

GCSE Maths: Exact answers with π (Foundation): worksheet

GCSE Maths - Standard Form, Indices and Surds - Foundation - Lesson 6.6

Name: _____

Date: _____

Score: _____

16 questions. Write your answers in the spaces. Answers and step-by-step help are free at websink.site/gcse/maths/ch06-standard-form-indices-surds/foundation/exact-answers-with/

Exercise 6N Exact answers with π

Non-calculator

1 Work out the area of each circle. Give your answers in terms of π .

(a) radius 3 cm

Answer:

(b) radius 5 cm

Answer:

(c) radius 6 cm

Answer:

(d) radius 10 cm

Answer:

2 Work out the circumference of each circle. Give your answers in terms of π .

(a) diameter 8 cm

Answer:

(b) diameter 10 cm

Answer:

(c) diameter 14 cm

Answer:

(d) diameter 20 cm

Answer:

3 Work out the circumference of each circle. Give your answers in terms of π .

(a) radius 4 cm

Answer:

(b) radius 7 cm

Answer:

(c) radius 9 cm

Answer:

4 Work out each. Leave π in your answers.

(a) $3\pi + 5\pi$

Answer:

(b) $9\pi - 4\pi$

Answer:

(c) $12\pi - \pi$

Answer:

(d) $7\pi + 2\pi$

Answer:

5 Work out each. Leave π in your answers.

(a) $4\pi \times 3$

Answer:

(b) $\frac{3}{4}\pi \times 8$

Answer:

(c) $5\pi \times 6$

Answer:

(d) $6\pi \div 2$

Answer:

(e) $10\pi \div 4$

Answer:

6 Use a calculator to write each exact answer as a decimal.

(a) $36\pi \text{ cm}^2$ (to 1 decimal place)

Answer:

(b) $10\pi \text{ cm}$ (to 1 decimal place)

Answer:

(c) $25\pi \text{ m}^2$ (to 2 decimal places)

Answer:

7 Work out the area of each shape. Leave π in your answers.

(a) a quarter circle of radius 8 cm

Answer:

(b) a quarter circle of radius 10 cm

Answer:

(c) a semicircle of radius 6 cm

Answer:

(d) a semicircle of radius 4 cm

Answer:

8 Work out the perimeter of each shape. Leave π in your answers.

(a) a semicircle of radius 5 cm

Answer:

(b) a semicircle of diameter 12 cm

Answer:

(c) a quarter circle of radius 8 cm

Answer:

9 Work out the exact area of each shape. It is a rectangle with a semicircle on one end (the diameter of the semicircle is the width of the rectangle).

(a) rectangle 8 cm by 5 cm

Answer:

(b) rectangle 12 cm by 7 cm

Answer:

10 A cylindrical can has radius 3 cm and height 10 cm. Work out its volume in terms of π .

Answer:

11 Find the radius of each circle.

(a) area $49\pi \text{ cm}^2$

Answer:

(b) area $100\pi \text{ cm}^2$

Answer:

(c) circumference $14\pi \text{ cm}$

Answer:

(d) circumference $30\pi \text{ cm}$

Answer:

12 A circular running track has an outer radius of 10 m and an inner radius of 6 m. Work out the exact area of the track.

Answer:

13 Is the fraction $22/7$ equal to π ? Explain your answer.

Answer:

14 Sam says the area of a circle with radius 6 cm is $12\pi \text{ cm}^2$. Explain his mistake and give the correct exact area.

Answer:

15 Show that the area of a semicircle with diameter 10 cm is $12.5\pi \text{ cm}^2$.

Answer:

16 Circle A has radius 2 cm and circle B has radius 6 cm. Show that the area of B is 9 times the area of A.

Answer: