

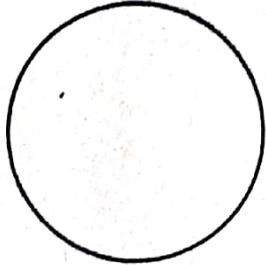
March 27

Arc Length of a Sector

θ ← theta
(used for angles)

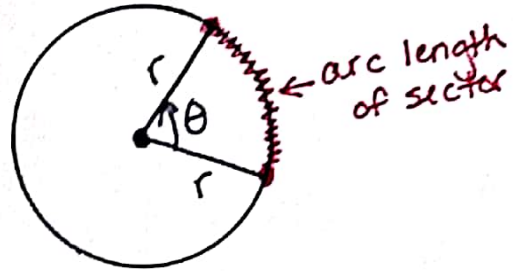
circumference:

$$C = 2\pi r$$

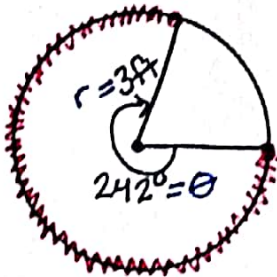


arc length of a sector:

$$s = \frac{\theta}{360} \cdot 2\pi r$$



(Ex1) Find arc length, solve for s.



$$s = \frac{\theta}{360} \cdot 2\pi r$$

$$s = \frac{242}{360} \cdot 2 \cdot \pi \cdot 3$$

$$s = 12.67 \text{ ft}$$

(Ex2) Find arc length of a sector with radius 7 in and central angle $135^\circ = \theta$. solve for s

$$s = \frac{\theta}{360} \cdot 2\pi r$$

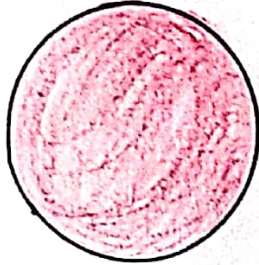
$$s = \frac{135}{360} \cdot 2 \cdot \pi \cdot 7$$

$$s = 16.49 \text{ in}$$

Area of a Sector

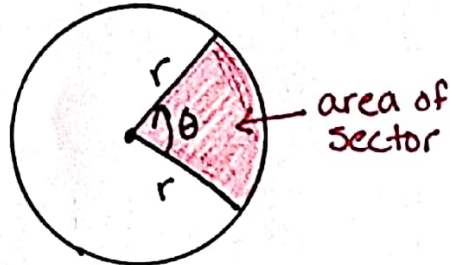
area:

$$A = \pi r^2$$



area of a sector:

$$A_s = \frac{\theta}{360} \cdot \pi r^2$$



Ex3 Find area of the sector. Solve for A_s



$$A_s = \frac{\theta}{360} \cdot \pi r^2$$

$$A_s = \frac{54}{360} \cdot \pi \cdot 17^2$$

$$A_s = 136.19 \text{ m}^2$$

Mixed Practice

Ex4 Given area of a sector is 176 ^{= A_s} yd² and central angle is 300°, find radius. solve for r

$$A_s = \frac{\theta}{360} \cdot \pi r^2$$

$$176 = \frac{300}{360} \cdot \pi \cdot r^2$$

$$\frac{176}{2.62} = \frac{2.62}{2.62} \cdot r^2$$

$$\sqrt{67.23} = \sqrt{r^2}$$

$$8.20 \text{ yd} = r$$

Ex 5 Given arc length of a sector is 6π cm and radius is $r = 3.4$ cm, find central angle. solve for θ

$$s = \frac{\theta}{360} \cdot 2\pi r$$

$$6\pi = \frac{\theta}{360} \cdot 2 \cdot \pi \cdot 3.4$$

$$\frac{18.85}{21.36} = \frac{\theta}{360} \cdot \frac{21.36}{21.36}$$

$$360 \cdot .88 = \frac{\theta}{360} \cdot 360$$

$$\boxed{317.65^\circ = \theta}$$

Ex 6 Given arc length of a sector is 4 km and central angle is 40° , find diameter. solve for r , then use to get d

$$s = \frac{\theta}{360} \cdot 2\pi r$$

$$4 = \frac{40}{360} \cdot 2 \cdot \pi \cdot r$$

$$\frac{4}{.70} = \frac{70 \cdot r}{70}$$

$$5.73 = r$$

$$5.73 \cdot 2 = \boxed{11.46 = d}$$