Name:

Exam Style Questions

Perimeter of a semicircle
Perimeter of a quarter circle

Corbettmaths

Equipment needed: Calculator, pen

Guidance

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

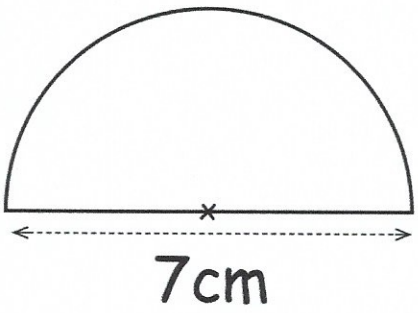
Video Tutorial

www.corbettmaths.com/contents

Videos 62, 62a

Answers and Video Solutions

1. Below is a semicircle.



Find the perimeter of the semicircle.
Give your answer to 1 decimal place.

$\pi \times 7 = 21.991148...$

$21.991148... \div 2 = 10.99557...$

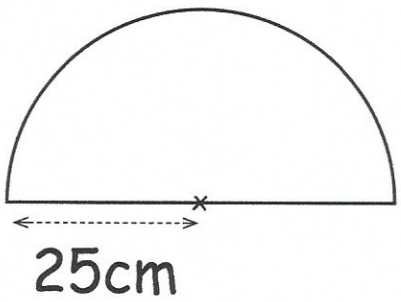
$10.99557... + 7 = 17.9955...$

17.996

.....cm

(3)

2. Shown is a semicircle.



Find the perimeter of the semicircle.
Give your answer to 1 decimal place.

$\pi \times 50 = 157.0796...$

$157.0796... \div 2 = 78.5398...$

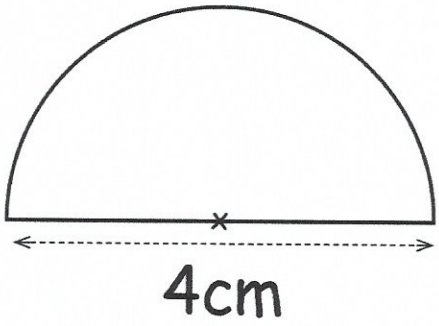
$78.5398... + 50 = 128.5398...$

128.5

.....cm

(3)

3. Below is a semicircle.



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

$4 \times \pi = 4\pi$

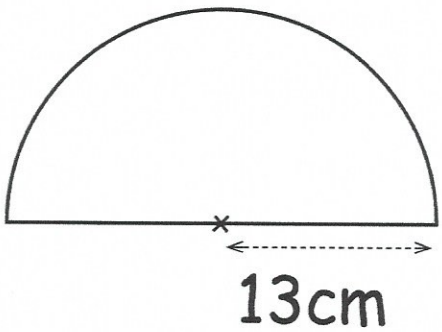
$4\pi \div 2 = 2\pi$

$2\pi + 4$

$2\pi + 4$ cm

(3)

4. Below is a semicircle.



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

$\pi \times 26 = 26\pi$

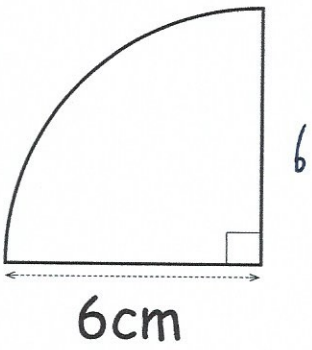
$26\pi \div 2 = 13\pi$

$13\pi + 26$

$13\pi + 26$ cm

(3)

5. Shown below is a quarter-circle with a radius of 6cm



Find the perimeter of the quarter-circle.
Give your answer to 1 decimal place.

$\pi \times 12 = 37.69911...$

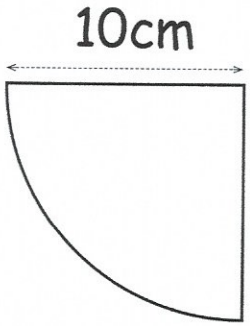
$37.69911... \div 4 = 9.424777...$

$9.42477... + 6 + 6 = 21.4247...$

21.4 .....cm

(3)

6. Shown below is a quarter-circle with a radius of 10cm



Find the perimeter of the quarter-circle.
Leave your answer in terms of π

$\pi \times 20 = 20\pi$

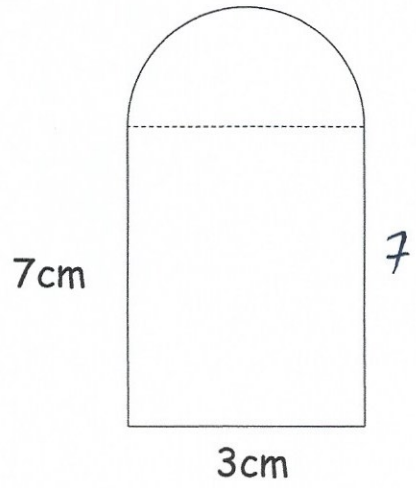
$20\pi \div 4 = 5\pi$

$5\pi + 10 + 10$

$5\pi + 20$ .....cm

(3)

7. Shahida designs a badge using a rectangle and a semicircle.



Find the perimeter of the badge.

$\pi \times 3 = 9.42477...$

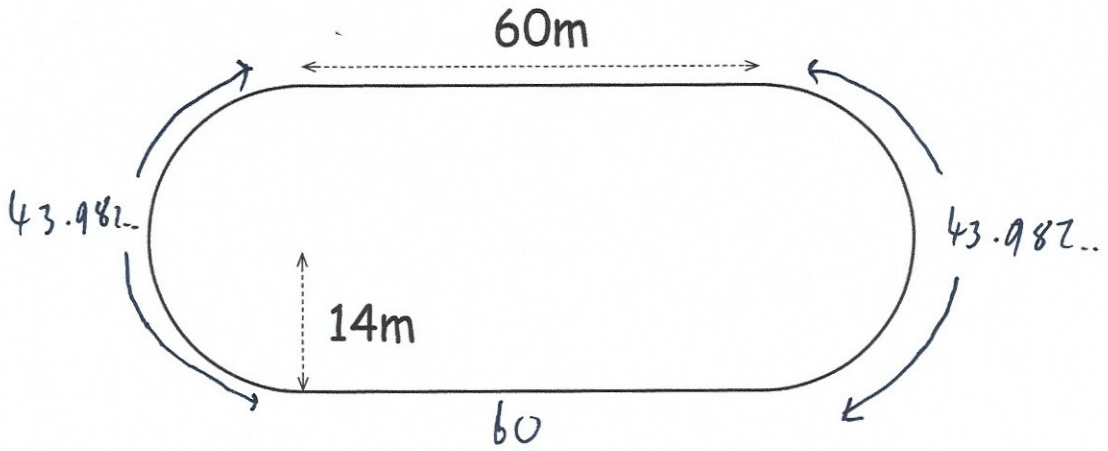
$9.42477... \div 2 = 4.71238...$

$4.71238... + 7 + 3 + 7 = 21.71238...$

21.71 cm
to 2 dp. **(4)**

8. A school running track has two straights and two semi-circular bends.

Each straight is 60 metres long and each semi-circular bend has a radius of 14 metres.



Maria runs 8 laps of the track.

Work out how far Maria has run in total.

$\pi \times 28 = 87.964...$

$87.964... \div 2 = 43.9822...$

$60 + 60 + 43.9822... + 43.9822... = 207.96459...$

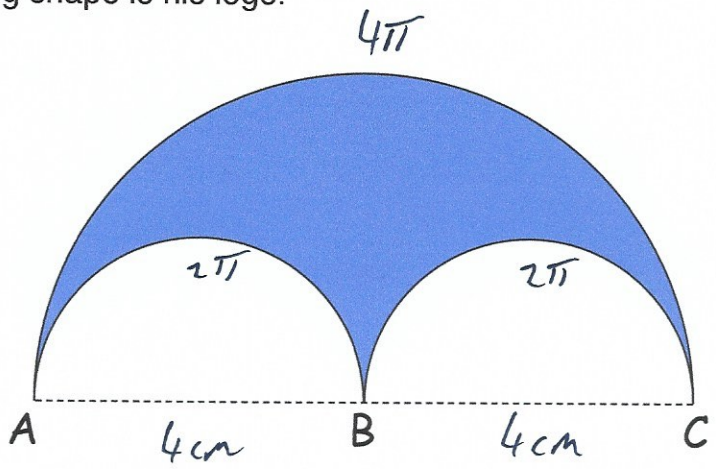
$207.96459... \times 8 = 1663.716...$ m

1663.72m

to 2dp. (4)

9. Dexter designs a logo.

He draws a semicircle with diameter, AC, that has a length of 8cm
He then removes two semicircles, with diameters AB and BC.
The remaining shape is his logo.



AC = 8 cm

Find the perimeter of the logo.
Give your answer in terms of π

$8 \times \pi = 8\pi$

$8\pi \div 2 = 4\pi$ cm

$4 \times \pi = 4\pi$

$4\pi \div 2 = 2\pi$

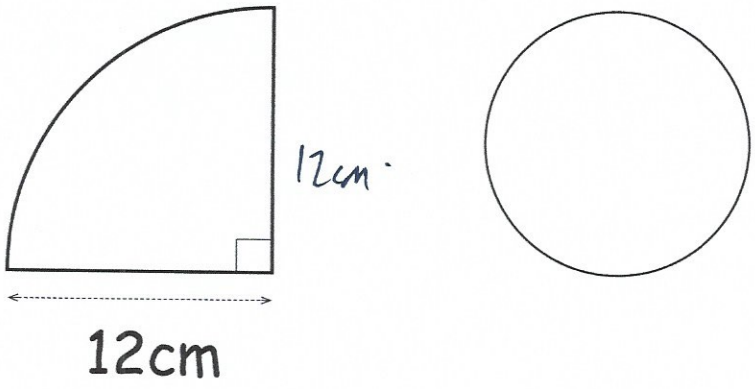
$4\pi + 2\pi + 2\pi = 8\pi$

8π .....cm

(4)

10. Shown below is a quarter-circle and a circle.

The perimeter of the quarter-circle is the same as the circumference of the circle.



Find the radius of the circle.

$\pi \times 24 = 24\pi$

$24\pi \div 4 = 6\pi$

$6\pi + 24$ or $42.8495...$

$C = \pi \times d$

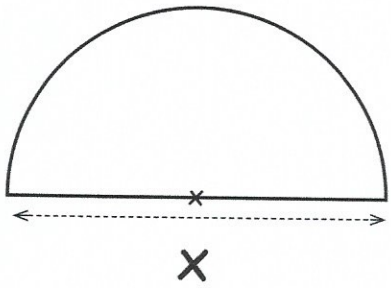
$42.8495... = \pi \times d$

$42.8495... \div \pi = 13.6394...$

$13.6394... \div 2 = 6.8197...$

6.82 .....cm
to 2dp **(4)**

11. Below is a semicircle.



The perimeter of the semicircle is 1 metre.

Find the diameter of the semicircle, x.

$\pi \times x = \pi x$

$\pi x \div 2 = 1.57... x$

$1.57... x + x = 2.5707... x$

$2.5707... x = 100$

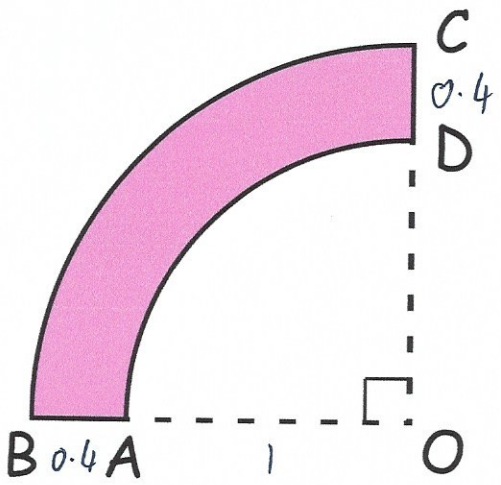
$x = 100 \div 2.5707...$

$x = 38.898...$

38.898cm.

(4)

12. OAD and OBC are quarter-circles with centre O.



A is a point on the line OB such that OA : AB = 5 : 2

OC = 1.4m

Find the perimeter of shape ABCD

$5 + 2 = 7$

$1.4 \div 7 = 0.2$

$OA : 0.2 \times 5 = 1\text{m}$

$AB : 0.2 \times 2 = 0.4\text{m}$

$0.4 + 0.4 + 0.5\pi + 0.7\pi$

$= 4.569911...$

Arc AD

$\pi \times 2 = 2\pi$

$2\pi \div 4 = 0.5\pi$ (1.57...)

Arc BC

$\pi \times 2.8 = 2.8\pi$

$2.8\pi \div 4 = 0.7\pi$ (2.1991...)

4.57m

.....

(4)