Geometry Note-Taking Guide **Name:**_____

Period:___

Section 10.4 – Circumference and Arc Length

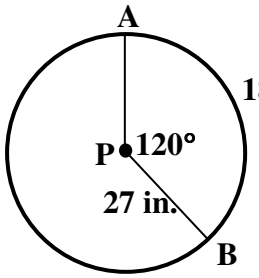
The _____ of a circle is the perimeter or distance around a circle. **Formula:** C = _____

The _____ of a circle is a portion of its circumference.

The _____ of a circle is a portion of the total degree measure of a circle, _____.

Important Note: An arcs <u>length</u> is different from an arcs <u>measure</u>.

Ex: A circle is named using its center point.
This is ⊙P.



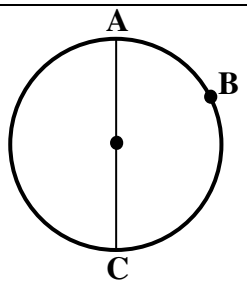
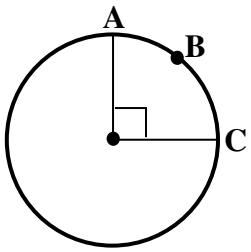
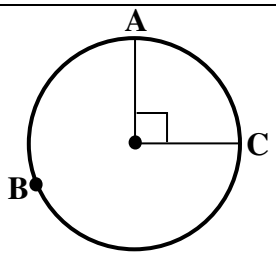
$\overset{\frown}{AB}$ (<u>Length</u> of arc AB) = _____

Total Circle Arc <u>Length</u> (Circumference) = _____

$m\overset{\frown}{AB}$ (<u>Measure</u> of arc AB) = _____

Total Circle Arc <u>Measure</u> = _____

Deriving the Area of Sector Formula

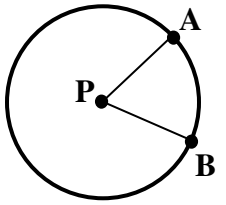
Diagram	$\frac{\overset{\frown}{ABC}}{\text{Total Arc Length } (C = 2\pi r)}$	$\frac{m\overset{\frown}{ABC}}{\text{Total Arc Measure } (360°)}$
		
		
		

What is the relationship between the <u>ratio</u> of the **<u>arc measure to 360°</u>** and the <u>ratio</u> of the **<u>arc length to its circumference</u>**?

Arc Length Formula

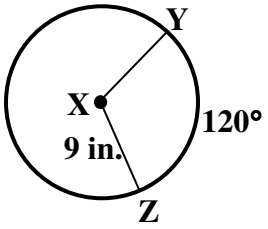
In a circle, the ratio of the length of a given arc to the circumference is equal to the ratio of the measure of the arc to 360°.

$$\frac{m\overset{\frown}{AB}}{360°} = \frac{\text{Arc length of } \overset{\frown}{AB}}{2\pi r}$$

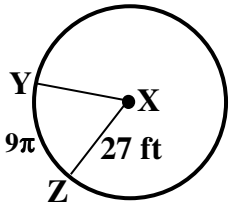


Ex 1:

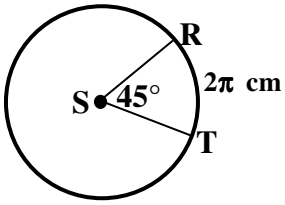
a) Find $\overset{\frown}{YZ}$.



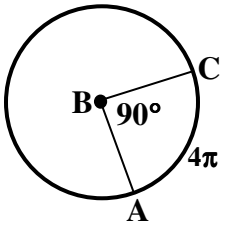
b) Find $m\overset{\frown}{YZ}$.



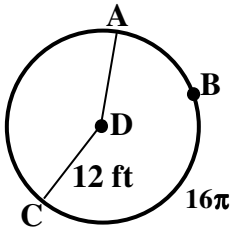
c) Find the radius of ⊙S.



d) Find the circumference of ⊙B.



e) Find $m\overset{\frown}{ABC}$.



f) Find the circumference of ⊙P.