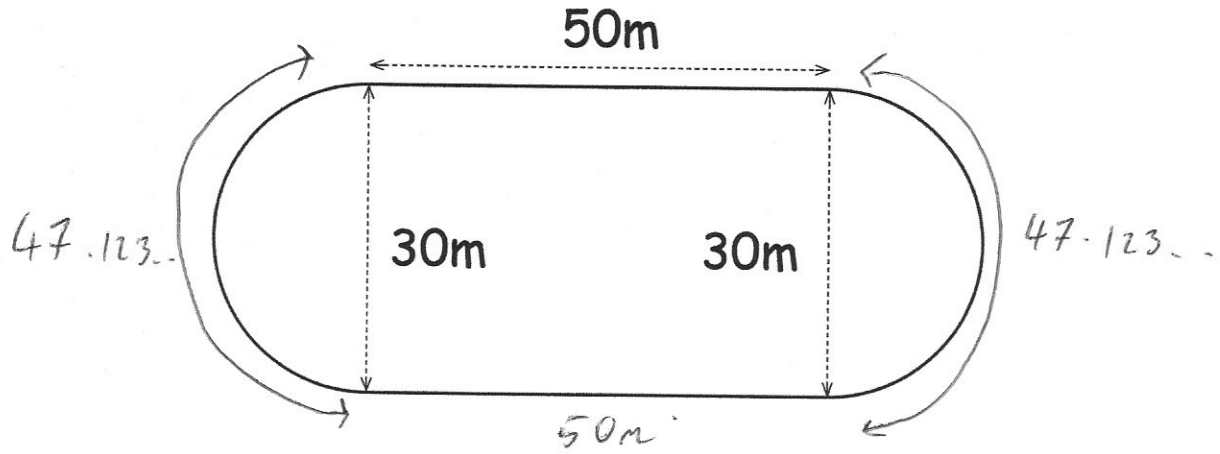
$43.98... \div 4 = 10.99...$

$10.99... + 7 + 7 = 24.99557...$

24.9956 cm

(3)

18. A primary school has a running track.
It has two straights of 50 metres.
Also there are two 'bends' that are semicircles with diameter 30 metres.



Work out the distance around the running track.

$\pi \times 30 = 94.2477...$

$94.2477... \div 2 = 47.1238...$

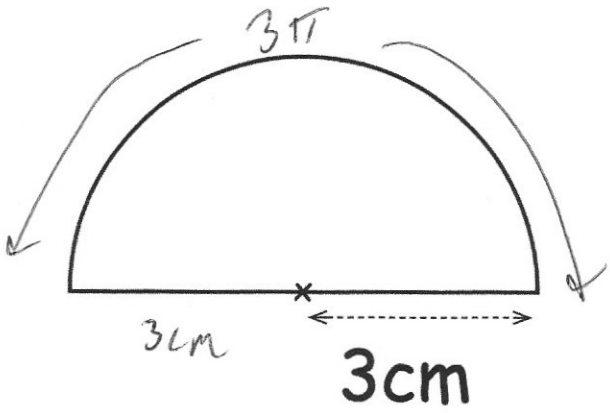
$50 + 50 + 47.123... + 47.123...$

$= 194.2477...$

194.25 .....m

(5)

19. Shown is a semicircle with radius 3cm.



Work out the perimeter of the semicircle.
Give your answer in terms of π

$\pi \times 6 = 6\pi$

$6\pi \div 2 = 3\pi$

$3\pi + 3 + 3$

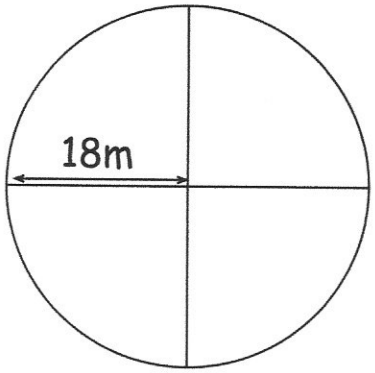
$3\pi + 6$ .....cm

(4)

20. Aisling runs a dog kennels.

She has a circular field, with diameter 36m, that she plans to use to let the dogs exercise.

Aisling is going to build a fence around the edge of the field and she also wants to build fences to divide the field into 4 equal sized sectors to keep the dogs separate.



The fence costs £34.85 per metre.

Work out how much the fence should cost Aisling.

$\pi \times 36 = 113.097...$

$113.097... + 18 + 18 + 18 + 18 = 185.097...$

$185.097... \times 34.85 = £6450.64$ to nearest penny

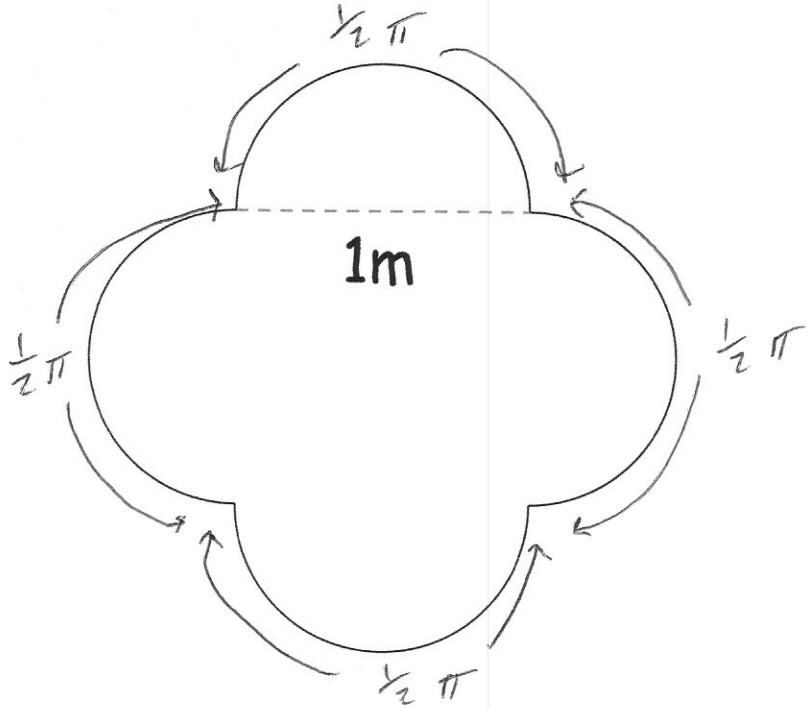
also accept

$186 \times 34.85 = £6482.10$

£6450.64

(5)

21. Shown is a table top.
It is made from a 1m square and four semicircles.



Calculate the perimeter of the table top.

$\pi \times 1 = \pi$

$\pi \div 2 = \frac{1}{2}\pi$

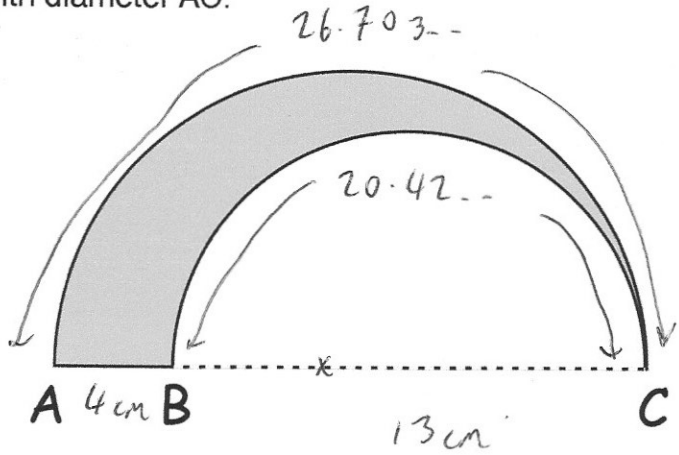
$\frac{1}{2}\pi + \frac{1}{2}\pi + \frac{1}{2}\pi + \frac{1}{2}\pi = 2\pi$

2π

.....m

(4)

22. Mona designs a logo by removing a semi-circle with diameter BC from a larger semi-circle with diameter AC.



AB = 4cm
BC = 13cm

Work out the perimeter of the logo.

$\pi \times 13 = 40.84...$

$40.84... \div 2 = 20.42...$

$\pi \times 17 = 53.407...$

$53.407... \div 2 = 26.703...$

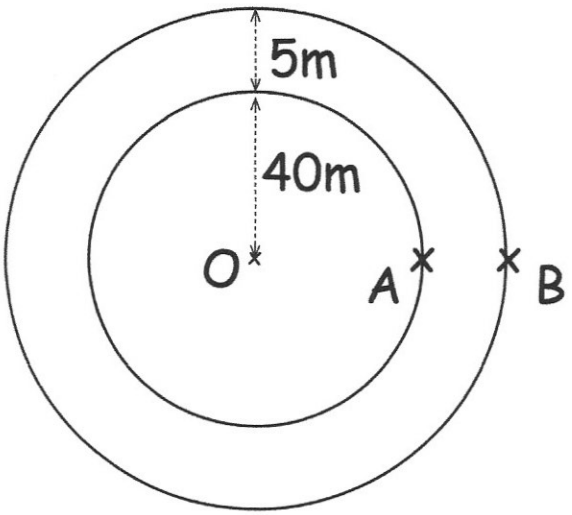
$20.42... + 26.703... + 4 =$

51.124
.....cm
(4)

23. Andrew and Benjamin run around circular running tracks.

Andrew runs one lap of a track that is a circle with radius 40m, centre O.
He starts and finishes at point A.
Andrew runs at an average speed of 6m/s

Benjamin runs one lap of a track that is a circle with radius 45m, centre O.
He starts and finishes at point B.



Both men start at the same time.
Benjamin finishes 3 seconds before Andrew.

Work out Benjamin's average speed.
Give your answer to 3 significant figures.

Andrew. $\pi \times 80 = 251.327...$ m

$t = d \div s$

$= 251.327... \div 6 = 41.8879...$ seconds

Benjamin. $41.8879... - 3 = 38.8879...$ seconds

$s = d \div t$ $\pi \times 90 = 282.74...$ m.

$282.74... \div 38.8879...$

$= 7.27...$

7.27 .....m/s

(5)