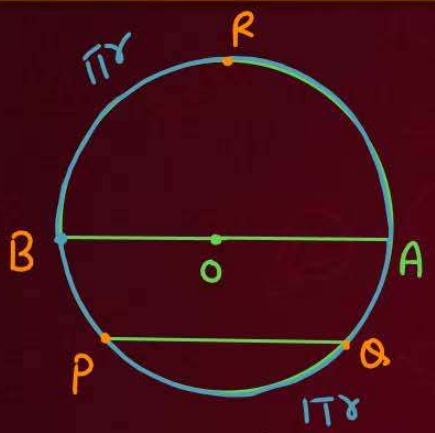
# Terms Related to Circles

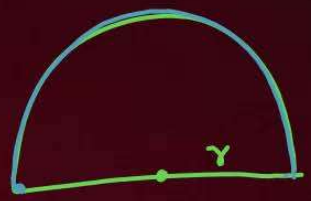



O → centre

OA → radius = r

AB → Diameter = (2r)

PQ → Chord




r = 7cm

πr + 2r

$\frac{22}{7} \times 7 + 14 = 36\text{cm}$

# Circumference of circle = 2πr

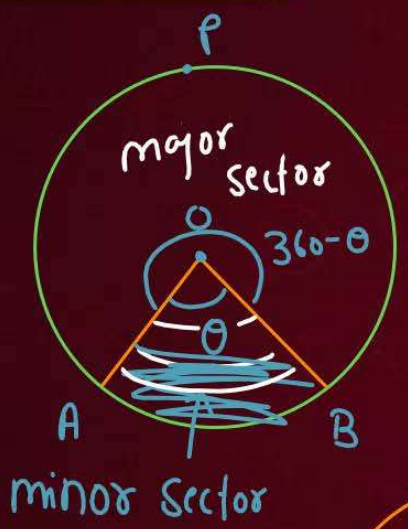
# " of semi-circle = πr

# Area of circle = $\pi r^2$

" of semi-circle = $\frac{\pi r^2}{2}$

Area of quadrant = $\frac{\pi r^2}{4}$

# All Formulas

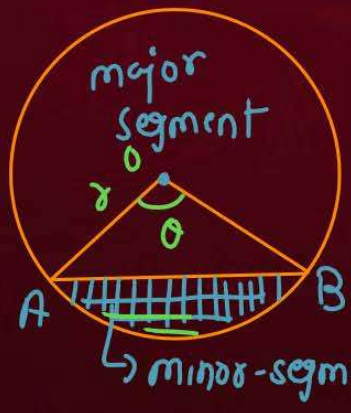



# Area of minor sector = $\frac{\theta}{360} \pi r^2$

# Area of major sector = $\pi r^2 - \frac{\theta}{360} \pi r^2$

# length of an arc :

$\frac{\theta}{360} \times 2\pi r$ = $\frac{360-\theta}{360} \pi r^2$




# Area of minor segment = Area of minor sector − Area of $\Delta OAB$

# Area of major segment = Area of circle − Area of minor segment

**QUESTION**

25 min = ?

The length of the minute hand of a clock is 14 cm. Find the area swept by the minute hand in 5 minutes.


$60 \text{ min} = 360^\circ$

$1 \text{ min} = \frac{360}{60} = 6^\circ$

$\theta = 5 \text{ min} = 30^\circ$

# Area of sector $= \frac{\theta}{360} \pi r^2$

$\frac{30}{360} \times \frac{22}{7} \times 14 \times 14 = \frac{154}{3} \text{ cm}^2$

12

3

**QUESTION**

In $\triangle AOB$ $\quad x+x+60=180$ $\quad 2x=120$ $\quad x=60^\circ$

$AOB$ is an equilateral $\triangle$

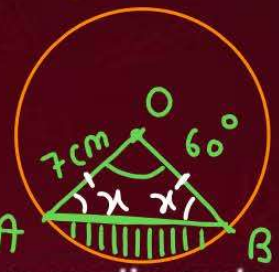
In a circle of radius 7 cm, an arc subtends an angle of 60° at the centre. Find:

$\sqrt{3}=1.73$

(i) The length of the arc $\frac{22}{3}$ cm

(ii) Area of the sector formed by the arc $\frac{77}{3}$ $cm^2$

(iii) Area of the segment formed by the corresponding chord




(i) length of an arc $= \frac{\theta}{360} \times 2\pi r$

$= \frac{60}{360} \times 2 \times \frac{22}{7} \times 7$

$= \frac{22}{3}$ cm

# Area of sector $= \frac{\theta}{360} \times \pi r^2$

$\frac{60}{360} \times \frac{22}{7} \times 7 \times 7$

$\frac{77}{3} cm^2$

# Area of minor segment =

Area of sector − ar of $\triangle AOB$

$\frac{77}{3} - \frac{\sqrt{3}}{4}(side)^2$

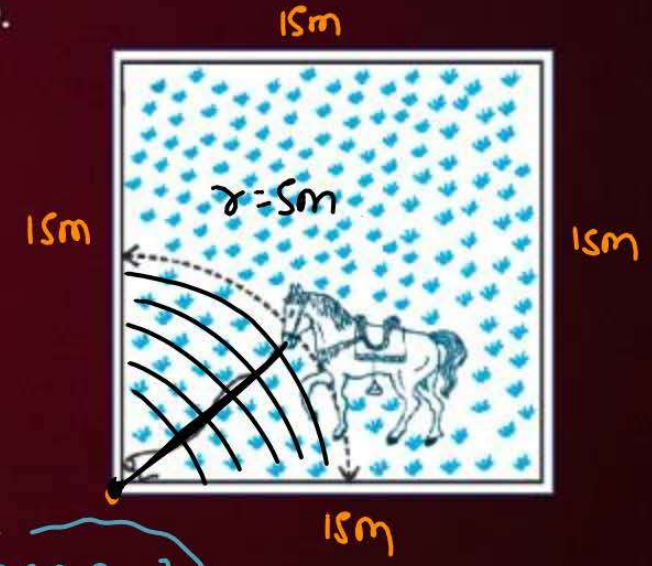
$\frac{77}{3} - \frac{\sqrt{3}}{4} \times 7^2$

$\left[\frac{77}{3} - \frac{49\sqrt{3}}{4}\right] cm^2$

**QUESTION**

A horse is tied to a peg at one corner of a square shaped grass field of side 15 m by means of a 5 m long rope (see given figure). Find $\pi = 3.14$

The area of the part of the field in which the horse can graze.




$\theta = 90^\circ$

$r = 5m$

$$\text{Required area} = \frac{\theta}{360} \pi r^2$$

$$= \frac{90}{360} \times 3.14 \times 5 \times 5$$

$$= \frac{1}{4} \times 3.14 \times 5 \times 5$$

$$= \frac{1}{4} \times 3.14 \times 25 \Rightarrow \frac{78.50}{4} \Rightarrow 19.625 m^2$$