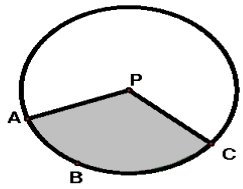
Geometry Notes – Arc Length and Areas of Sectors and Segments of Circles

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: ⊙ P and $m\angle APC = 120°$



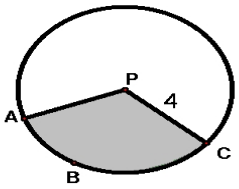
a. Find the length of ABC

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

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

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

Given: ⊙ P and $m\angle APC = 120°$



b. Find the area of the shaded sector.

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

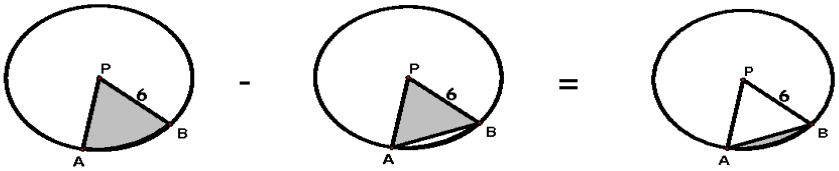
$A_{sector} = \frac{1}{3}\pi 4^2$

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

Example 2:

Note: Sector of Circle – Triangle = Segment of Circle

Given: ⊙ P and $m\angle APB = 60°$



$\frac{60}{360}\pi 6^2$ – $\frac{6^2\sqrt{3}}{4}$ = $6\pi - 9\sqrt{3}$ units^2