3.16 Area and Circumference of Circles: 30-minute Pack

EDEXCEL 1MA1 · Calculator allowed · about 30 minutes

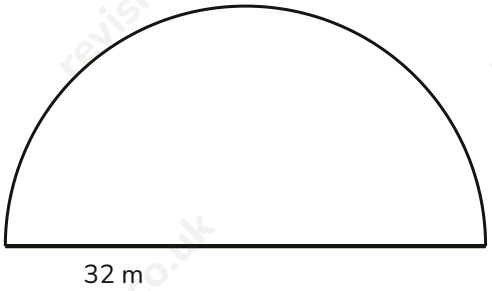
Total Marks

Name: _____ Date: ____ / ____ / _____

Answer ALL questions. Show all your working.

1 A semicircle has diameter 32 m.
Work out the perimeter of the semicircle, including the diameter. Give your answer correct to 3 significant figures.

Diagram NOT accurately drawn



(Total for Question 1 is 3 marks)

---

2 Work out the area of a circle with radius 5 cm. Use $\pi = 3.14$.

(Total for Question 2 is 2 marks)

---

3 A circular roundabout has diameter 12 m. Work out its area. Use $\pi = 3.14$ and give your answer to 1 decimal place.

(Total for Question 3 is 2 marks)

© Revision Library | revisionlibrary.co.uk

4 Work out the circumference of a circle with radius 2.5 cm. Use $\pi = 3.14$ and give your answer to 2 decimal places.

(Total for Question 4 is 3 marks)

---

5 A circular pond has radius 4 m. A path of width 1 m runs all around the pond (the path is a ring around the circle). Work out the area of the path. Use $\pi = 3.14$ and give your answer to 1 decimal place.

(Total for Question 5 is 3 marks)

---

6 Work out the circumference of a circle with radius 7 cm. Give your answer in terms of π.

(Total for Question 6 is 2 marks)

---

7 A circular badge has diameter 10 cm. Work out the area of the badge. Give your answer in terms of π.

(Total for Question 7 is 3 marks)

© Revision Library | revisionlibrary.co.uk

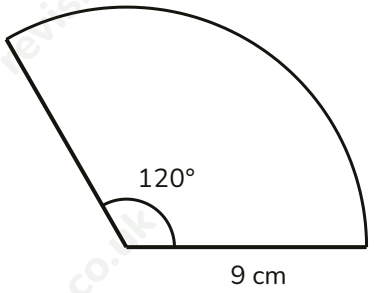
8 A circular table top has area 153.86 cm². Use π = 3.14. Work out the diameter of the table top, giving your answer to 1 decimal place.

(Total for Question 8 is 4 marks)

---

9 A sector of a circle has radius 9 cm and angle 120 degrees. Work out the length of the arc of the sector. Give your answer in terms of π.

Diagram NOT accurately drawn



(Total for Question 9 is 4 marks)

© Revision Library | revisionlibrary.co.uk

Mark scheme · 3.16 Area and Circumference of Circles: 30-minute Pack

Question 1

π x 32 / 2 (arc length)	**M1**
adds the diameter 32	**M1**
82.3 m	**A1**

Answer: 82.3 m

Question 2

use area = $\pi * r^2$, substitution: $3.14 * 5^2$	**M1**
78.5 cm² cao	**A1**

Answer: 78.5 cm^2

Question 3

use r = 6 m, area = $\pi * r^2 = 3.14 * 6^2$	**M1**
113.0 m² cao (3.14 * 36 = 113.04 rounds to 113.0 m² to 1 dp)	**A1**

Answer: 113.0 m^2

Question 4

use C = 2 * π * r, substitution: 2 * 3.14 * 2.5	**M1**
15.7 cm cao (2 * 3.14 * 2.5 = 15.7)	**A1**
answer to 2 dp 15.70 cm awrt	**A1**

Answer: 15.70 cm

Question 5

area of outer circle with radius 5 m and inner circle radius 4 m; method: area difference = $\pi * 5^2 - \pi * 4^2$	**M1**
substitute using 3.14: 3.14 * (25 - 16) = 3.14 * 9	**M1**
28.3 m² cao (3.14 * 9 = 28.26 rounds to 28.3 to 1 dp)	**A1**

Answer: 28.3 m^2

Question 6

use circumference = 2 π r or π d	**M1**
14 π cm cao	**A1**

Answer: 14 π cm

Question 7

use area = πr^2 with r = 5	**M1**
25 π cao	**A1**
include units: cm^2	**B1**

Answer: 25 π cm^2

Question 8

use area = $\pi * r^2$, so r^2 = area / π	**M1**
substitute: r^2 = 153.86 / 3.14 = 49.0	**M1**
r = 7.0 cm cao	**A1**
diameter = 14.0 cm cao with units	**A1**

Answer: 14.0 cm

Question 9

method: arc length = (angle/360) x circumference = (angle/360) x 2 π r	**M1**
substitute angle = 120, r = 9 to get (120/360) x 2 π x 9	**M1**
6 π cao	**A1**
units: cm	**B1**

Answer: 6 π cm

© Revision Library | revisionlibrary.co.uk