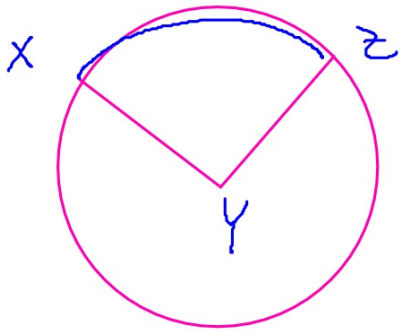
Central Angle



$m\angle XYZ = m\overset{\frown}{XZ}$

Intercepted Arc

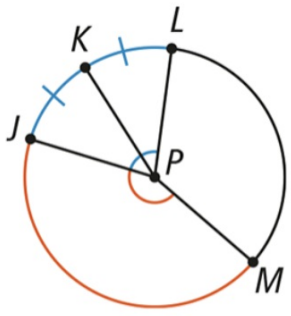
Arc Measure

The measure of an arc is equal to the measure of its corresponding central angle.

$m\overset{\frown}{JM} = m\angle JPM$

Congruent central angles intercept congruent arcs, and congruent arcs are intercepted by congruent central angles.

$\angle JPK \cong \angle KPL$ $\qquad$ $\overset{\frown}{JK} \cong \overset{\frown}{KL}$

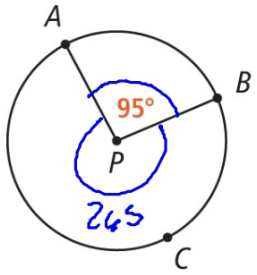


What are $m\overset{\frown}{AB}$ and $m\overset{\frown}{ACB}$?

SOLUTION

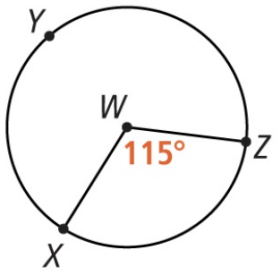
$m\overset{\frown}{AB} = 95^\circ$

$m\overset{\frown}{ACB} = 265$



$360 - 95 = 265$

1. Use $\odot W$.

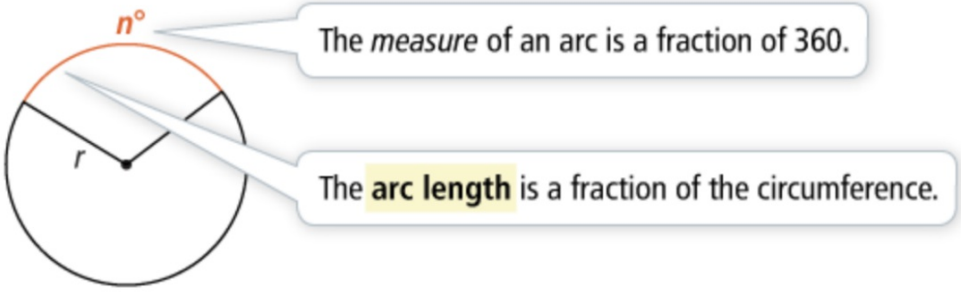


a. What is $m\overset{\frown}{XZ}$? $=115$

Enter your answer.

b. What is $m\overset{\frown}{XYZ}$? 245

A. How do you find the length *s* of an arc measured in degrees?



Use a proportion to represent the relationship between arc length *s*, radius *r*, and arc measure *n*.

$$\frac{\text{arc length}}{\text{circumference}} = \frac{\text{arc measure}}{360}$$

$$\frac{s}{2\pi r} = \frac{n}{360}$$

$$s = \frac{n}{360} \cdot 2\pi r$$

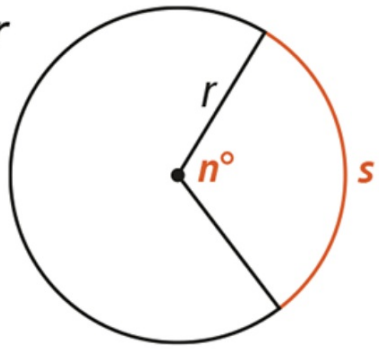
The formula to find the length of an arc is $s = \frac{n}{360} \cdot 2\pi r$.

Arc Length

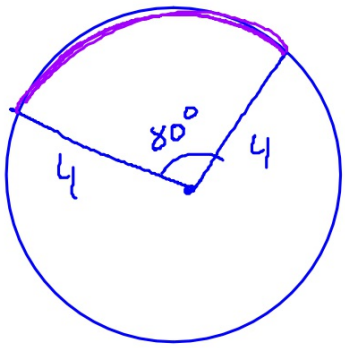
The length s of an arc of a cirlce is the product of the ratio relating the measure of the central angle in degrees to 360 and the circumference of the circle.

Central angle in degrees:

$$s = \frac{n}{360} \cdot 2\pi r$$



2. a. In a circle with radius 4, what is the length of an arc that has a measure of 80? Round to the nearest tenth.



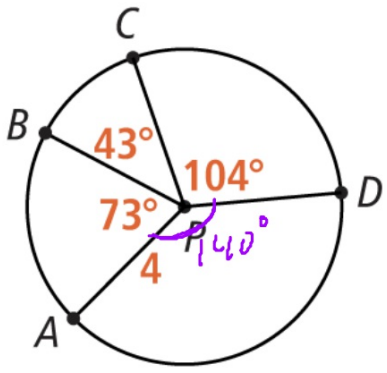
$$S = \frac{n}{360} \cdot 2\pi r$$

$$\frac{80}{360} \cdot 2\pi(4)$$

$$\frac{2}{9}(8\pi)$$

$$\frac{16\pi}{9} = 1.8\pi$$

What is the length of $\overset{\frown}{AD}$? Express the answer in terms of π.



$r = 4$

$$s = \frac{n}{360} \cdot 2\pi r$$

$$= \frac{140}{360} = 2\pi(4)$$

$$= \frac{7}{18}(8\pi)$$

$$\frac{56\pi}{18} = \frac{28\pi}{9}$$