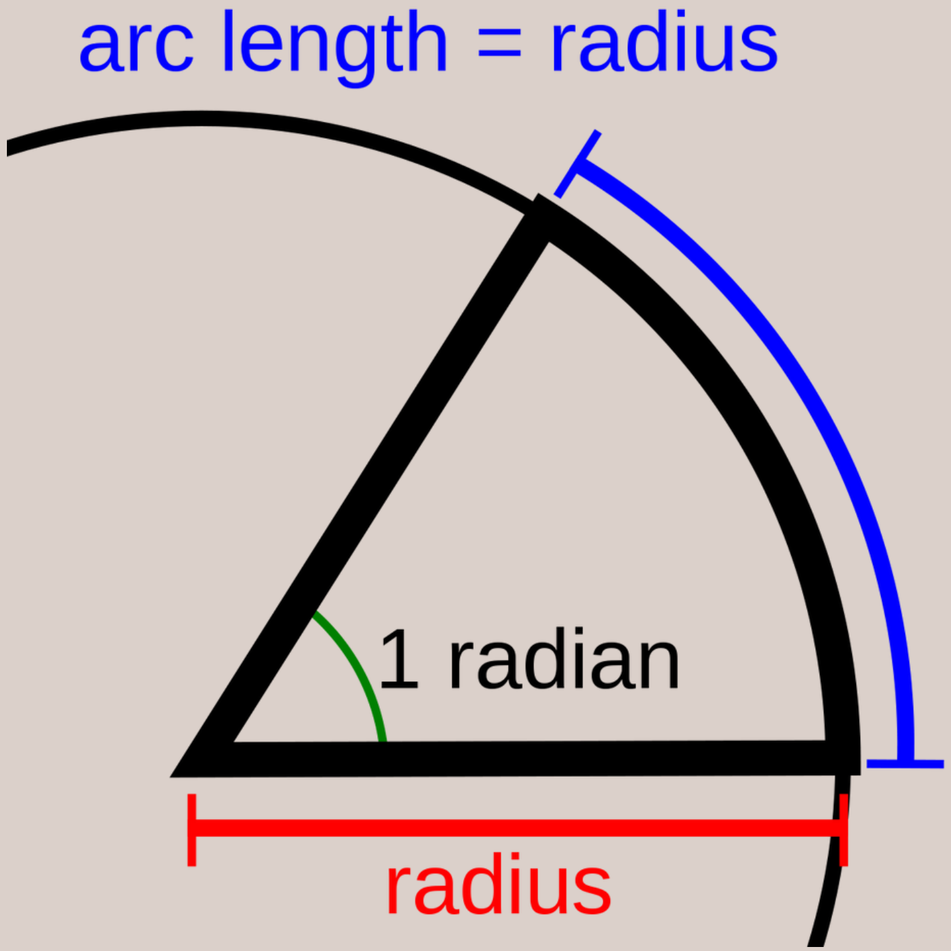
CIRCULAR MEASURE



Radian

π=3.14159265359...

π=180°

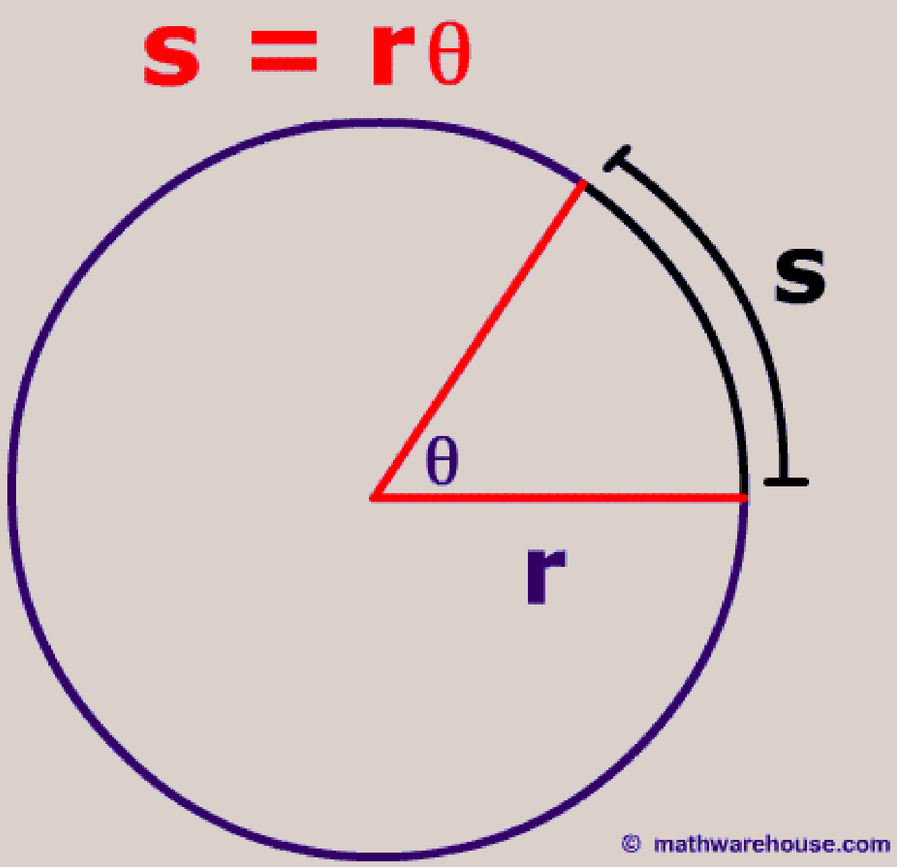
Degree to Radian:

Radian = Degree*π/180

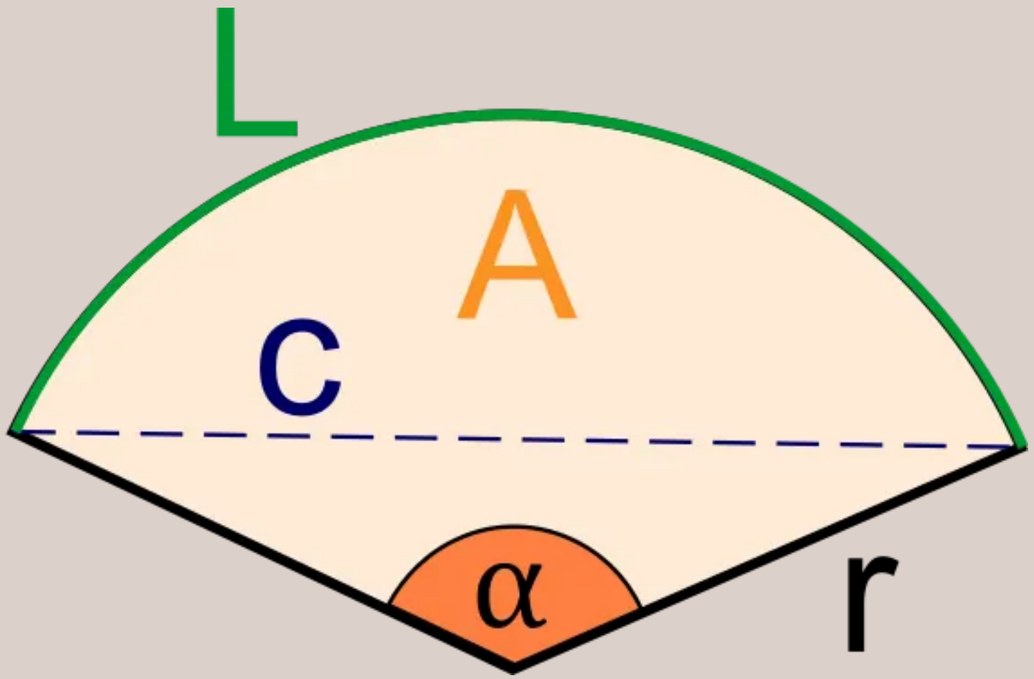
Radian to Degree:

Degree = Radian*180/π

Length of an arc
Area of a sector

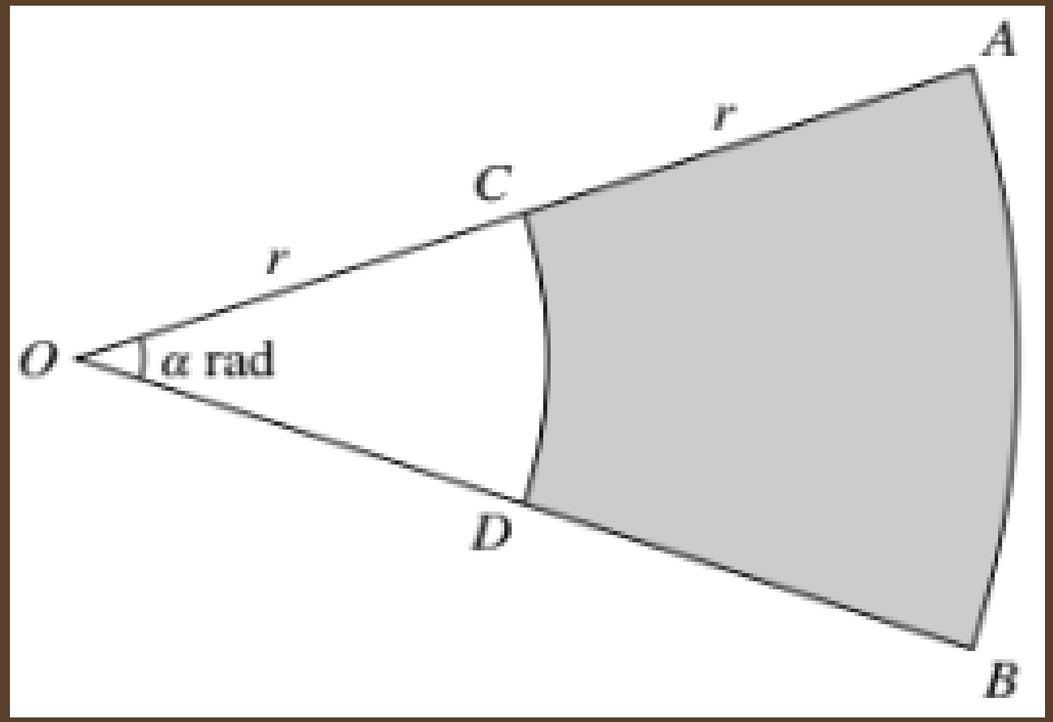


$$A = r^2 \cdot \alpha / 2$$



In the diagram OCA and ODB are radii of a circle with centre O and radius $2r$ cm. Angle $AOB = \alpha$ radians. CD and AB are arcs of circles with centre O and radii r cm and $2r$ cm respectively. The perimeter of the shaded region $ABDC$ is $4.4r$ cm.

(i) Find the value of α. [2]



$$P = r+r+CD+AD$$

$$CD = r\alpha \text{ (use formula } s = r\theta)$$

$$AD = 2r\alpha$$

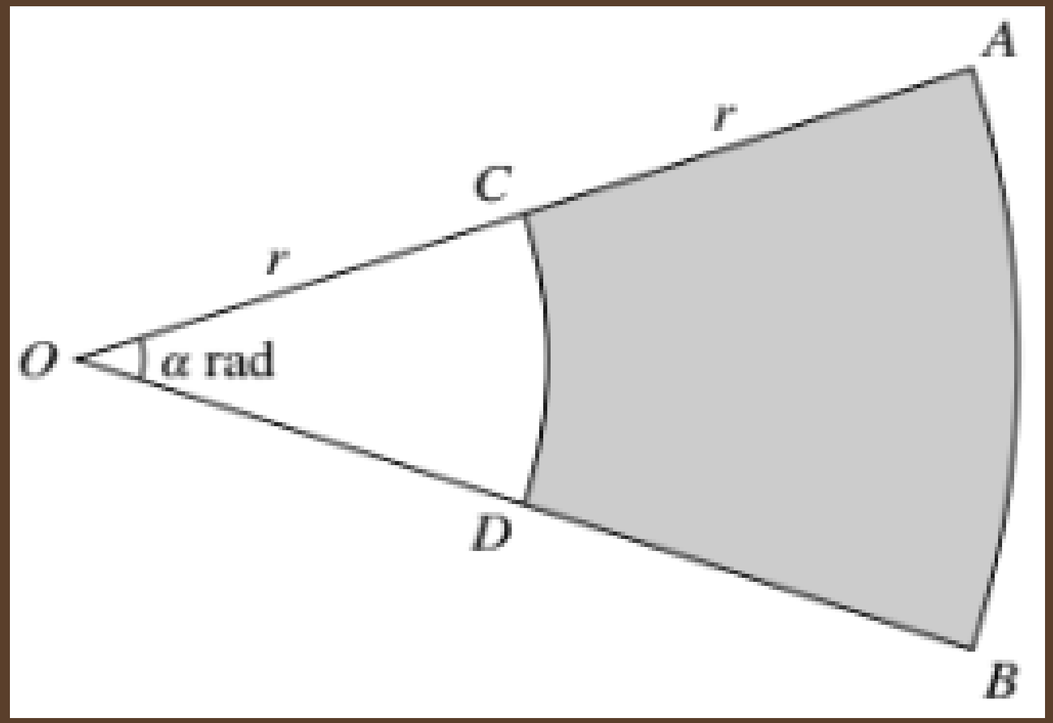
$$4.4r = 2r+r\alpha+2r\alpha$$

$$2.4r = \alpha(r+2r)$$

$$2.4r/3r = \alpha$$

$$\alpha = 0.8$$

It is given that the area of the shaded region is $30\,\text{cm}^2$. Find the value of r.



$30 = (2r)^2 * \alpha / 2$

$60 = 4r^2 * 0.8$

$4r^2 = 75$

$r^2 = 18.75$

$r = 4.33$ cm