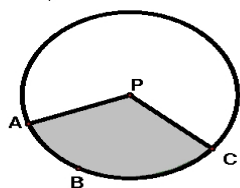


Geometry Notes - Arc Length and Areas of Sectors and Segments of Circles

Arc length = $\frac{m}{360}C$ where m is the measure of the central angle and C is the circumference.

Area of sector = $\frac{m}{360}\pi r^2$ where m is the measure of the central angle and r is the radius of the circle.

Example 1: Given: $\square P$ and $m\angle APC = 120^\circ$



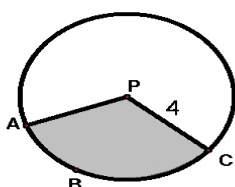
a. Find the length of $\widehat{ABC}$

$$\text{Arc length} = \frac{120}{360}\pi(8)$$

$$\text{Arc length} = \frac{1}{3}(8\pi)$$

$$\text{Arc length} = \frac{8\pi}{3} \text{ units}$$

Given: $\square P$ and $m\angle APC = 120^\circ$



b. Find the area of the shaded sector.

$$A_{\text{sector}} = \frac{120}{360}\pi r^2$$

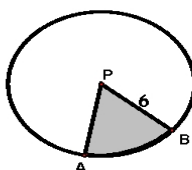
$$A_{\text{sector}} = \frac{1}{3}\pi 4^2$$

$$A_{\text{sector}} = \frac{16\pi}{3} \text{ units}^2$$

Example 2:

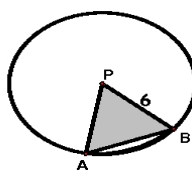
Note: Sector of Circle - Triangle = Segment of Circle

Given: $\square P$ and $m\angle APB = 60^\circ$



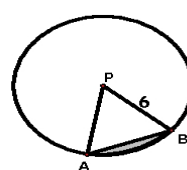
$$\frac{60}{360}\pi 6^2$$

-



$$\frac{6^2\sqrt{3}}{4}$$

=



$$6\pi - 9\sqrt{3} \text{ units}^2$$