

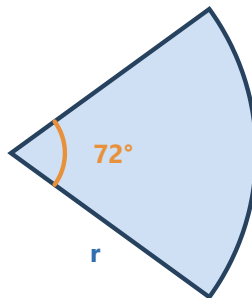
GCSE Maths: Arc lengths and areas of sectors (Higher): answers

GCSE Maths - Perimeter, Area and Circles - Higher - Lesson 18.8

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/higher/arc-lengths-and-areas-of-sectors/

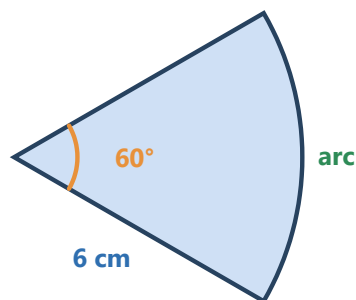
Exercise 18H Arc lengths and areas of sectors Calculator allowed

- 1 The sector has an angle of 72° . Write 72 out of 360 as a fraction of the whole circle, in its simplest form.



Answer: $\frac{1}{5}$

- 2 Work out (a) the arc length and (b) the area of the sector. Give your answers in terms of π .



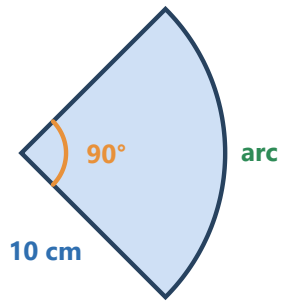
- (a) arc length

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

- (b) area

Answer: $6\pi\text{ cm}^2$

- 3 Work out (a) the arc length and (b) the area of the sector. Give your answers to 1 decimal place.



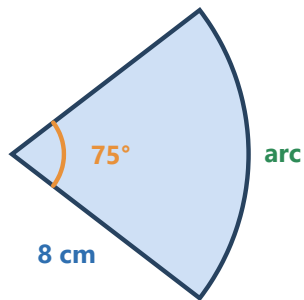
(a) arc length

Answer: 15.7 cm

(b) area

Answer: 78.5 cm²

4 Work out (a) the arc length and (b) the area of the sector. Give your answers to 1 decimal place.



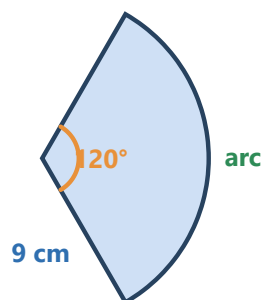
(a) arc length

Answer: 10.5 cm

(b) area

Answer: 41.9 cm²

5 Work out (a) the arc length and (b) the area of the sector. Give your answers in terms of π .



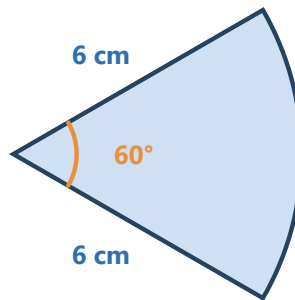
(a) arc length

Answer: 6π cm

(b) area

Answer: 27π cm²

6 Work out the perimeter of the sector (a) in terms of π and (b) to 1 decimal place.



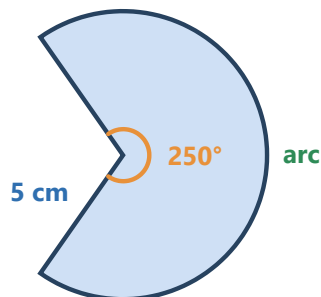
(a) in terms of π

Answer: $(12 + 2\pi)$ cm

(b) 1 d.p.

Answer: 18.3 cm

7 The sector of a circle has angle 250° (more than half the circle). Work out (a) the arc length and (b) the area. Give your answers to 1 decimal place.



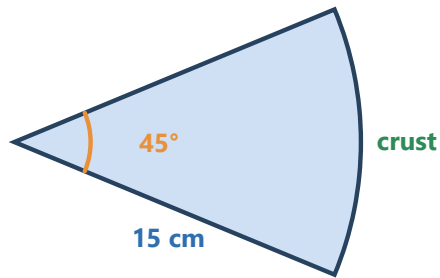
(a) arc length

Answer: 21.8 cm

(b) area

Answer: 54.5 cm²

8 A slice of pizza is a sector of angle 45° cut from a pizza of radius 15 cm. Work out (a) the area of the slice and (b) the length of the curved crust, to 1 decimal place.



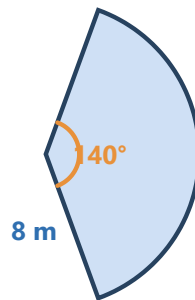
(a) area

Answer: 88.4 cm^2

(b) crust

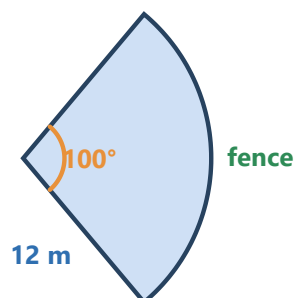
Answer: 11.8 cm

- 9 A garden sprinkler waters a sector of radius 8 m and angle 140° . Work out the area that is watered, to 1 decimal place.



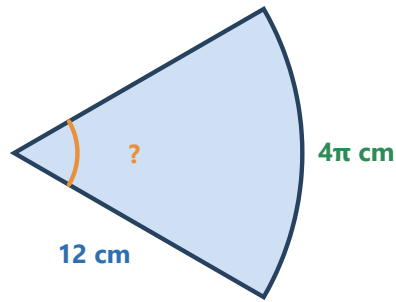
Answer: 78.2 m^2

- 10 A fence runs round the curved edge of a sector-shaped lawn. The radius of the lawn is 12 m and the angle is 100° . Fencing costs $\pounds 8$ per metre. Work out the cost of the fence, to the nearest pound.



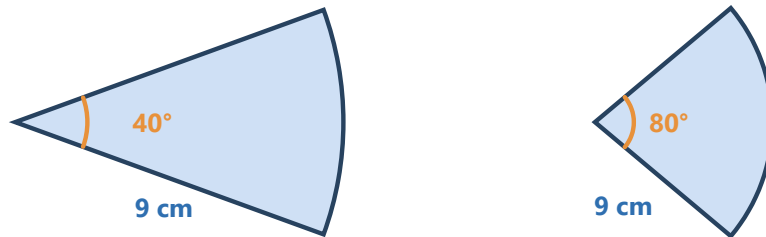
Answer: $\pounds 168$

- 11 The arc length of this sector is $4\pi\text{ cm}$ and the radius is 12 cm . Work out the angle of the sector.



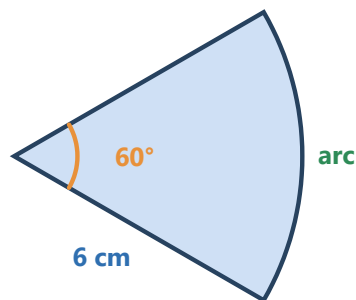
Answer: 60°

- 12** Sector A has angle 40° and sector B has angle 80° . Both have radius 9 cm. Show that sector B has twice the arc length and twice the area of sector A.



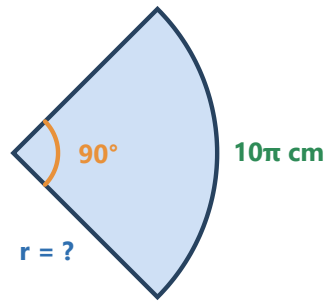
Answer: Arc: 4π and 2π ; area: 18π and 9π ; B is double

- 13** Ella says: "The arc length of a 60° sector with radius 6 cm is $(60/360) \times \pi \times 6^2$." Explain her mistake and give the correct arc length in terms of π .



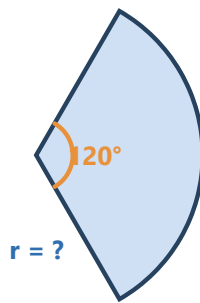
Answer: She used the area formula; arc length = 2π cm

- 14** The arc length of a sector is 10π cm and its angle is 90° . Work out the radius.



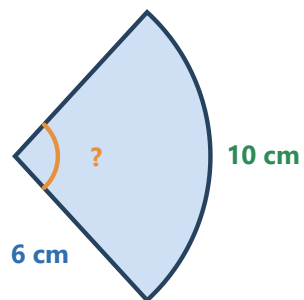
Answer: 20 cm

- 15** The area of this sector is $12\pi \text{ cm}^2$ and its angle is 120° . Work out the radius.



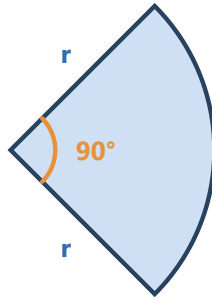
Answer: 6 cm

- 16** The arc length of a sector of radius 6 cm is 10 cm. Work out the angle of the sector to 1 decimal place.



Answer: 95.5°

- 17** A sector has radius r and angle 90° . Show that its perimeter is $r(\pi + 4) \div 2$.



Answer: Perimeter = $r(\pi + 4) \div 2$