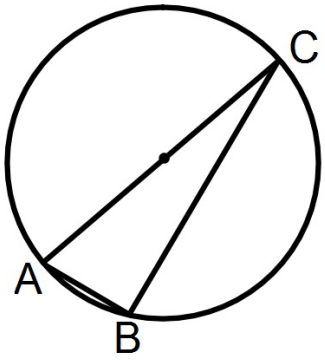
Bellwork

Find the indicated measure:

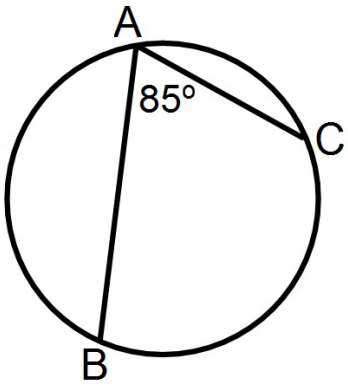
1. $m\angle B$



Since $\overline{AC}$ is a diameter, $\overset{\frown}{AC}$ is a Semicircle.

$\frac{180^\circ}{2} = \boxed{90^\circ}$

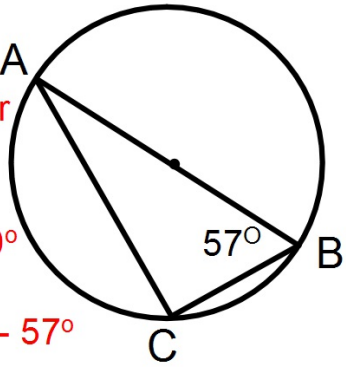
2. $m\overset{\frown}{BC}$



85° is the inscribed angle for the arc. This means we multiply by 2.

$85^\circ(2) = \boxed{170^\circ}$

3. $m\overset{\frown}{BC}$



Similar to #1, $\overline{AB}$ is the diameter and makes $\angle C = 90^\circ$.

A triangle has 180°

So...

$\angle A = 180^\circ - 90^\circ - 57^\circ$

$= 33^\circ$

Then since $\angle A$ is the inscribed angle similar to #2, we will multiply by 2.

$33^\circ(2) = \boxed{66^\circ}$

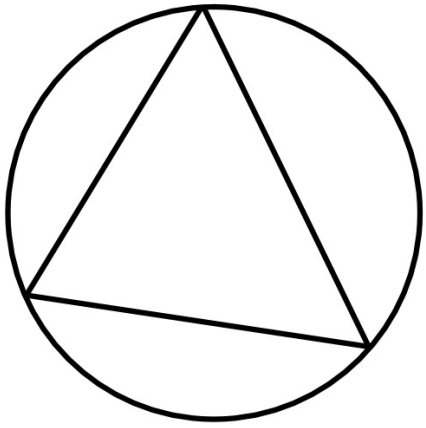
One Problem and Two Figures?

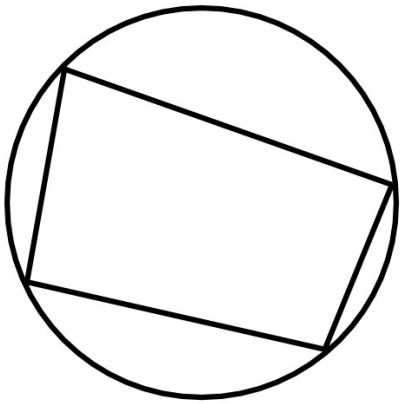
Inscribed Polygon:

A polygon that has all of its vertices on a circle.

Circumscribed Circle:

A circle containing an inscribed polygon.



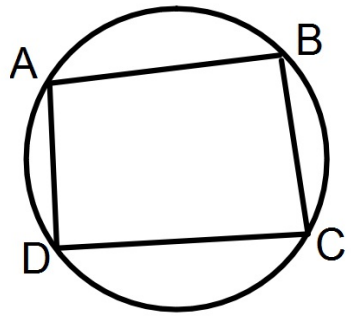


Theorem of Focus

There are several items that we can talk about here, but we will focus on the following:

Inscribed Quadrilateral Theorem:

A quadrilateral can be inscribed in a circle if and only if its opposite angles are supplementary.



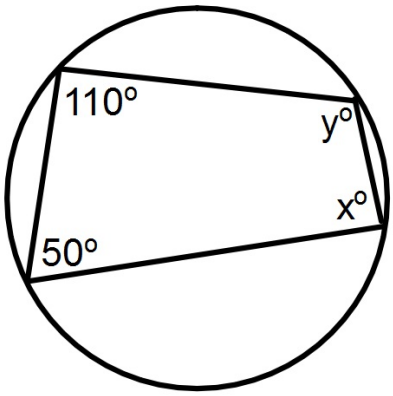
$\angle A + \angle C = 180$

$\angle B + \angle D = 180$

Examples

Find the values of the variables:

1.



$110^\circ + x^\circ = 180^\circ$

$-110^\circ \qquad -110^\circ$

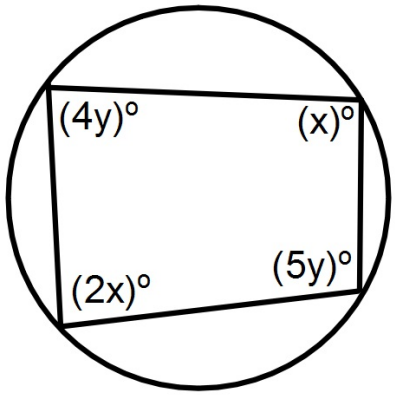
$\boxed{x = 70^\circ}$

$50^\circ + y^\circ = 180^\circ$

$-50^\circ \qquad -50^\circ$

$\boxed{y = 130^\circ}$

2.



$2x + x = 180$

$\frac{3x}{3} = \frac{180}{3}$

$\boxed{x = 60}$

$4y + 5y = 180$

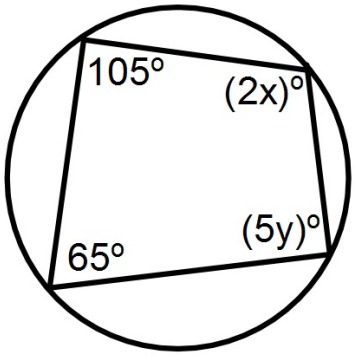
$\frac{9y}{9} = \frac{180}{9}$

$\boxed{y = 20}$

Examples

Find the values of the variables:

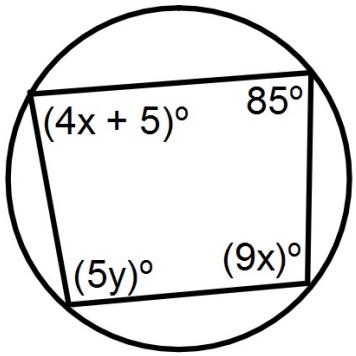
3.



$2x + 65 = 180$
$-65 \quad -65$
$\frac{2x}{2} = \frac{115}{2}$
$x = 57.5$

$5y + 105 = 180$
$-105 \quad -105$
$\frac{5y}{5} = \frac{75}{5}$
$y = 15$

4.



$4x + 5 + 9x = 180$
$13x + 5 = 180$
$-5 \quad -5$
$\frac{13x}{13} = \frac{175}{13}$

$x = \frac{175}{13}$

$5y + 85 = 180$
$-85 \quad -85$
$\frac{5y}{5} = \frac{95}{5}$
$y = 19$