4.11 Circles: Circumference and Area: 30-minute Pack

Calculators not allowed · about 30 minutes

Name: _____ Date: ____ / ____ / _____

Answer ALL questions. Show all your working.

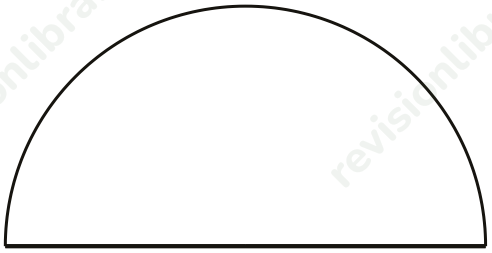
1 A circular sign has radius 25 cm. A border of width 3 cm is painted around the outside. Find the area of the painted border. Give your answer to the nearest whole cm^2. Use $\pi = 3.14$.

(3)

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2 A semicircular placemat has diameter 10 cm.

Diagram NOT accurately drawn



(a) Find the area of the semicircle, giving your answer in terms of π. **(1)**

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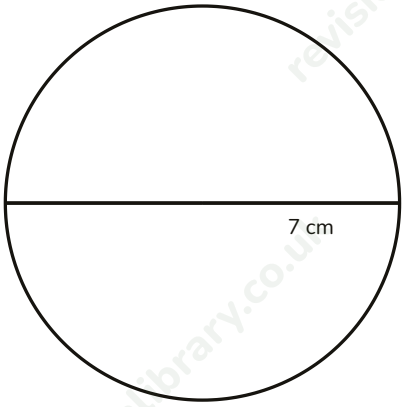
(b) Give the area as a decimal to 1 decimal place, and find the perimeter of the semicircle including the straight edge, to 1 decimal place. **(2)**

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3 Two identical semicircles, each with radius 7 cm, are joined along their diameters to make one shape. Use π = 3.14. Find the perimeter of this shape to 1 decimal place.

Diagram NOT accurately drawn



(3)

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4 A circle has diameter 2 cm. Work out its circumference. Use π = 3.14.

(2)

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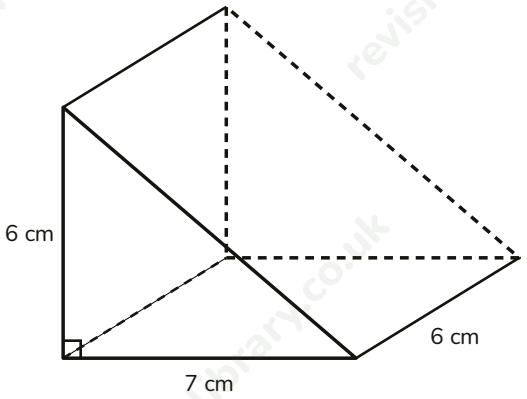
5 A wheel has diameter 50 cm. Work out how far the wheel travels in 20 complete turns. Give your answer in metres. Use π = 3.14.

(3)

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6 A triangular prism has a right-angled triangle for its cross-section, with base 7 cm and height 6 cm. The prism is 6 cm long. Work out its volume.

Diagram NOT accurately drawn



(3)

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7 A circular plate has radius 10 cm. Calculate its circumference. Give your answer to 1 decimal place.

(2)

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8 A circle has radius 2 cm. Give its area in terms of π.

(2)

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9 Write down the formula for the circumference of a circle in terms of its radius r.

(1)

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10 A circle has radius 5 cm. Calculate its circumference. Give your answer in terms of π.

(1)

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Mark scheme · 4.11 Circles: Circumference and Area: 30-minute Pack

Question 1

area outer circle with r = 28: π x 28^2 = 2461.76 approx	M1
area inner circle with r = 25: π x 25^2 = 1962.5 approx; subtract	M1
499 cm² cao (2461.76 - 1962.5 = 499.26 -> 499 rounded to nearest whole)	A1

Answer: **499 cm^2**

Question 2

(a) use of area formula for semicircle = (1/2) x π x r^2 with r = 5	M1

(a) Answer: **12.5pi cm^2**

(b) convert 12.5pi to decimal using π = 3.14	M1
(b) area = 39.3 cm² and perimeter = 25.7 cm cao	A1

(b) Answer: **39.3 cm^2; 25.7 cm**

Question 3

recognise that joining two semicircles along diameters gives full circle circumference	M1
calculate circumference = 2pi r = 2 x 3.14 x 7	M1
44.0 cm cao	A1

Answer: **44.0 cm**

Question 4

3.14 x 2	M1
6.28 cm cao	A1

Answer: **6.28 cm**

Question 5

3.14 x 50 = 157	M1
x 20 and ÷ 100	M1
31.4 m cao	A1

Answer: **31.4 m**

Question 6

cross-section area 1/2 x 7 x 6	M1
x 6	M1
126 cm³ cao	A1

Answer: **126 cm^3**

Question 7

use of circumference = 2 x π x r or π x d with r = 10	M1
62.8 cm cao	A1

Answer: **62.8 cm**

Question 8

π x 2^2	M1
4 π cm^2 cao	A1

Answer: **4 π cm^2**

Question 9

C = 2 x π x r oe cao	B1

Answer: **C = 2 π r**

Question 10

10pi cao	B1

Answer: **10pi cm**

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