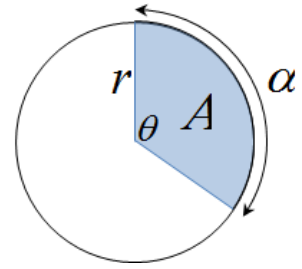


# Review - Arc Sectors & Radians

## Part I — Finding the Central Angle

Given radius and arc length OR sector area



### Converting radians ↔ degrees:

- $\frac{\theta}{360} = \frac{\text{radians}}{2\pi} = \frac{\text{arc length}}{\text{circumference}} = \frac{A_{\text{sector}}}{A_{\text{circle}}}$
- $\text{radians} = \frac{\text{arc length}}{\text{radius}}$

- A circle has a radius of 10 cm and an arc length of 20 cm.
  - Find the central angle in radians.
  - Find the central angle in degrees.
  - Find the area of the sector.
- A circle has a radius of 15 cm and an arc length of 15 cm.
  - Find the central angle in radians.
  - Find the central angle in degrees.
  - Find the area of the sector.
- A circle has a radius of 50 mm and an arc length of 120 mm.
  - Find the central angle in radians.
  - Find the central angle in degrees.
  - Find the area of the sector.
- A circle has a radius of 8 cm and a sector area of 14 cm<sup>2</sup>.
  - Find the central angle in radians.
  - Find the central angle in degrees.
  - Find the length of the arc.
- A circle has a radius of 4.85 m and a sector area of 25 m<sup>2</sup>.
  - Find the central angle in radians.
  - Find the central angle in degrees.
  - Find the length of the arc.
- A circle has a radius of 5 cm and a sector area of 50 cm<sup>2</sup>.
  - Find the central angle in radians.
  - Find the central angle in degrees.
  - Find the length of the arc.

## Part II — Finding Arc Length and Sector Area

*Given radius and central angle*

7. A circle has a radius of 12 cm and a central angle of  $30^\circ$ .
  - (a) Find the length of the arc.
  - (b) Find the area of the sector.
  
8. A circle has a radius of 4 m and a central angle of  $135^\circ$ .
  - (a) Find the length of the arc.
  - (b) Find the area of the sector.
  
9. A circle has a radius of 20 mm and a central angle of 2.5 rad.
  - (a) Find the length of the arc.
  - (b) Find the area of the sector.
  
10. A circle has a radius of 0.60 m and a central angle of  $300^\circ$ .
  - (a) Find the length of the arc.
  - (b) Find the area of the sector.

## Part III — Real-World Applications

*Applying arc and sector formulas in context*

11. A pizza slice has a crust corresponding to a central angle of  $72^\circ$  on a circle of radius 25 cm.
  - (a) Find the crust length (arc).
  - (b) Find the area of the slice.
  
12. A Ferris-wheel car sweeps out a sector of area  $100 \text{ m}^2$  on a wheel of radius 15 m.
  - (a) Find the central angle in radians.
  - (b) Find the central angle in degrees.
  - (c) Find the length of the arc travelled by the car.
  
13. A clock's minute hand is 0.15 m long and moves through  $60^\circ$  in 10 minutes.
  - (a) Find the distance its tip travels.
  - (b) Find the area it sweeps out.
  
14. A sector has an area of  $18 \text{ cm}^2$  and an arc length of 9 cm.
  - (a) Find the radius of the circle.
  - (b) Find the central angle in radians.
  - (c) Find the central angle in degrees.