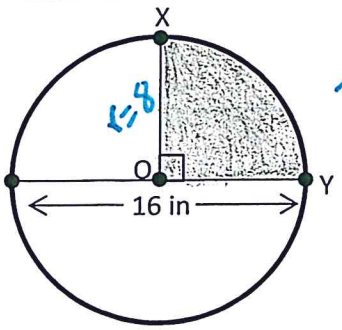
Sectors

Part of the inside of a circle.

Area of a Sector:



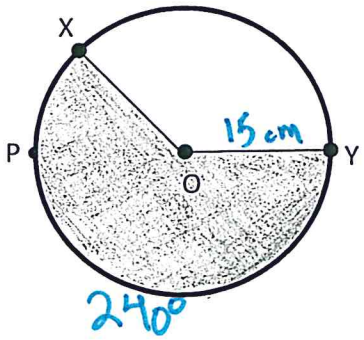
Find the area of the shaded sector XOY in terms of pi.

Total Area of Circle $= \pi r^2 = \pi(8)^2 = 64\pi$ in.^{2}

$A_{XOY} = \frac{64\pi}{4} = \boxed{16\pi \text{ in.}^2}$ $\left(\frac{1}{4} \cdot 64\pi\right)$

This happens to be $\frac{1}{4}$ of a circle, but how could we find area for any sector of a circle (even ones that aren't "perfect parts" of a circle)? Remember: $\frac{\text{Arc Measure}}{360} = \frac{90}{360} = \frac{1}{4}$

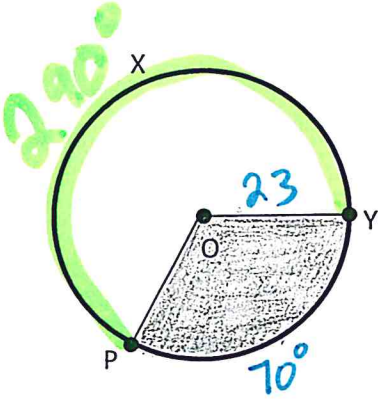
$$\text{Sector Area} = \frac{\text{Arc Measure}}{360} \cdot \text{Area } (\pi r^2)$$



Find the area of the shaded sector XOY if its measure is 240° and the circle has a radius of 15 cm. Leave in terms of pi.

$A_{XOY} = \frac{240}{360} \cdot \pi(15)^2 = \frac{2}{3} \cdot 225\pi$

$\boxed{A_{XOY} = 150\pi \text{ cm}^2}$



Find the area of the shaded sector POY if the measure of $\overset{\frown}{PXY}$ is 290° and the circle has a diameter of 46 cm. Leave in terms of pi.

r = 23

$A_{POY} = \frac{70°}{360°} \cdot \pi(23)^2$

$= \frac{7}{36} \cdot 529\pi$

$\boxed{A_{POY} = \frac{3703}{36}\pi \text{ cm}^2}$