4.11 Circles: Circumference and Area: Test Pack

Calculators not allowed · about 55 minutes

Name: _____ Date: ____ / ____ / _____

Answer ALL questions. Show all your working.

1 Write down the definition of the circumference of a circle.

(1)

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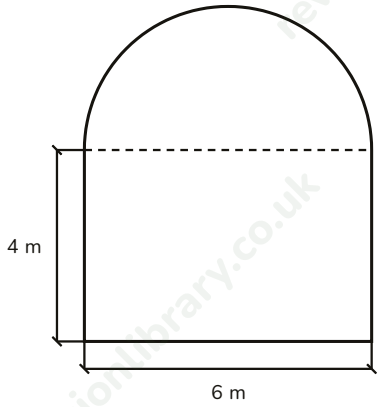
2 A square of side 8 cm has a quarter-circle of radius 4 cm removed from one corner (the quarter circle sits exactly in the corner). Find the area of the remaining shape. Give your answer to 1 decimal place. Use π = 3.14.

(4)

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3 A semicircular window sits on top of a rectangle. The rectangle is 6 m wide and 4 m high. The semicircle has diameter equal to the width of the rectangle. Find the total area of the window to 1 decimal place. Use π = 3.14.

Diagram NOT accurately drawn



(4)

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4 A school wants to fill a pool formed by a rectangle 20 m long and 8 m wide with a semicircular shallow end whose diameter is the width of the rectangle. The pool will be painted at a cost of £1.80 per square metre. Calculate the total area to be painted and the total cost. Give the area to 1 decimal place and the cost to the nearest penny. Use π = 3.14.

(a) Find the area of the rectangular part of the pool. **(1)**

.....

(b) Find the area of the semicircular end (diameter 8 m). **(1)**

.....

(c) Find the total area to be painted and give it to 1 decimal place. **(1)**

.....

(d) Calculate the total cost to paint the pool at £1.80 per square metre. Give the cost to the nearest penny. **(2)**

.....

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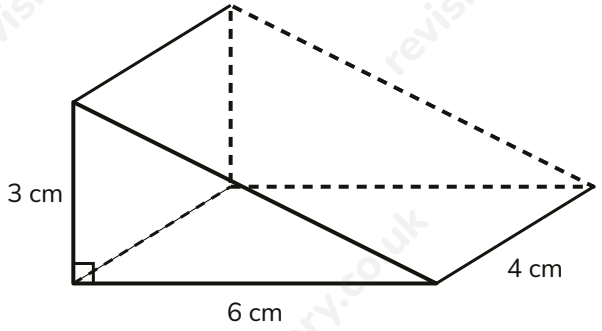
5 State the value of π that you should use in calculations to 2 decimal places.

(1)

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6 A triangular prism has a right-angled triangle for its cross-section, with base 6 cm and height 3 cm. The prism is 4 cm long. Work out its volume.

Diagram NOT accurately drawn

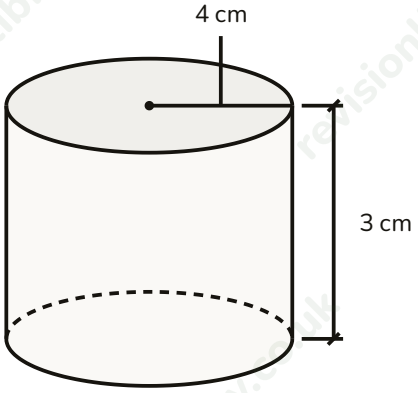


(3)

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7 A cylinder has radius 4 cm and height 3 cm. Work out its volume. Use π = 3.14.

Diagram NOT accurately drawn



(3)

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8 A circle has radius 4 cm. Work out its area. Use π = 3.14.

(2)

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9 A circular pond has radius 8 m. A fence is built right around the edge. Work out the length of the fence. Use π = 3.14.

(2)

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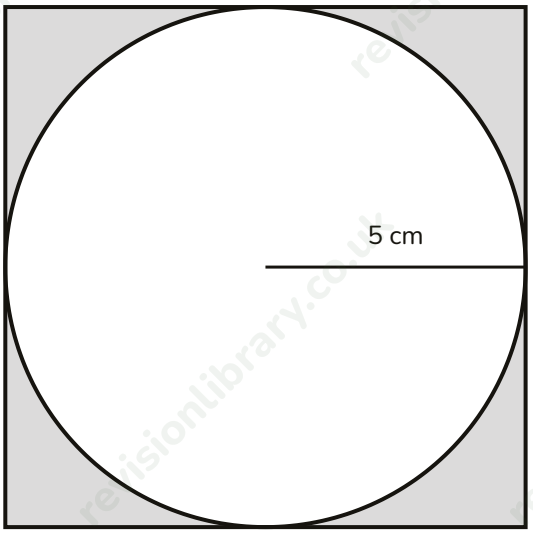
10 A circle has radius 10 cm. Give its area in terms of π.

(2)

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11 A circle of radius 5 cm fits exactly inside a square. Work out the area of the square not covered by the circle. Use π = 3.14.

Diagram NOT accurately drawn



(4)

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12 A circular flower bed has area 314 cm². Calculate its radius in cm, correct to 1 decimal place. Use π = 3.14.

(2)

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13 A circular table has diameter 1.4 m. Calculate its circumference. Give your answer to 1 decimal place. Use π = 3.14.

(2)

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14 A circular table has radius 60 cm. A tablecloth overhangs the table by 10 cm all around. Calculate the area of the tablecloth. Use π = 3.14.

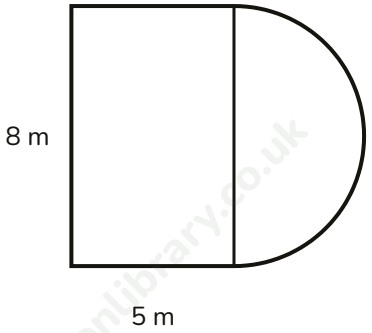
(3)

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15 A window is made from a rectangle with a semicircle on top. The rectangle is 8 m wide and 5 m high. The semicircle has diameter equal to the width of the rectangle.

Diagram NOT accurately drawn

Window shown rotated



(a) Find the area of the rectangular part. **(1)**

.....

(b) Find the area of the semicircular part (diameter 8 m). Give your answer to 1 decimal place, using π = 3.14. **(2)**

.....

(c) Find the total area of the window. Give your answer to 1 decimal place. **(2)**

.....

16 A circle has diameter 20 cm. Calculate its area. Give your answer in terms of π.

(1)

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Mark scheme · 4.11 Circles: Circumference and Area: Test Pack

Question 1

statement that the circumference is the distance around the outside of a circle, oe	B1

Answer: **The distance around the outside of a circle**

Question 2

find area of square = 8 x 8 = 64 cm²	M1
find area of quarter circle = (π x 4^2)/4 = 4pi	M1
subtraction: 64 - 4pi	M1
51.4 cm² cao	A1

Answer: **51.4 cm^2**

Question 3

find area of rectangle = 6 x 4 = 24	M1
find area of semicircle with r = 3: (1/2) x π x 3^2 = 4.5pi	M1
convert semicircle area to decimal using π = 3.14	M1
38.1 m² cao	A1

Answer: **38.1 m^2**

Question 4

(a) rectangle area = 20 x 8 = 160 m²	M1
(a) Answer: **160 m^2**	
(b) semicircle area = (1/2) x π x r^2 with r = 4	M1
(b) Answer: **8pi m^2**	
(c) add rectangle and semicircle areas: 160 + 8pi	M1
(c) Answer: **185.1 m^2**	
(d) multiply area 185.12 by 1.80	M1
(d) £333.22 cao	A1
(d) Answer: **£333.22**	

Question 5

π = 3.14 cao	B1

Answer: **3.14**

Question 6

cross-section area 1/2 x 6 x 3	M1
x 4	M1
36 cm³ cao	A1

Answer: **36 cm^3**

Question 7

3.14 x 4^2	M1
x 3	M1
150.72 cm³ cao	A1

Answer: **150.72 cm^3**

Question 8

3.14 x 4^2	M1
50.24 cm² cao	A1

Answer: **50.24 cm^2**

Question 9

2 x 3.14 x 8	M1
50.24 m cao	A1

Answer: **50.24 m**

Question 10

π x 10^2	M1
100 π cm^2 cao	A1

Answer: **100 π cm^2**

Question 11

square side 10	M1
square area 100	M1
circle area 3.14 x 5^2 = 78.5	M1
21.5 cm² cao	A1

Answer: **21.5 cm^2**

Question 12

use of area = π r^2 and rearrangement r = √area/&π;	M1
10.0 cm cao	A1

Answer: **10.0 cm**

Question 13

3.14 x 1.4 or equivalent method	M1
4.4 cao	A1

Answer: **4.4 m**

Question 14

find the tablecloth radius, 60 + 10 = 70	M1
3.14 x 70^2 or equivalent method	M1
15386 cao	A1

Answer: **15386 cm^2**

Question 15

(a) 40 cao	B1
(a) Answer: **40 m^2**	
(b) half x 3.14 x 4^2	M1
(b) 25.1 cao	A1
(b) Answer: **25.1 m^2**	
(c) add the rectangular and semicircular areas, 40 + 25.12	M1
(c) 65.1 cao	A1
(c) Answer: **65.1 m^2**	

Question 16

100pi cao	B1

Answer: **100pi cm^2**

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