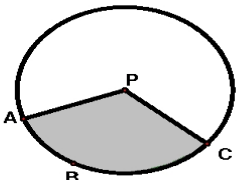
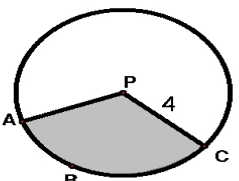
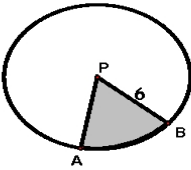
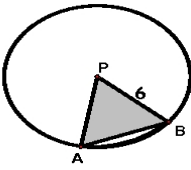
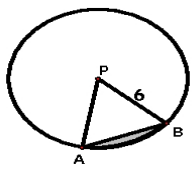


**Geometry Notes - Arc Length and Areas of Sectors and Segments of Circles**

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.

|   |   |
|---|---|
| <p>Example 1: Given: <math>\square P</math> and <math>m\angle APC = 120^\circ</math></p>   | <p>a. Find the length of <math>ABC</math></p> <p>Arc length = <math>\frac{120}{360} \pi(8)</math></p> <p>Arc length = <math>\frac{1}{3}(8\pi)</math></p> <div style="border: 1px solid black; padding: 2px; display: inline-block;">Arc length = <math>\frac{8\pi}{3}</math> units</div>                                      |
| <p>Given: <math>\square P</math> and <math>m\angle APC = 120^\circ</math></p>    | <p>b. Find the area of the shaded sector.</p> <p><math>A_{\text{sector}} = \frac{120}{360} \pi r^2</math></p> <p><math>A_{\text{sector}} = \frac{1}{3} \pi 4^2</math></p> <div style="border: 1px solid black; padding: 2px; display: inline-block;"><math>A_{\text{sector}} = \frac{16\pi}{3}</math> units<sup>2</sup></div> |
| <p>Example 2:</p> <p style="text-align: center;">Note: Sector of Circle - Triangle = Segment of Circle</p> <p>Given: <math>\square P</math> and <math>m\angle APB = 60^\circ</math></p>   |   |
| <div style="display: flex; align-items: center; justify-content: center;">  <span style="margin: 0 10px;">-</span>  <span style="margin: 0 10px;">=</span>  </div> <div style="display: flex; align-items: center; justify-content: center; margin-top: 10px;"> <math>\frac{60}{360} \pi 6^2</math> <span style="margin: 0 10px;">-</span> <math>\frac{6^2 \sqrt{3}}{4}</math> <span style="margin: 0 10px;">=</span> <div style="border: 1px solid black; padding: 2px; display: inline-block;"><math>6\pi - 9\sqrt{3}</math> units<sup>2</sup></div> </div> |   |