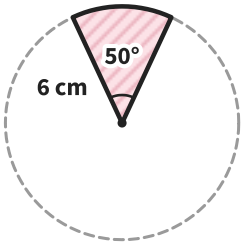
# Area of a Sector

ANSWERS

**1**

Find the area of the sector.
Give your answer to 1 decimal place.




Area = $\frac{\text{angle}}{360} \times \pi \times r^2$

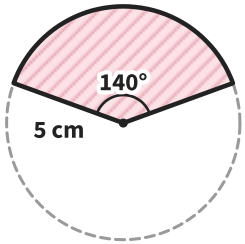
**angle =** 50° **r =** 6 cm

**Area =** $\frac{50}{360} \times \pi \times 6^2$

**Answer** 15.7 cm²

**2**

Find the area of the sector.
Give your answer to 1 decimal place.




Area = $\frac{\text{angle}}{360} \times \pi \times r^2$

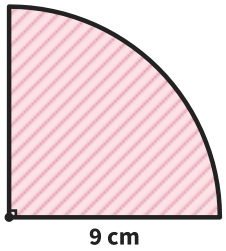
**angle =** 140° **r =** 5 cm

**Area =** $\frac{140}{360} \times \pi \times 5^2$

**Answer** 30.5 cm²

**3**

This shape is a quarter circle. Find its area.
Give your answer to 1 decimal place.




Area = $\frac{\text{angle}}{360} \times \pi \times r^2$

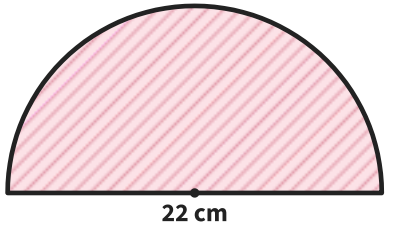
**angle =** 90° **r =** 9 cm

**Area =** $\frac{90}{360} \times \pi \times 9^2$

**Answer** 63.6 cm²

**4**

This shape is a semicircle. Find its area.
Give your answer to 1 decimal place.




Area = $\frac{\text{angle}}{360} \times \pi \times r^2$

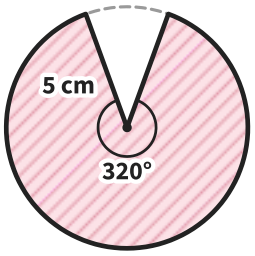
**angle =** 180° **r =** 11 cm

**Area =** $\frac{180}{360} \times \pi \times 11^2$

**Answer** 190.1 cm²

**5**

Find the area of the sector.
Give your answer to 2 decimal places.



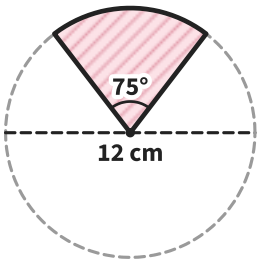

$\frac{320}{360} \times \pi \times 5^2$

$= 69.813...$

**Answer** 69.81 cm²

**6**

The circle has a diameter of 12 cm.
Find the area of the shaded sector.
Give your answer to 1 decimal place.



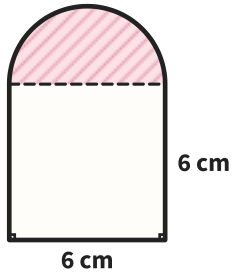

$r = 12 \div 2 = 6$

$\frac{75}{360} \times \pi \times 6^2 = 23.561...$

**Answer** 23.6 cm²

**7**

The shape is a square with a semicircle on one side. Find the area of the shape.
Give your answer to 1 decimal place.



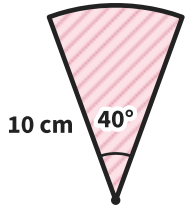

$36 + \frac{1}{2} \times \pi \times 3^2$

$= 36 + 14.137...$

**Answer** 50.1 cm²

**8**

A sector has an angle of 40° and a radius of 10 cm. Leah works out its area as $\frac{40}{360} \times \pi \times 20 = 7.0$ cm². Explain her mistake, then find the area to 1 decimal place.




$\pi \times 20$ gives the arc length

$\frac{40}{360} \times \pi \times 10^2 = 34.906...$

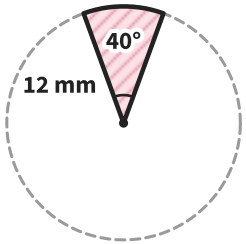
**Answer** 34.9 cm²

# Area of a Sector *further practice*

ANSWERS

**9**

Find the area of the sector.
Give your answer to 1 decimal place.



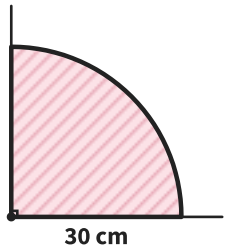

$\frac{40}{360} \times \pi \times 12^2 = 50.265...$

50.3

**Answer** _____ mm²

**10**

A corner shelf is a quarter circle with a radius of 30 cm. Find the area of the top of the shelf. Give your answer to 1 decimal place.



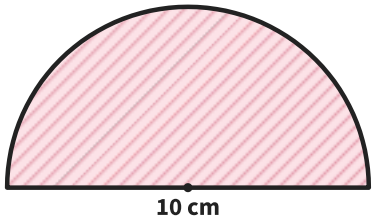

$\frac{1}{4} \times \pi \times 30^2 = 706.858...$

706.9

**Answer** _____ cm²

**11**

A protractor is a semicircle that measures 10 cm across its straight edge.
Find its area. Give your answer to 2 decimal places.




$r = 5$

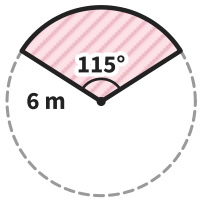
$\frac{1}{2} \times \pi \times 5^2 = 39.269...$

39.27

**Answer** _____ cm²

**12**

A garden lamp lights up a sector of a patio. The sector has an angle of 115° and a radius of 6 m. Find the area it lights up.
Give your answer to 1 decimal place.




$\frac{115}{360} \times \pi \times 6^2 = 36.128...$

36.1

**Answer** _____ m²

**13**

Which sector has the bigger area, A or B? By how much? Give your answer to 1 decimal place.




A: $\frac{70}{360} \times \pi \times 9^2 = 49.480...$

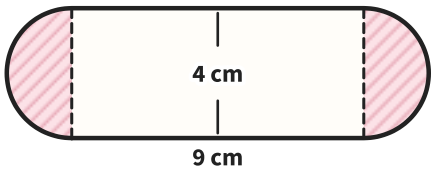
B: $\frac{90}{360} \times \pi \times 8^2 = 50.265...$

B, by 0.8 cm²

**Answer** _____

**14**

The shape is a rectangle with a semicircle on each end. Find its area.
Give your answer to 1 decimal place.




rectangle $9 \times 4 = 36$

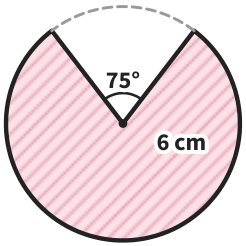
two semicircles: $\pi \times 2^2 = 12.566...$

48.6

**Answer** _____ cm²

**15**

A sector of 75° is cut out of a circle of radius 6 cm. Find the area of the shaded part that is left. Give your answer to 1 decimal place.




angle $= 360 - 75 = 285°$

$\frac{285}{360} \times \pi \times 6^2 = 89.535...$

89.5

**Answer** _____ cm²

**16**

Is Sam right? Use quarter circles with radii of 4 cm and 8 cm to explain.

> **Sam**
> If I double the radius of a sector and keep the angle the same, its area doubles.

$\frac{1}{4} \times \pi \times 4^2 = 4\pi$

$\frac{1}{4} \times \pi \times 8^2 = 16\pi$

$16\pi$ is $4 \times 4\pi$

No, it is four times as big

**Answer** _____