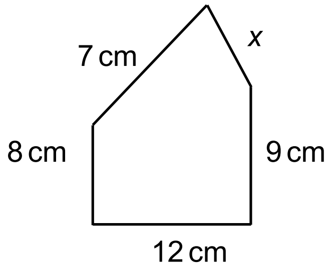
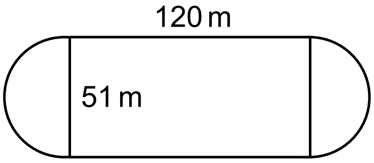
Topic Check In - 10.02 Perimeter calculations

1. Calculate the perimeter of a square with sides 6 cm.
2. Calculate the perimeter of a rectangle with sides 5 cm by 8 cm.
3. Calculate the circumference of a circle of diameter 4 cm.
4. The perimeter of this shape is 39 cm. Work out the length of x.

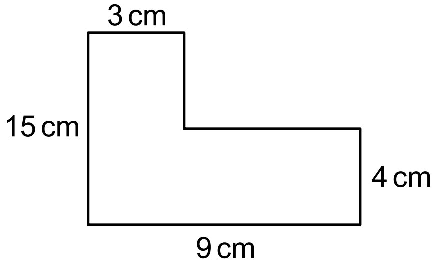


5. Calculate the perimeter of a semicircle of radius 12 cm.
6. Jim has a circle of radius 7 cm. He says the circumference is 21.99 cm. Explain why he is wrong.
7. Jo is training for a race. She runs around this track.

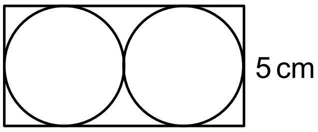


Show that she needs to complete at least 13 laps to have run 5 km.

8. Calculate the perimeter of the shape below.



9. A pond which is rectangular in shape has a length which is 3 times its width. The perimeter of the pond is 16 m. Work out the dimensions of the pond.
10. Two identical circles are drawn inside a rectangle. Which is larger, the circumference of the two circles added together, or the perimeter of the rectangle?



Extension

Darren has 36 m of fencing. He needs to make a pen in the shape of a rectangle. Investigate the different perimeters he could use. Which one would give him the largest area?

Consider different shapes for the 36 m perimeter pen.
Investigate with different lengths of fencing.

Answers

1. 24 cm

2. 26 cm

3. 12.6 cm (1dp)

4. 3 cm

5. 61.7 cm (1dp)

6. He has multiplied the radius by pi not the diameter (should be 44.0 cm).

7. $\pi \times 51 + 240 \approx 397$
   $5000 \div 397 \approx 12.6$
   So 13 full laps are > 5 km

8. 48 cm

9. 2 m × 6 m

10. For the rectangle: 5 + 10 + 10 + 5 = 30 cm
    For the circles: $\pi \times 5 \times 2 = 31.4$ cm
    So circumference of circles larger

Extension

17×1, 16×2, 15×3, 14×4, 13×5, 12×6, 11×7, 10×8, 9×9
9×9 would give the biggest area (81 m^2)

A circle pen would give the biggest area:
$36 = \pi d$
$\frac{36}{\pi} = d = 11.46$ (2dp)
$r = \frac{d}{2} = 5.73$ (2dp)
$A = \pi r^2 = 103.1\ m^2$ (1dp)

GCSE (9–1)
MATHEMATICS

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Assessment Objective	Qu.	Topic	R	A	G
AO1	1	Perimeter of square.			
AO1	2	Perimeter of rectangle.			
AO1	3	Circumference of circle.			
AO1	4	Find missing length given perimeter.			
AO1	5	Perimeter of semicircle.			
AO2	6	Explain formula for circumference.			
AO2	7	Perimeter of composite shape.			
AO2	8	Perimeter of composite shape.			
AO3	9	Solve perimeter problem.			
AO3	10	Perimeter and circumference.			

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