# CIRCULAR SECTOR

TEXAN GLOBAL SCHOOL
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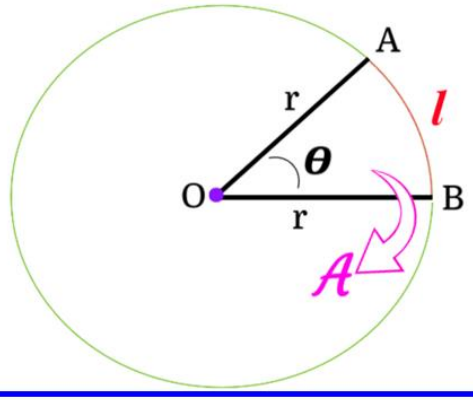
## CIRCULAR SECTOR

A circular sector is the portion of a circle bounded by two radii and a portion of the circumference called an arc. If AOB = 1 radian, the length of the arc AB is "r", hence:




$$l = r\theta$$

$$\mathcal{A} = \frac{r^2\theta}{2}$$

WHERE:
$l$ = arc length of a circumference.
r = radius.
$\theta$ = angule in radians.
$\mathcal{A}$ = area of the circular sector.

EXAMPLE: Find the length of the sector if its area is 10 $m^2$ and its radius is 5 m. Sketch the sector.

SOLUTION: 1) Finding the angle if r=5m and $\mathcal{A}=10m^2$:

$\mathcal{A} = \frac{r^2\theta}{2}$ ⇨

$$10 = \frac{(5)^2\theta}{2}$$

$$10 = \frac{25\theta}{2}$$

$$20 = 25\theta$$

$$\frac{20}{25} = \theta$$

$$\frac{4}{5} = \theta$$

$$\theta = 0.8\,rad$$

$$\theta = 45.84°$$

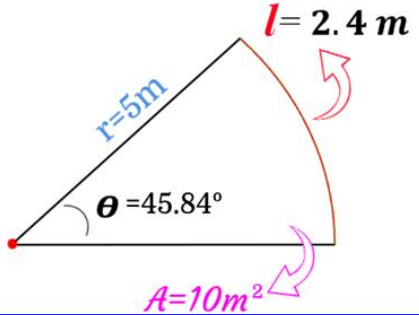
2) As r=5 m and $\theta$=4/5 rad, hence:

$l = r\theta$ ⇨ $l = (3)(\frac{4}{5})$

$$l = \frac{12}{5}$$

$$l = 2.4\,m$$

3) Sketching the sector:

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