

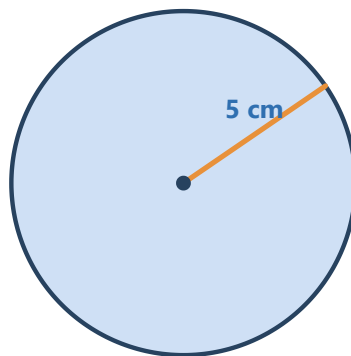
GCSE Maths: Area of a circle, semicircles and composite shapes (Foundation): answers

GCSE Maths - Perimeter, Area and Circles - Foundation - Lesson 18.7

Answers. Final answers to the worksheet questions. Full step-by-step solutions for every question are free at websink.site/gcse/maths/ch18-perimeter-area-circles/foundation/area-of-a-circle-semicircles-and-composite-shapes/

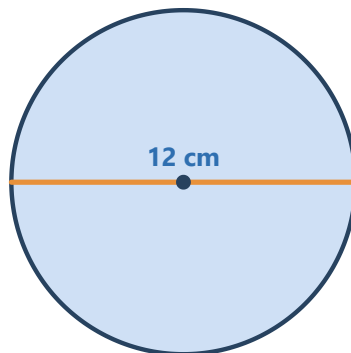
Exercise 18G Area of a circle, semicircles and composite shapes Calculator allowed

- 1 Work out the area of the circle. Give your answer to 1 decimal place.



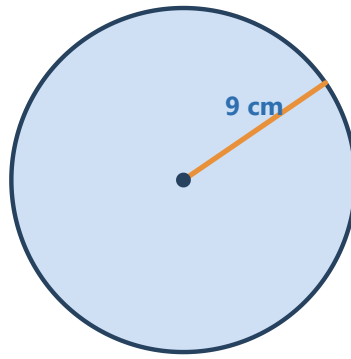
Answer: 78.5 cm²

- 2 Work out the area of the circle. Give your answer to 1 decimal place.



Answer: 113.1 cm²

- 3 Work out the area of the circle with radius 9 cm. Give your answer (a) in terms of π and (b) to 1 decimal place.



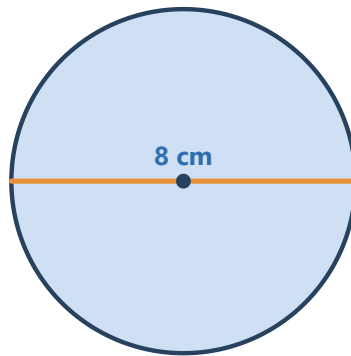
(a) in terms of π

Answer: $81\pi \text{ cm}^2$

(b) 1 d.p.

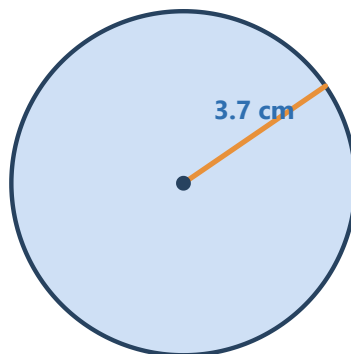
Answer: 254.5 cm^2

4 Work out the area of a circle with diameter 8 cm. Give your answer in terms of π .



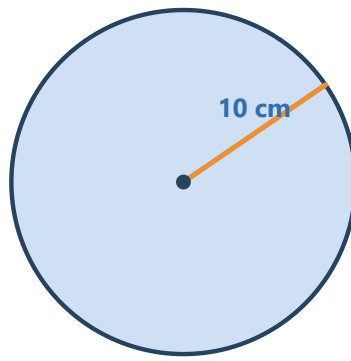
Answer: $16\pi \text{ cm}^2$

5 Work out the area of the circle. Give your answer to 3 significant figures.



Answer: 43.0 cm^2

6 Estimate the area of the circle by using $\pi \approx 3$. Then use your calculator to find the area to 1 decimal place.



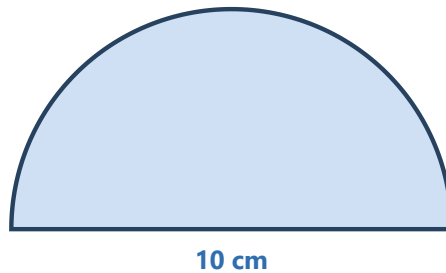
(a) estimate

Answer: 300 cm²

(b) calculator

Answer: 314.2 cm²

7 Work out (a) the area and (b) the perimeter of the semicircle. Give your answers to 1 decimal place.



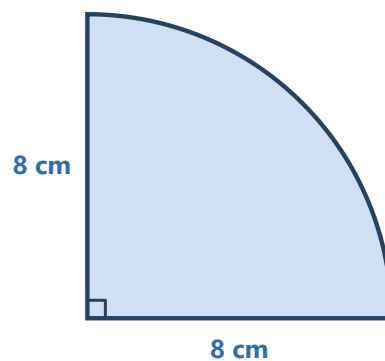
(a) area

Answer: 39.3 cm²

(b) perimeter

Answer: 25.7 cm

8 The shape is a quarter of a circle. Work out (a) its area and (b) its perimeter. Give both answers in terms of π .



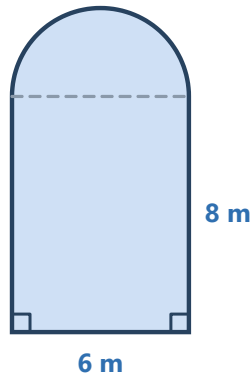
(a) area

Answer: 16π cm²

(b) perimeter

Answer: $(16 + 4\pi)$ cm

- 9 The diagram shows a window made from a rectangle and a semicircle. Work out (a) the area and (b) the perimeter. Give your answers to 1 decimal place.



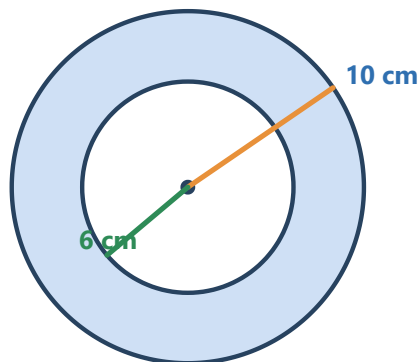
(a) area

Answer: 62.1 m²

(b) perimeter

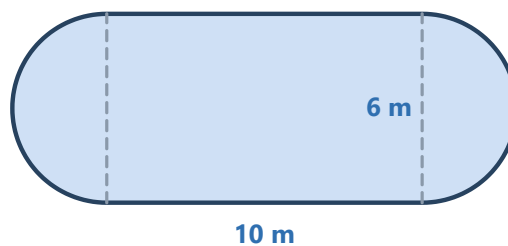
Answer: 31.4 m

- 10 The diagram shows a ring. Work out the shaded area. Give your answer in terms of π .



Answer: 64π cm²

- 11 A running track is a rectangle with a semicircle at each end, as shown. Work out (a) the distance round the track and (b) the area inside the track. Give your answers in terms of π .



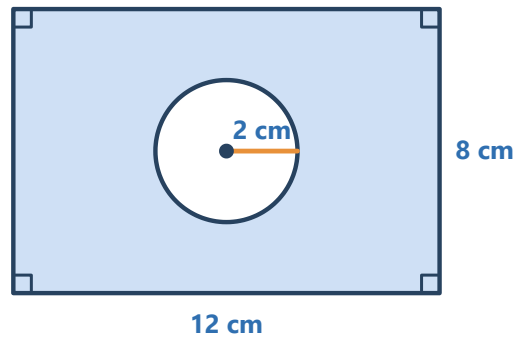
(a) perimeter

Answer: $(20 + 6\pi)$ m

(b) area

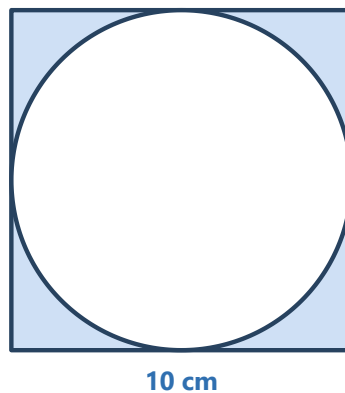
Answer: $(60 + 9\pi)$ m²

- 12** A metal plate is a rectangle 12 cm by 8 cm with a circular hole of radius 2 cm cut out. Work out the area of the plate. Give your answer to 1 decimal place.



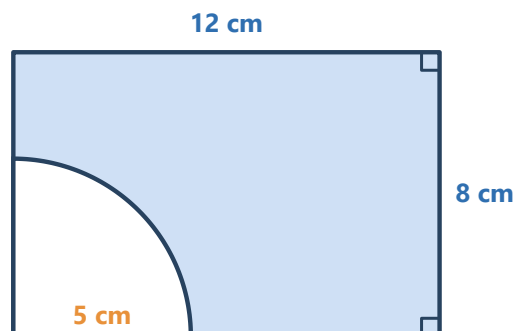
Answer: 83.4 cm²

- 13** A circle just touches all four sides of a square of side 10 cm. Work out the shaded area. Give your answer to 1 decimal place.



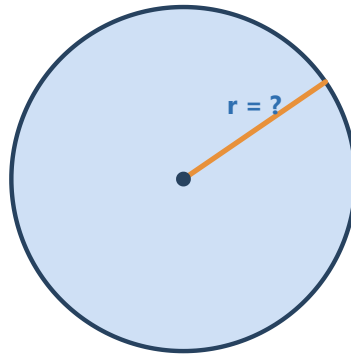
Answer: 21.5 cm²

- 14** A quarter circle of radius 5 cm is cut from a 12 cm by 8 cm rectangle. Work out the shaded area to 3 significant figures.



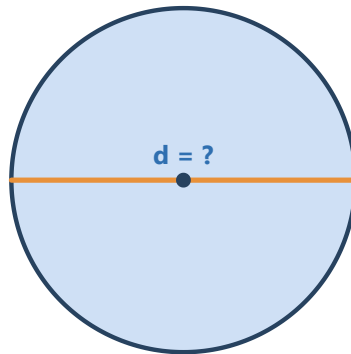
Answer: 76.4 cm^2

- 15** The area of a circle is $64\pi \text{ cm}^2$. Work out the radius.



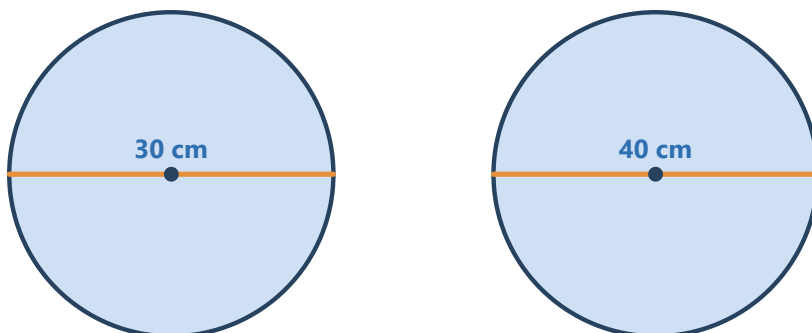
Answer: 8 cm

- 16** The area of a circle is 100 cm^2 . Work out the diameter. Give your answer to 1 decimal place.



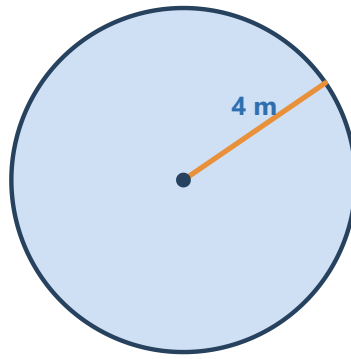
Answer: 11.3 cm

- 17** A pizza shop sells a medium pizza (diameter 30 cm) for £8 and a large pizza (diameter 40 cm) for £12. Which is better value for money? Show your working.



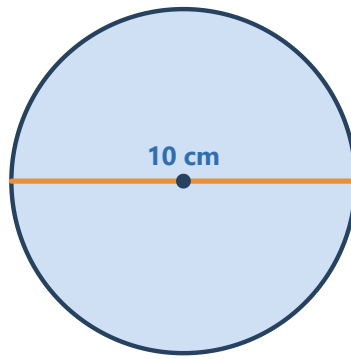
Answer: Large: 0.95p per cm^2 against 1.13p for medium; the large is better value

- 18** A circular lawn has radius 4 m. Turf costs £3.50 per square metre and must be bought in whole square metres. Work out the cost of the turf.



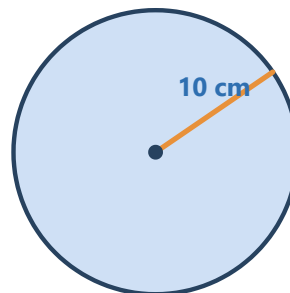
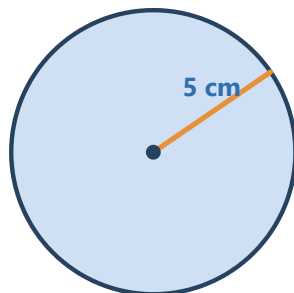
Answer: £178.50

- 19** Kai says: "The area of a circle with diameter 10 cm is $\pi \times 10^2 = 314 \text{ cm}^2$." Explain his mistake and work out the correct area to 1 decimal place.



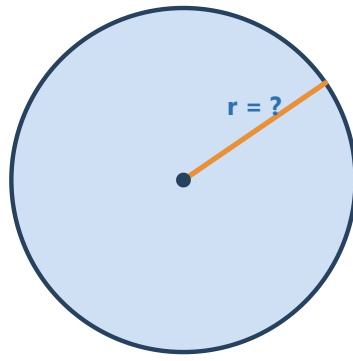
Answer: He used the diameter; area = 78.5 cm^2

- 20** Show that the area of a circle with radius 10 cm is 4 times the area of a circle with radius 5 cm.



Answer: $100\pi = 4 \times 25\pi$

- 21** A circle has the same value for its area (in cm^2) as for its circumference (in cm). Work out its radius.



Answer: 2 cm