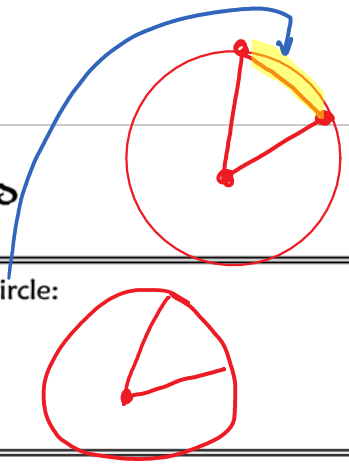
11.6 – AREAS OF SECTORS

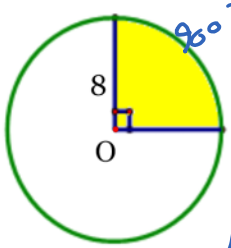
Draw a Picture

Sector of a circle: $\frac{\text{Arc Measure}}{360} \cdot \pi r^2$ or $\frac{\text{Arc length}}{C_0} \cdot A_0$

Segment of a circle:



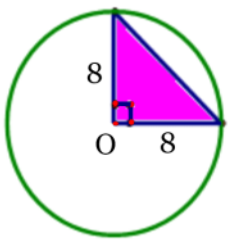
1. Find the area of the shaded region.



Sector: $\frac{90}{360} \cdot 64\pi$

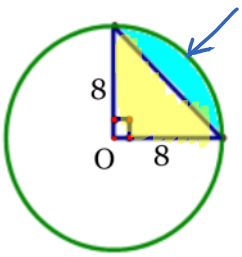
$A_{sect} = 16\pi \text{ u}^2$

2. Find the area of the triangle.



$A_\Delta = \frac{1}{2}(8)(8) = 32 \text{ u}^2$

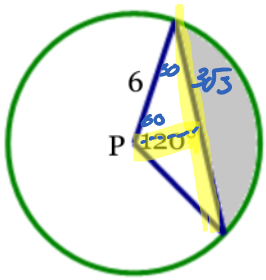
3. Put it together: Find the area bounded by the segment



$A_{seg} = (16\pi - 32) \text{ u}^2$

$A_{seg} = A_{sect} - A_\Delta$

4. Find the area of the segment (the area of the shaded region).



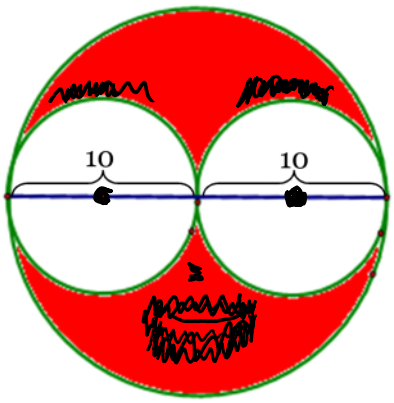
$A_{sect} = \frac{1}{3}(36\pi) = 12\pi \text{ u}^2$

$A_\Delta = \frac{1}{2}(6\sqrt{3})(3) = 9\sqrt{3} \text{ u}^2$

$A_{seg} = 12\pi - 9\sqrt{3} \text{ u}^2$

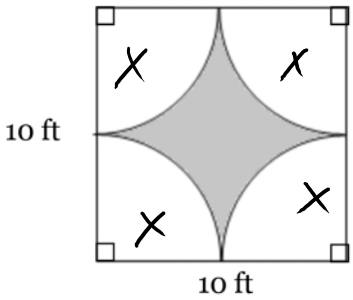
$A_{seg} = \boxed{12\pi - 9\sqrt{3}}\ u^2$

5. Find the area of the shaded region.



$50\pi\ u^2$

6. Find the area of the shaded region.

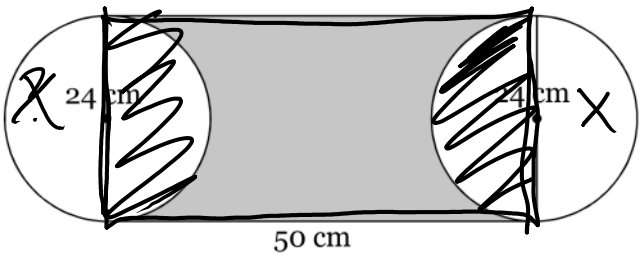


$\frac{360}{360}$

$(100-25\pi)\ ft^2$

$(160-25\pi)\ ft^2$

7. Find the area of the shaded region.



$(1200-144\pi)\ cm^2$

$24 \times 50 = 1200$