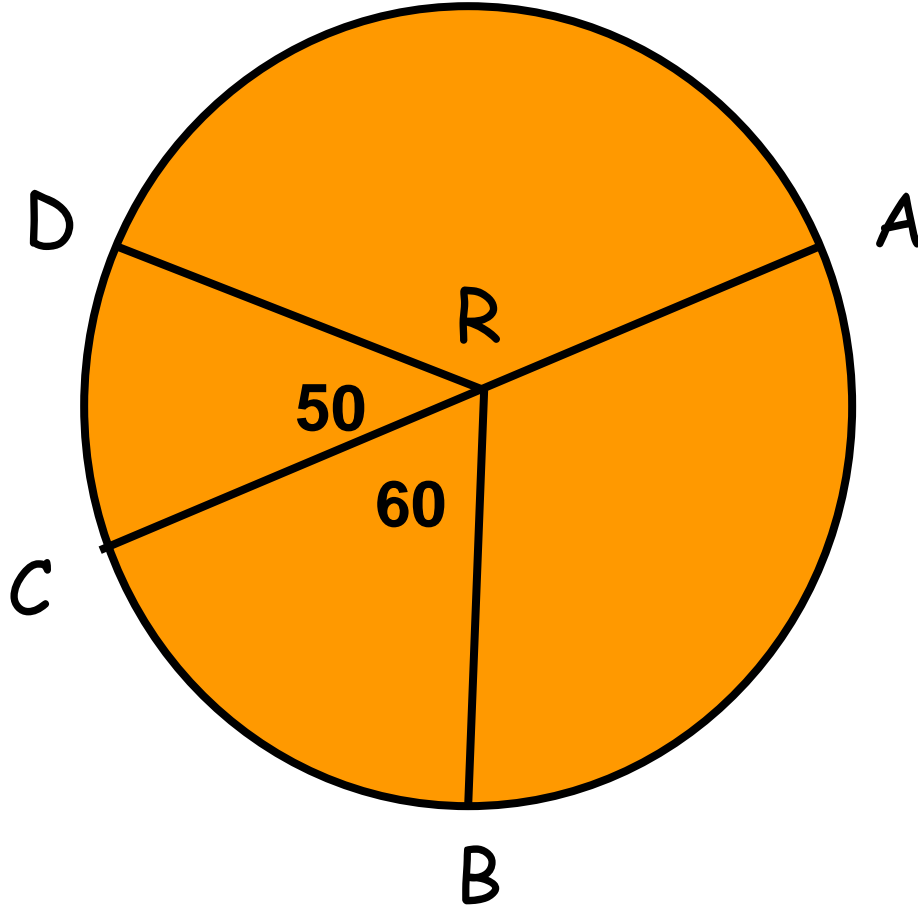


Warm up

Find the missing measures:



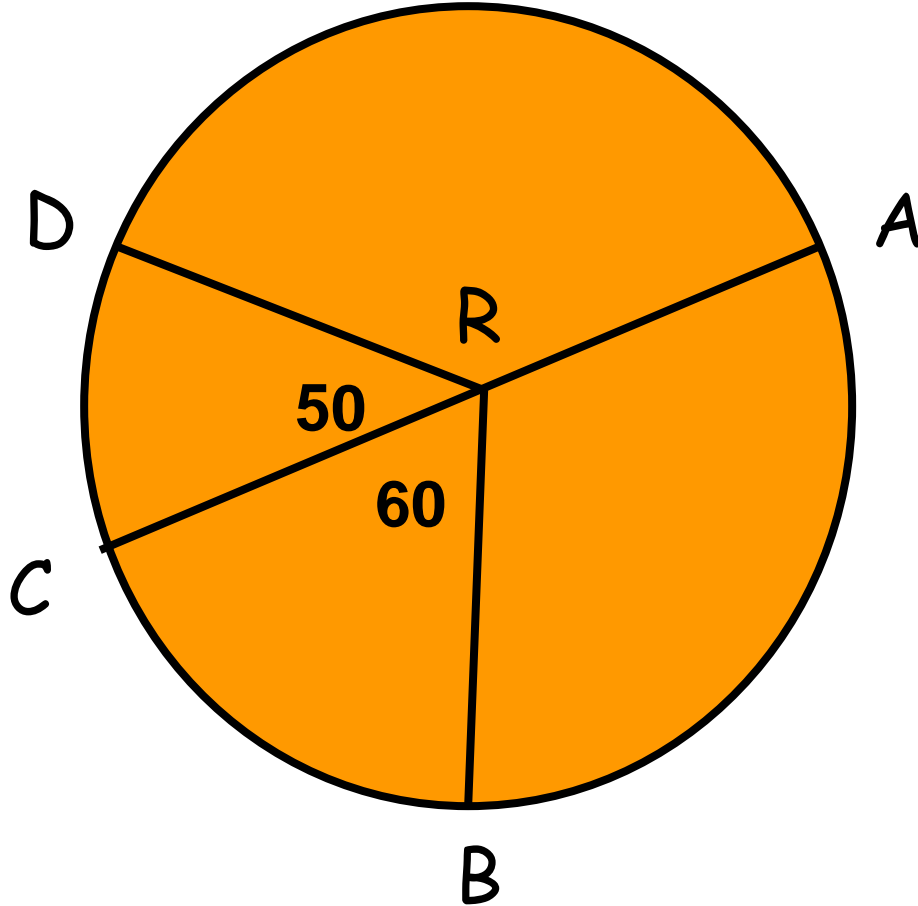
1. $\angle ARD =$

2. $\angle ARB =$

3. $\widehat{ABD} =$

Warm up

Find the missing measures:



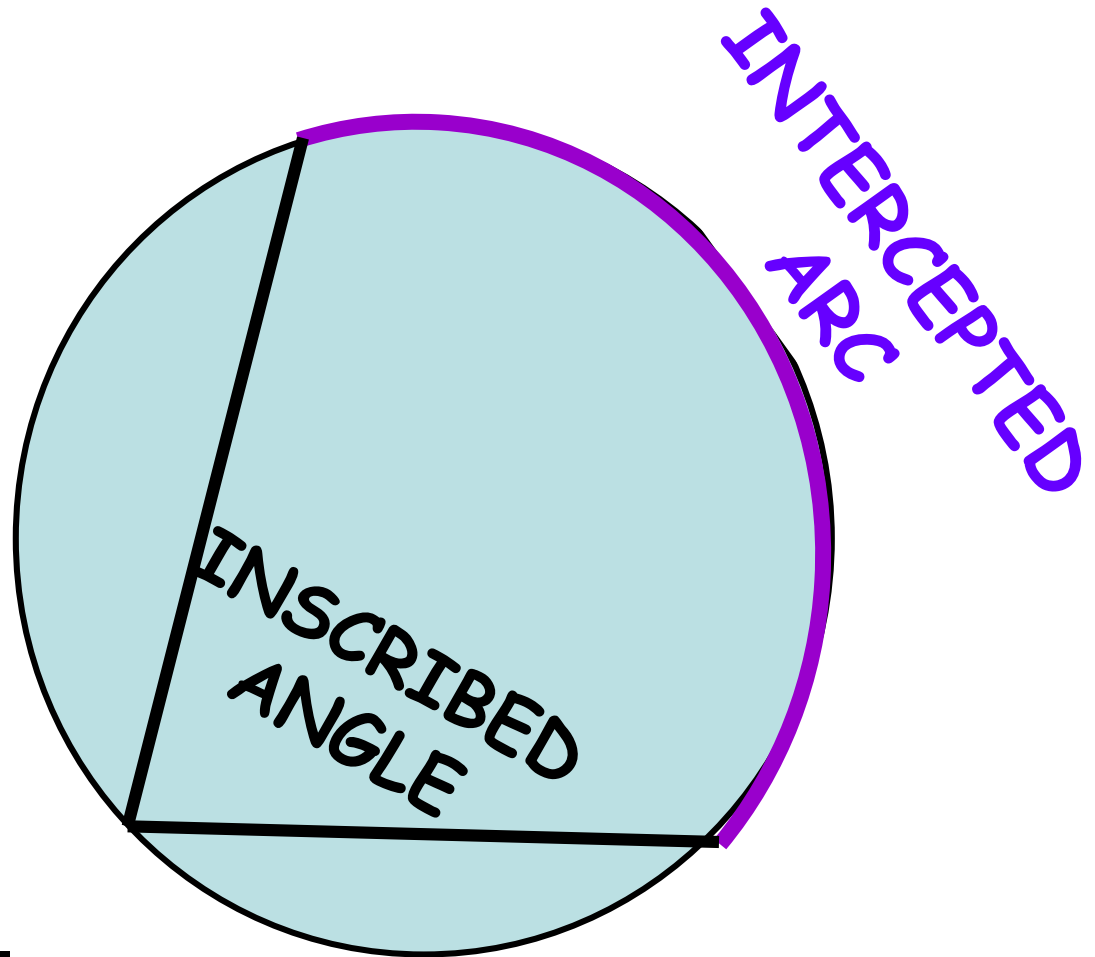
1. $\angle ARD = 130^\circ$

2. $\angle ARB = 120^\circ$

3. $\widehat{ABD} = 230^\circ$

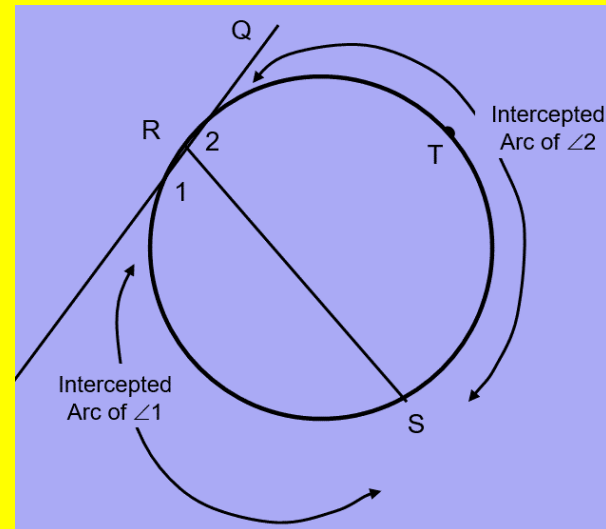
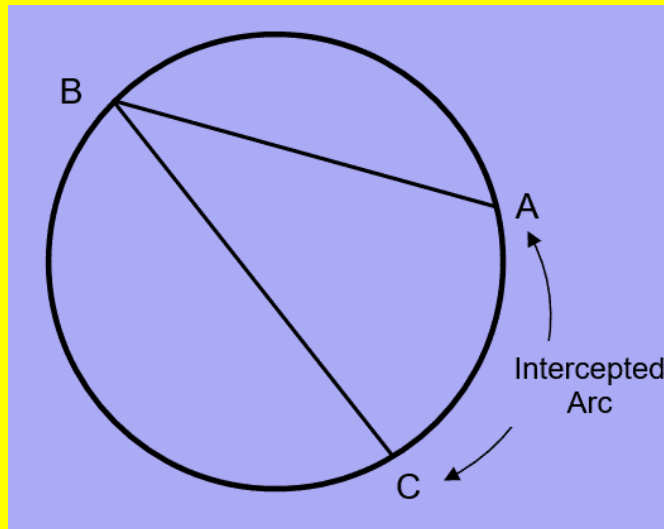
Inscribed Angle:

An angle whose **vertex** is on the circle and whose **sides** are chords of the circle

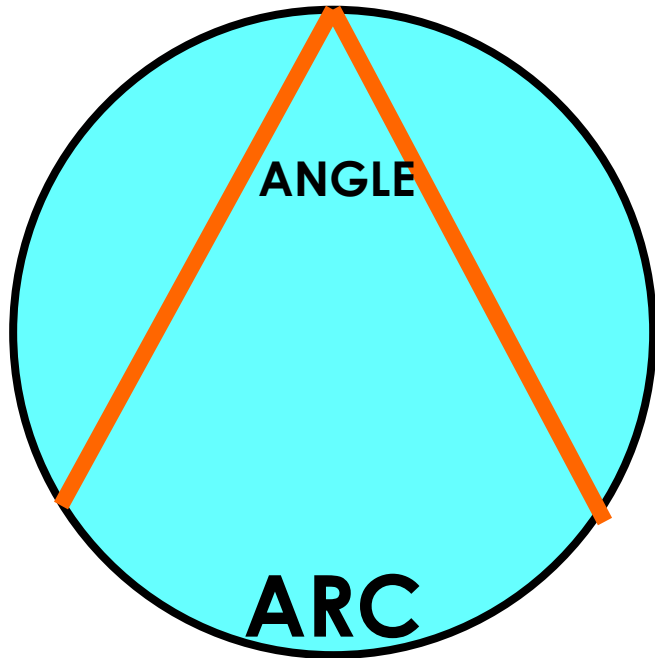


UNIT 4A: CIRCLES

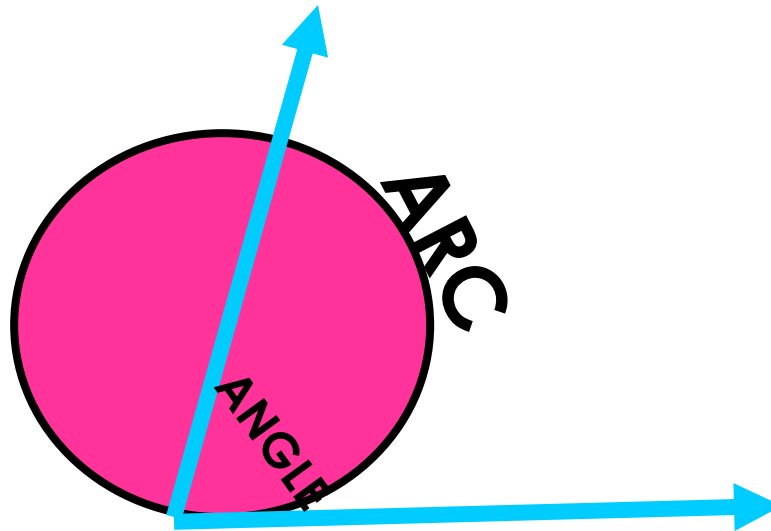
Angles with Vertex On the Circle



Vertex is **ON** the Circle

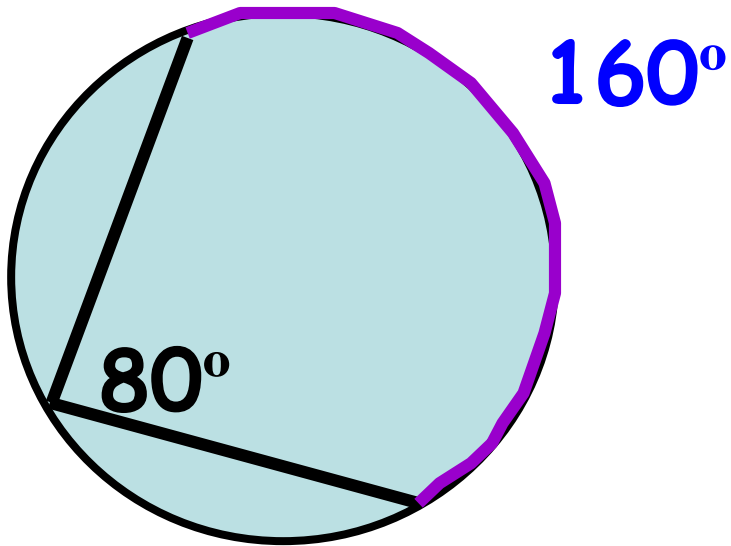


$$\text{ANGLE} = \frac{\text{ARC}}{2}$$

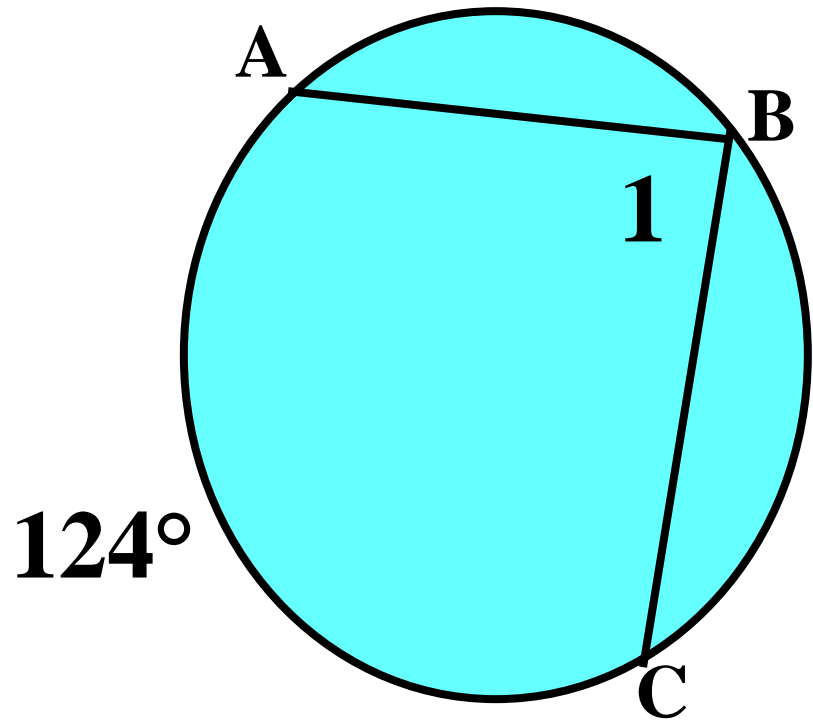


To find the measure of an angle with a vertex on the circle, **divide the intercepted arc by 2...**

$$\text{Angle} = \frac{\text{intercepted arc}}{2}$$



Ex. 1: Find $m\angle 1$.

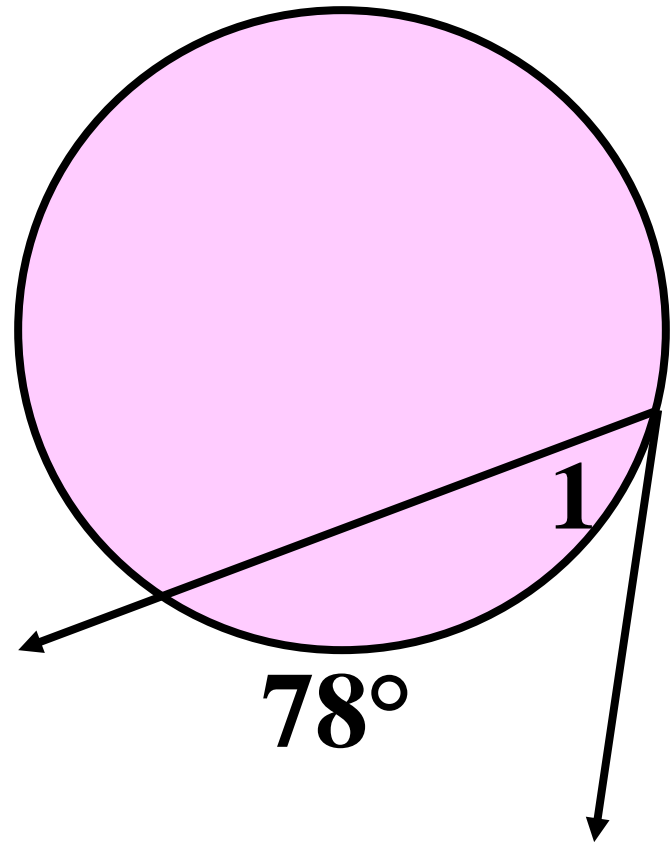


$$m\angle 1 = 62^\circ$$

Ex. 2: Find $m\angle 1$.

$$m\angle 1 = \frac{78}{2}$$

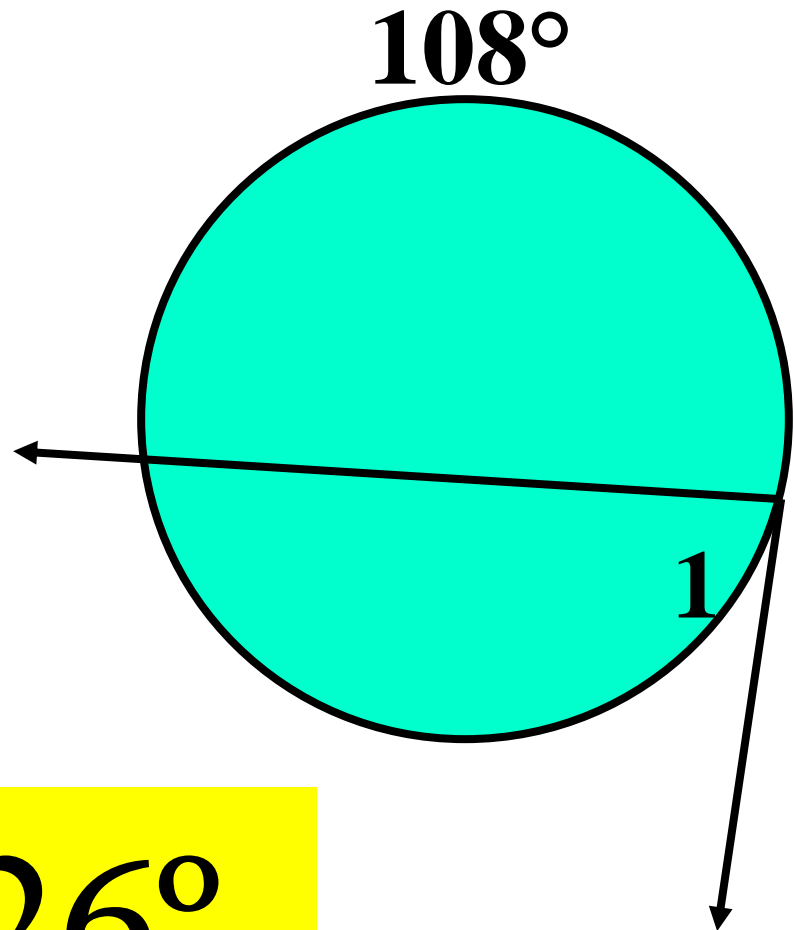
$$m\angle 1 = 39^\circ$$



Ex. 3: Find $m\angle 1$.

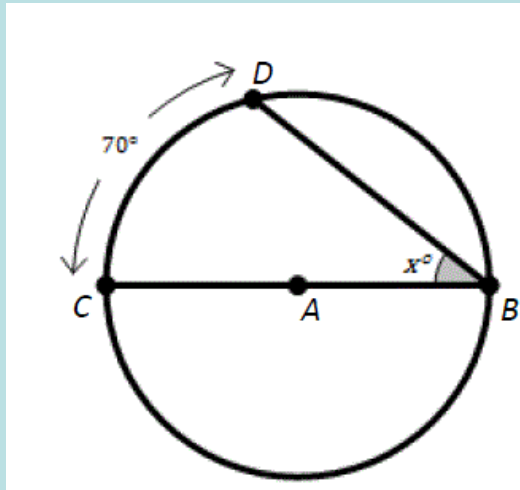
$$m\angle 1 = \frac{252}{2}$$

$$m\angle 1 = 126^\circ$$

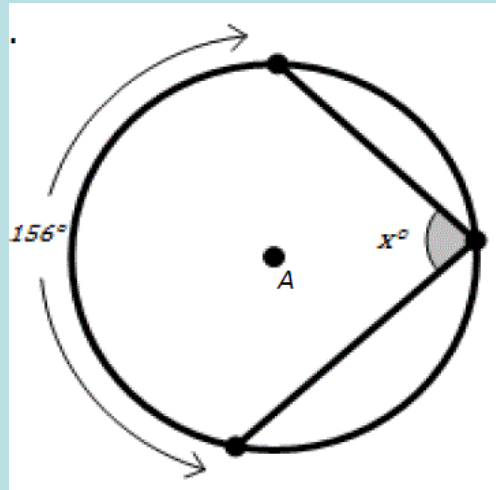


What is the measure of the *angle*?

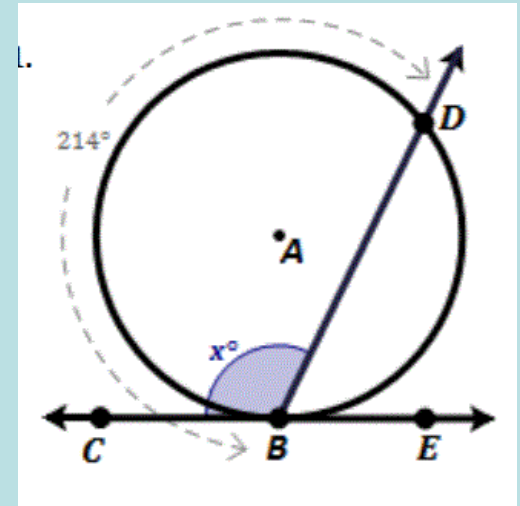
EX 4:



EX 5:

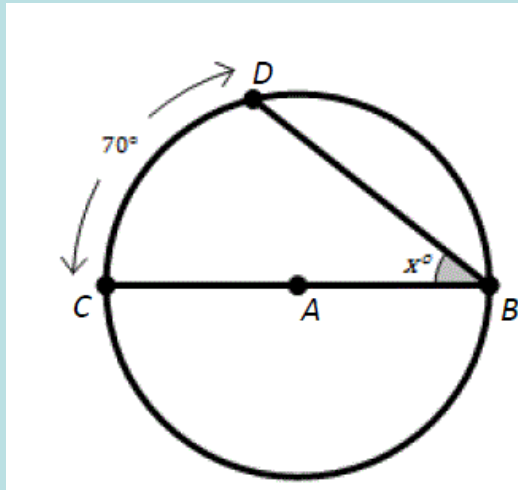


EX 6:



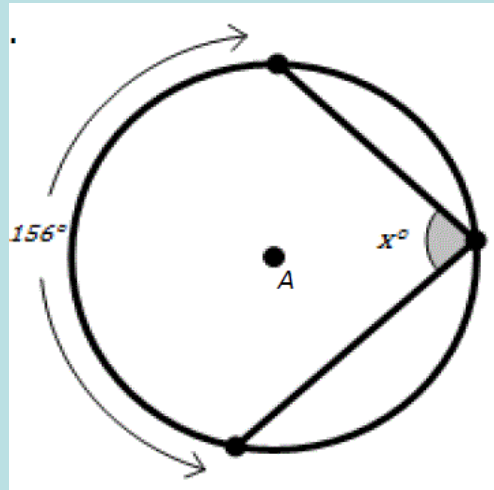
What is the measure of the *angle*?

EX 4:



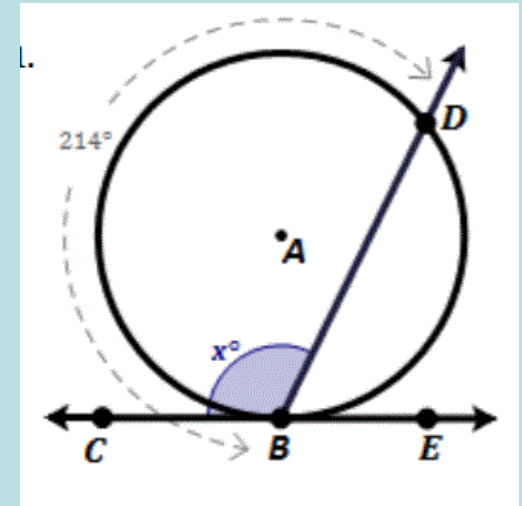
$$x = 35^\circ$$

EX 5:



$$x = 78^\circ$$

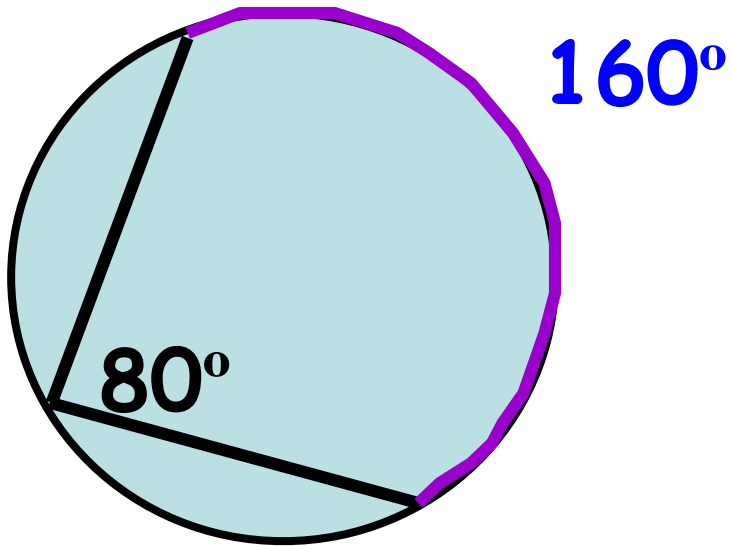
EX 6:



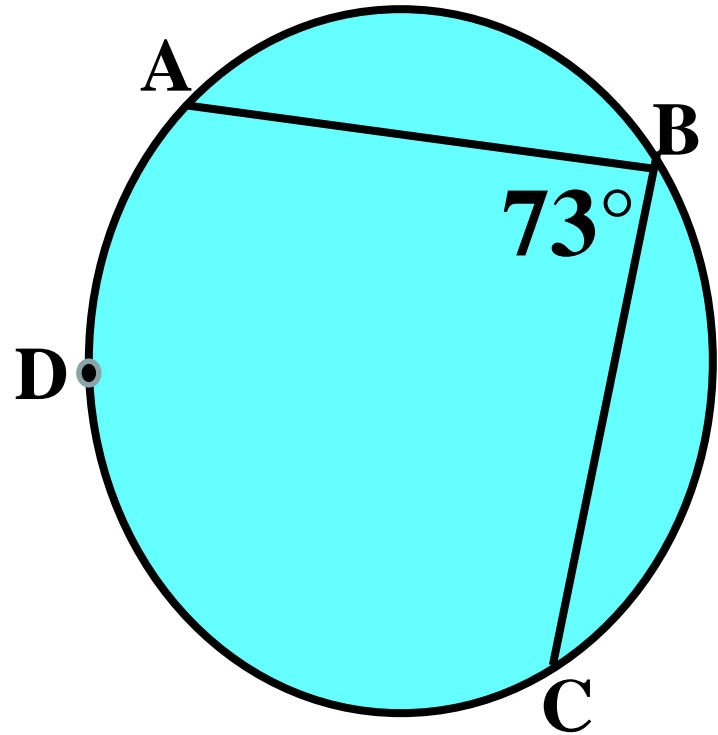
$$x = 107^\circ$$

To find the measure of an intercepted arc,
multiply the angle by 2...

$$\text{Intercepted Arc} = 2 \cdot \text{Angle}$$



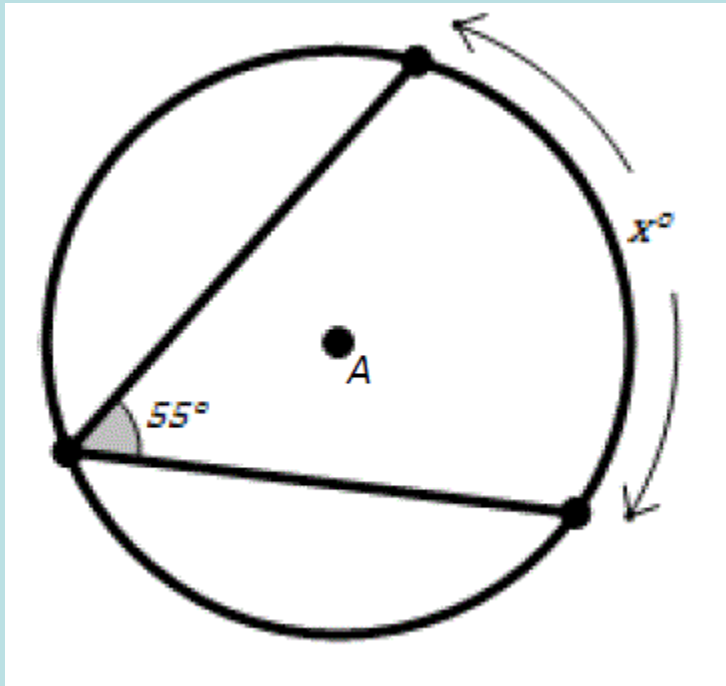
EX 7: Find \widehat{ADC} .



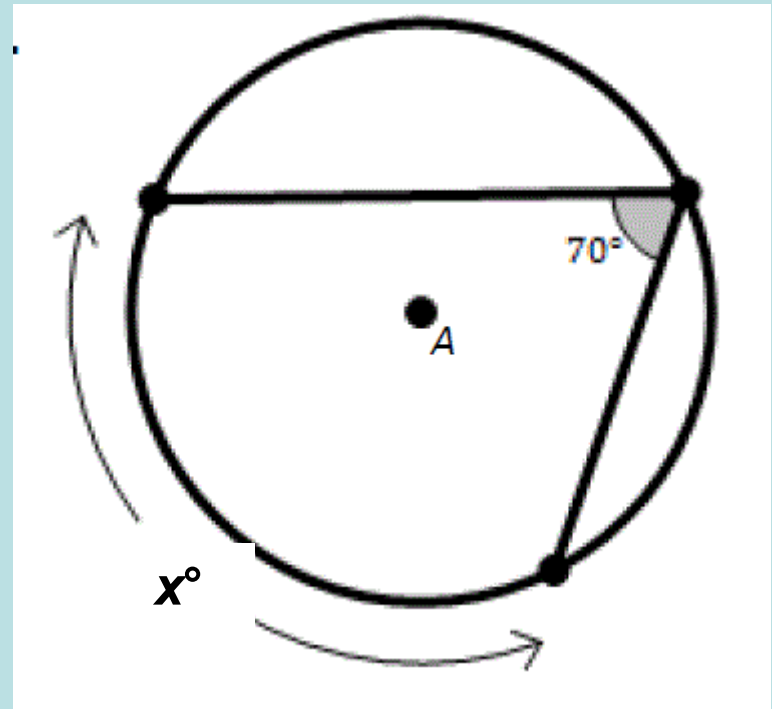
$$\widehat{ADC} = 146^\circ$$

What is the measure of the *intercepted angle*?

EX 8:

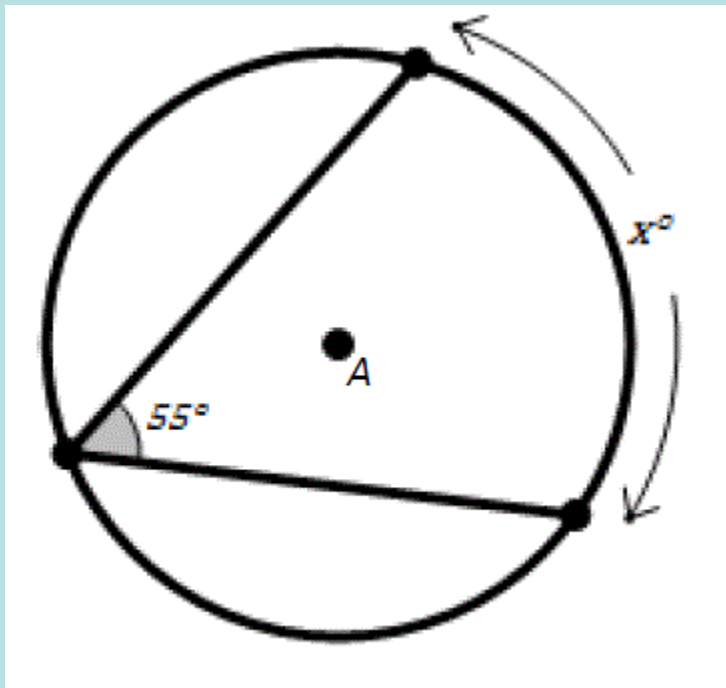


EX 9 :



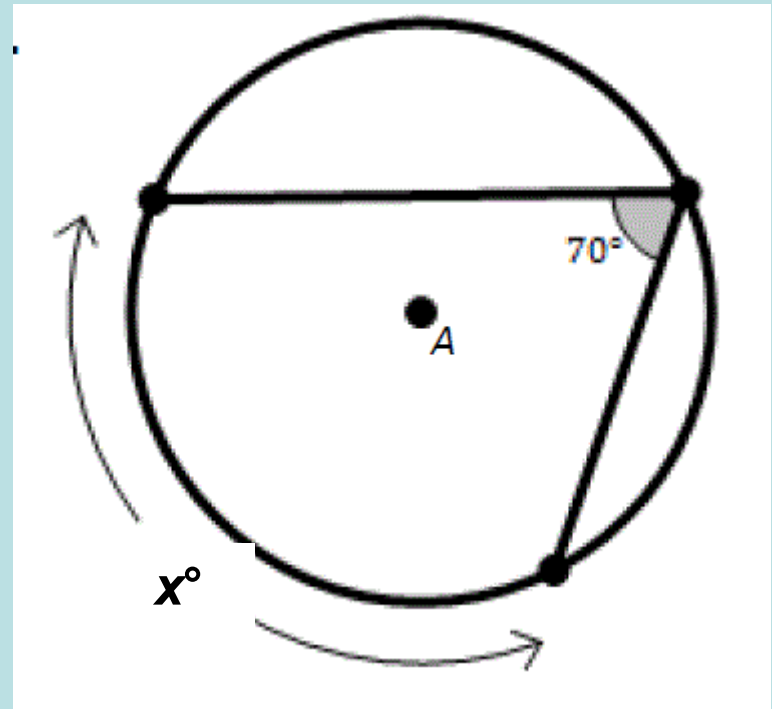
What is the measure of the *intercepted angle*?

EX 8:



$$x = 110^\circ$$

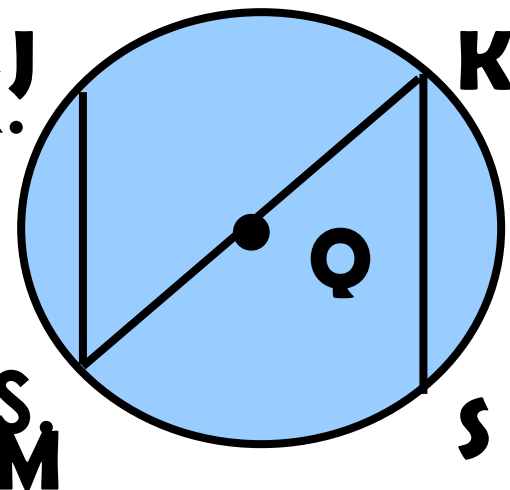
EX 9 :



$$x = 140^\circ$$

Ex 10: If $m \widehat{JK} = 80^\circ$, find $m \angle JMK$.

40°

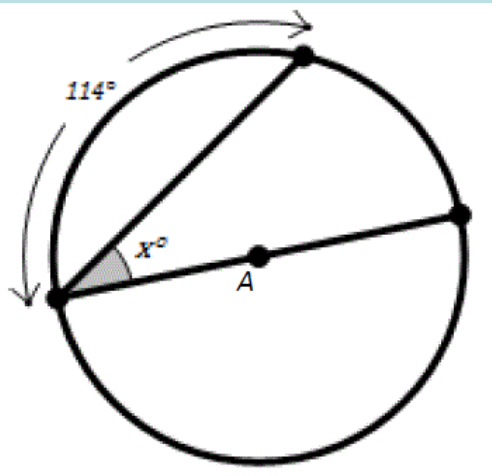


Ex 11: If $m \angle MKS = 56^\circ$, find $m \widehat{MS}$.

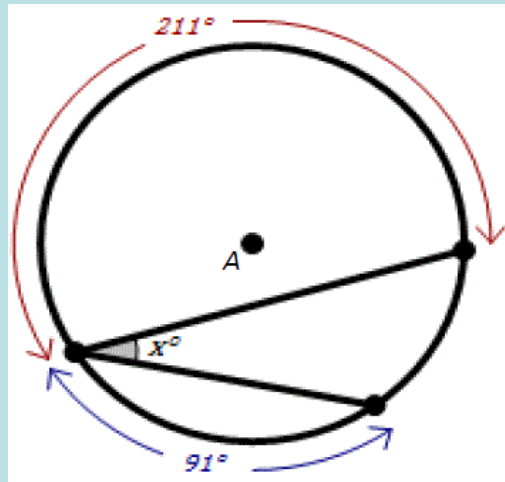
112°

PUTTING IT ALL TOGETHER!

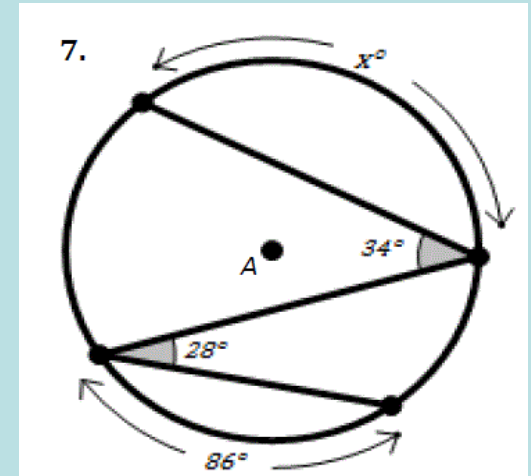
EX 12:



EX 13 :

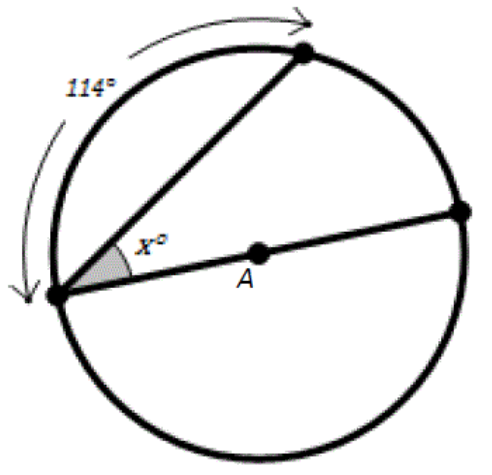


EX 14 :



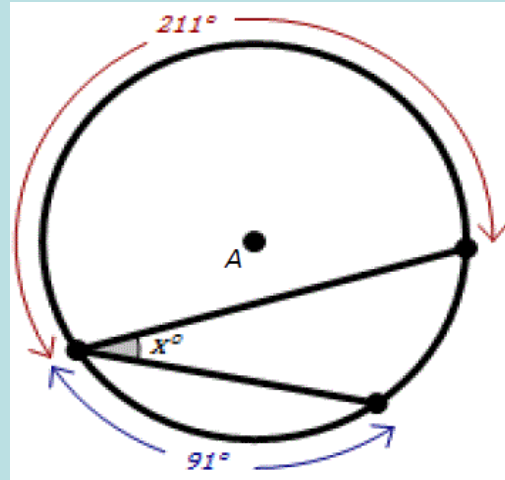
PUTTING IT ALL TOGETHER!

EX 12:



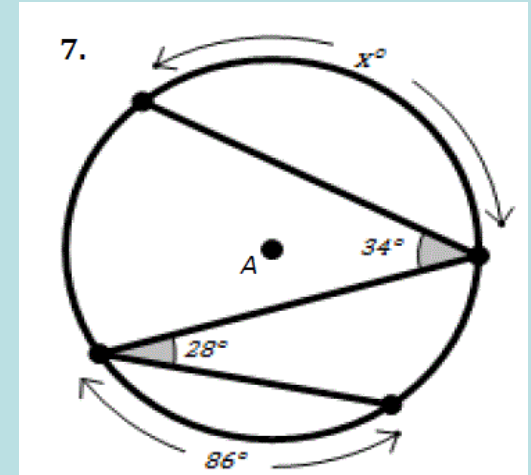
$$x = 33^\circ$$

EX 13 :



$$x = 29^\circ$$

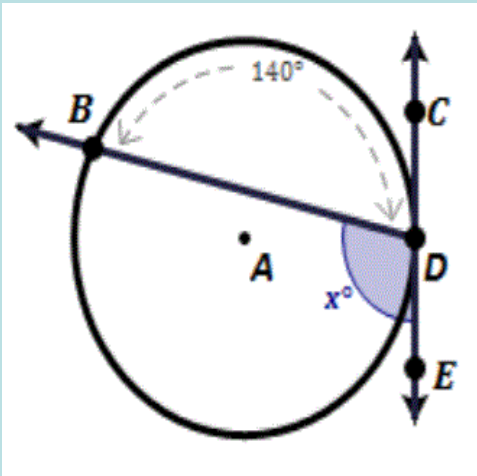
EX 14 :



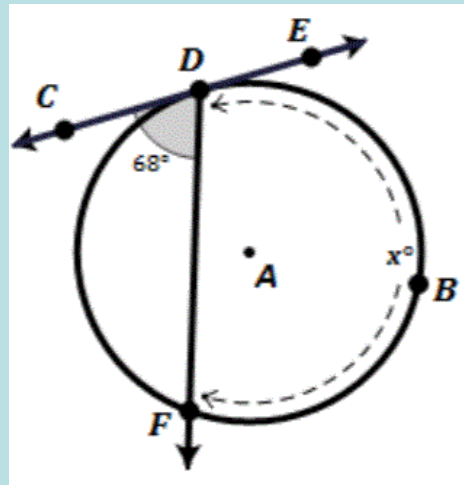
$$x = 150^\circ$$

PUTTING IT ALL TOGETHER!

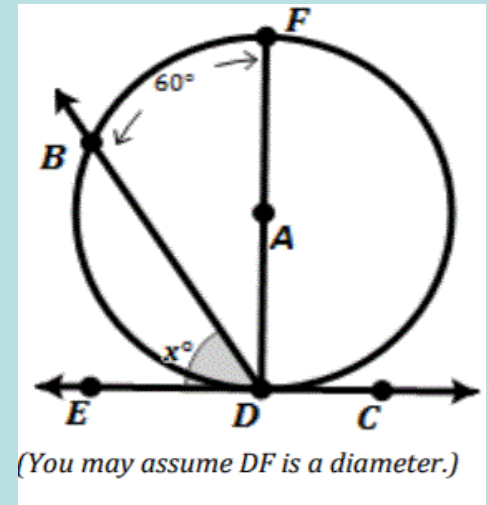
EX 15:



EX 16 :

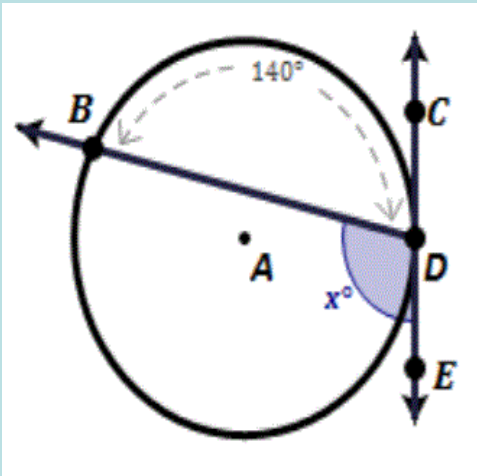


EX 17 :



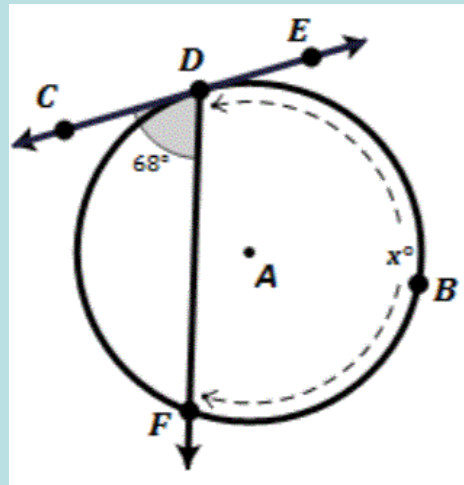
PUTTING IT ALL TOGETHER!

EX 15:



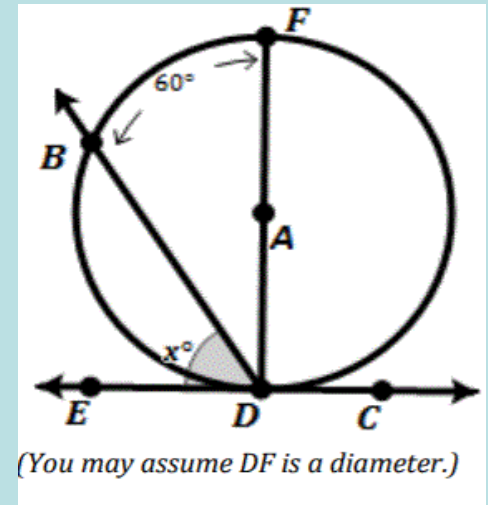
$$x = 110^\circ$$

EX 16 :



$$x = 224^\circ$$

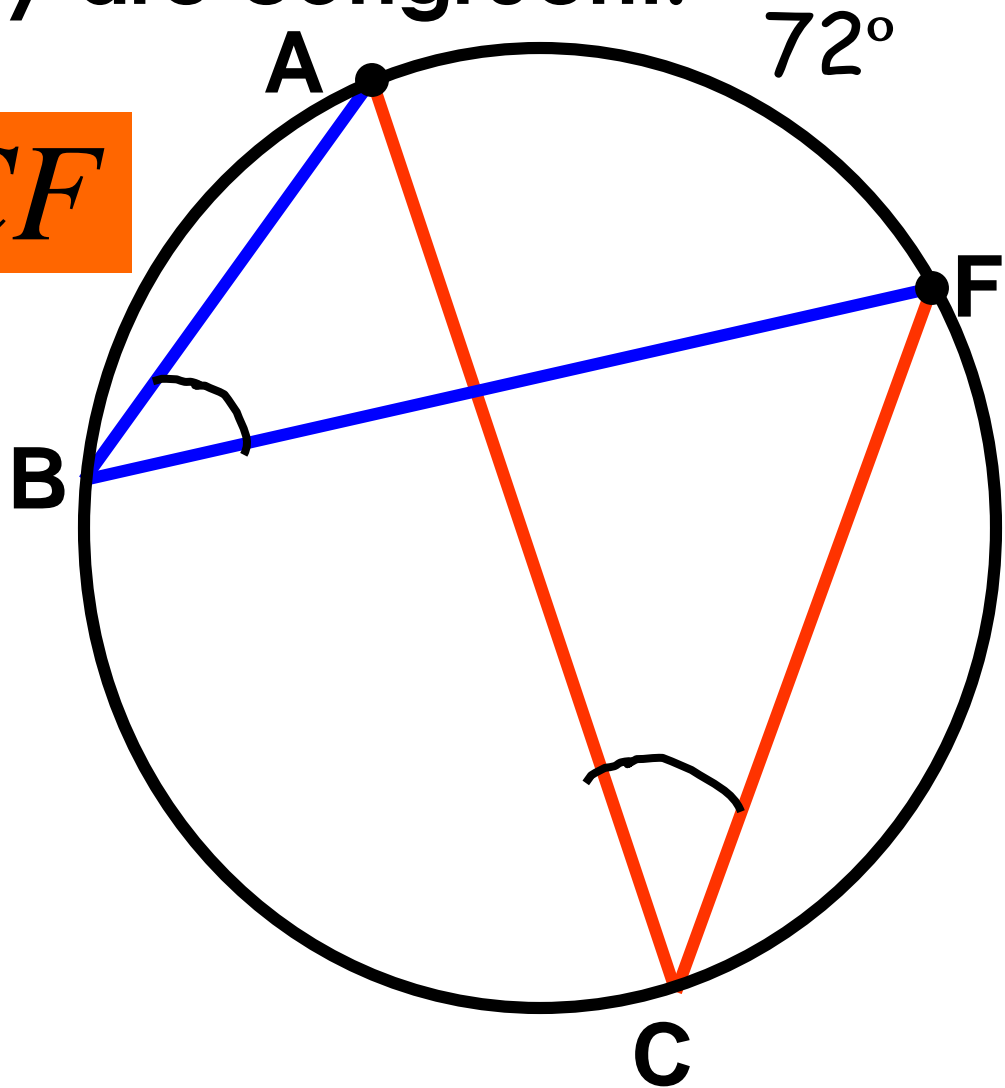
EX 17 :



$$x = 60^\circ$$

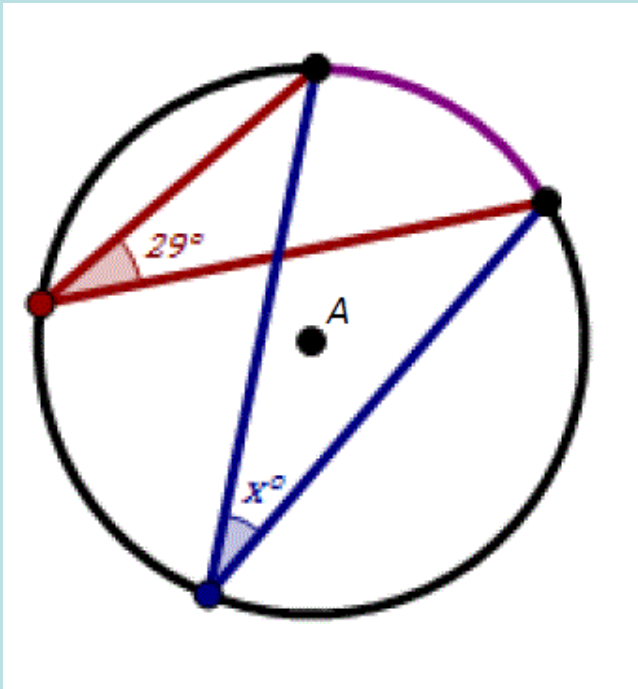
If two inscribed angles intercept the same arc, then they are congruent.

$$\angle ABF \cong \angle ACF$$



What is the measure of the *intercepted angle*?

EX 18:



$$x = 29^\circ$$

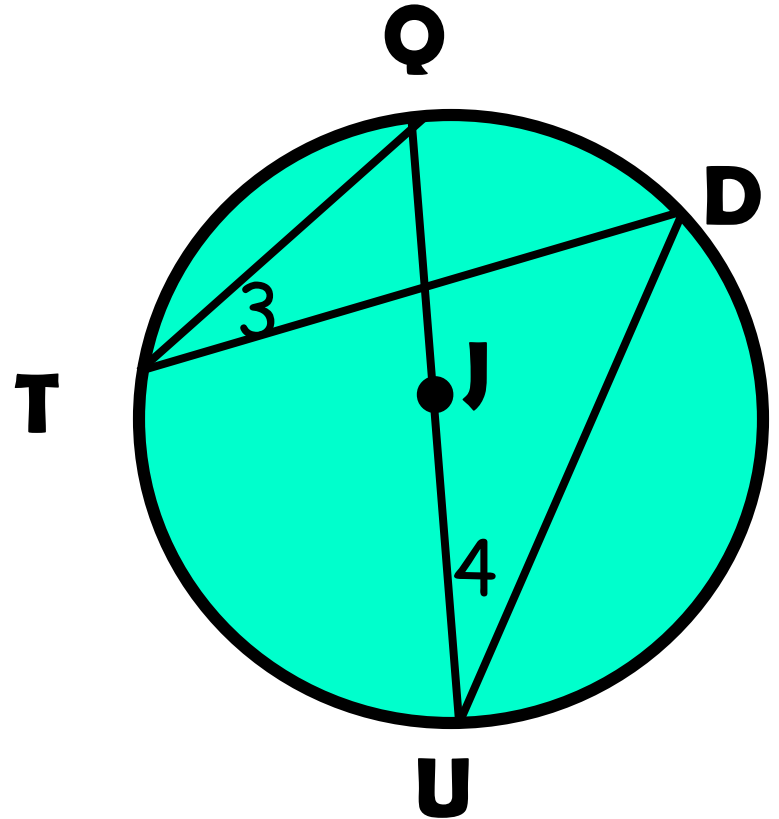
Example 19:

In $\odot J$, $m\angle 3 = 5x$ and $m\angle 4 = 2x + 9$.

Find the value of x .

$$5x = 2x + 9$$

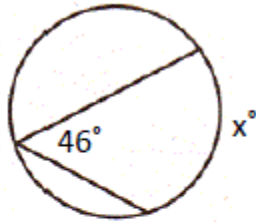
$$x = 3$$



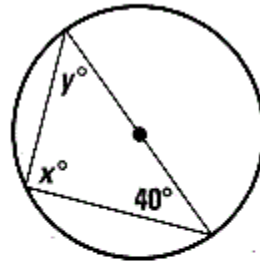
Geometry: ANGLES ON THE CIRCLE PRACTICE

Find the value of each variable.

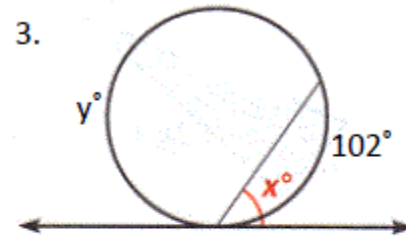
1.



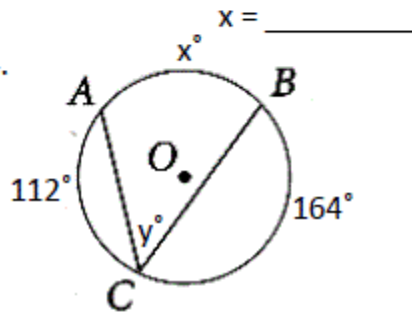
2.



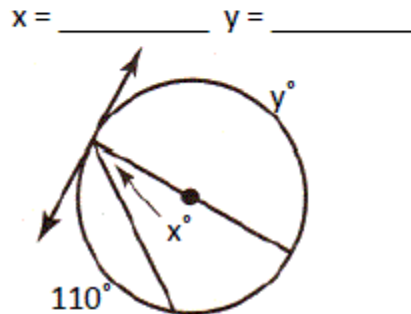
3.



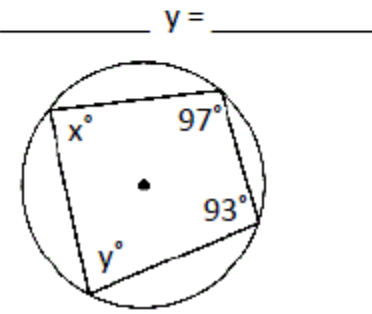
4.



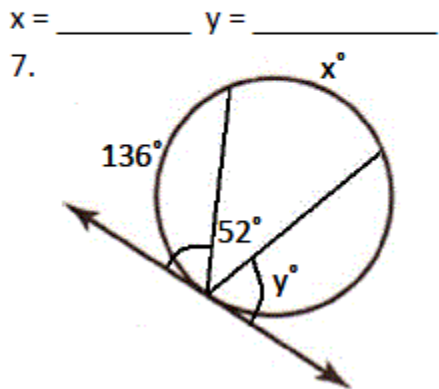
5.



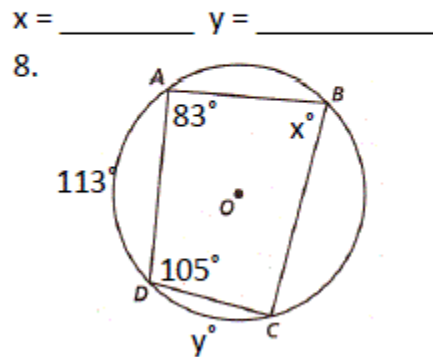
6.



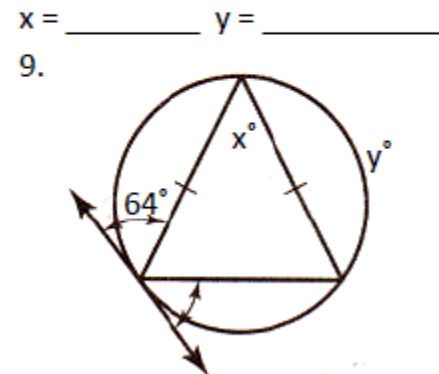
7.



8.



9.



Geometry: ANGLES ON THE CIRCLE PRACTICE

Complete #s 1-8 of the Practice sheet.

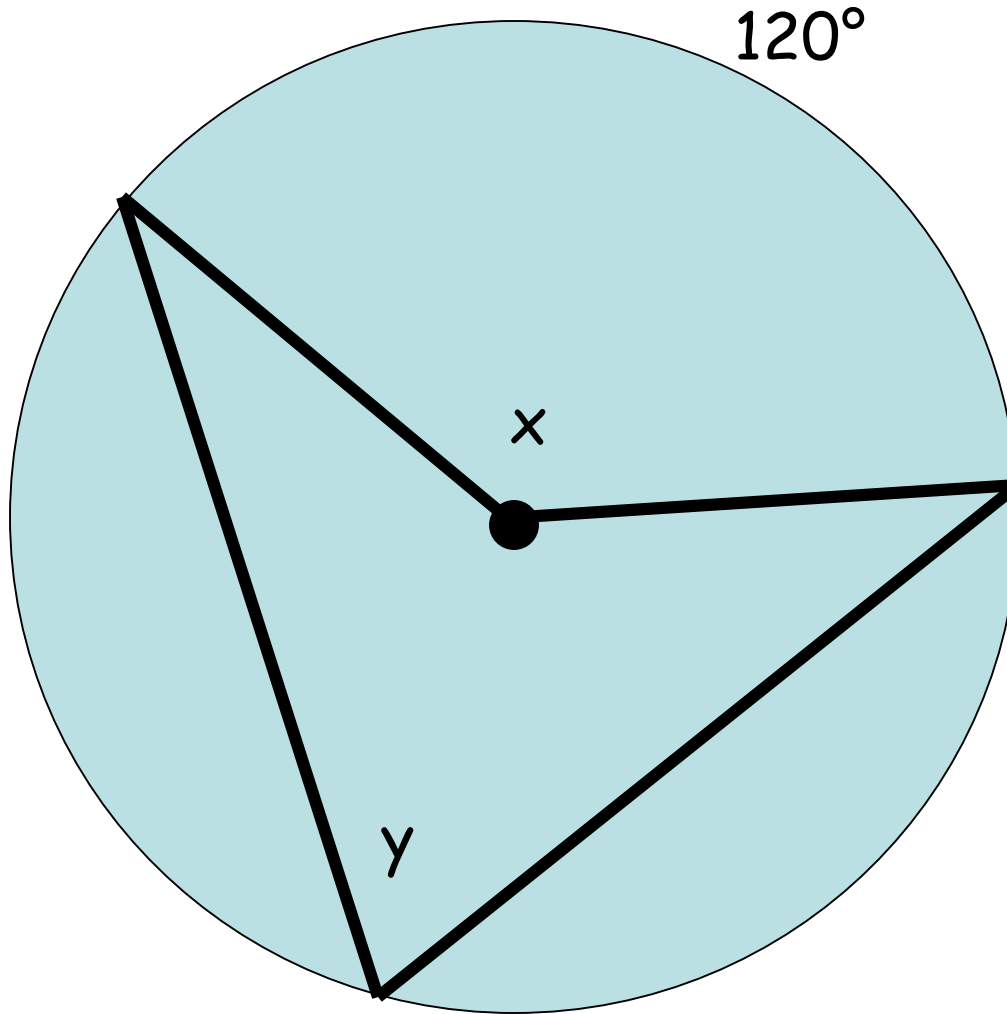
Enter answers in FORMS:

[https://forms.office.com/Pages/ResponsePage.aspx?id=-x30L5-](https://forms.office.com/Pages/ResponsePage.aspx?id=-x30L5-ROEmquMR_D8kYLWbKo50joN1FnNo7u2GDUMNURVU4SEoxMVizNUhPTVRQSzA3U0tZQVNCSy4u)

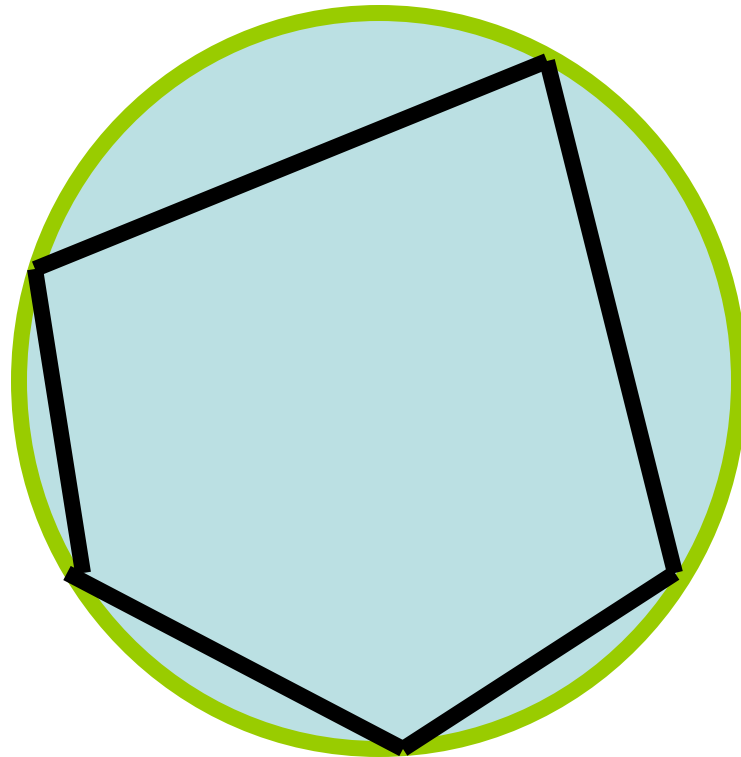
[ROEmquMR_D8kYLWbKo50joN1FnNo7u2GDUMNURVU4SEoxMVizNUhPTVRQSzA3U0tZQVNCSy4u](https://forms.office.com/Pages/ResponsePage.aspx?id=-x30L5-ROEmquMR_D8kYLWbKo50joN1FnNo7u2GDUMNURVU4SEoxMVizNUhPTVRQSzA3U0tZQVNCSy4u)

1st/2nd Block

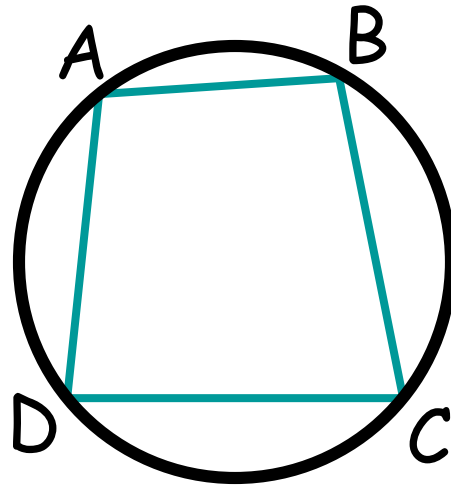
What is the value of x ? **Inscribed Angle**



If all the vertices of a polygon touch the edge of the circle, then the polygon is **INSCRIBED** and the circle is **CIRCUMSCRIBED**.



A circle can be circumscribed around a quadrilateral if and only if its opposite angles are supplementary.



$$m\angle A + m\angle C = 180$$

$$m\angle B + m\angle D = 180$$

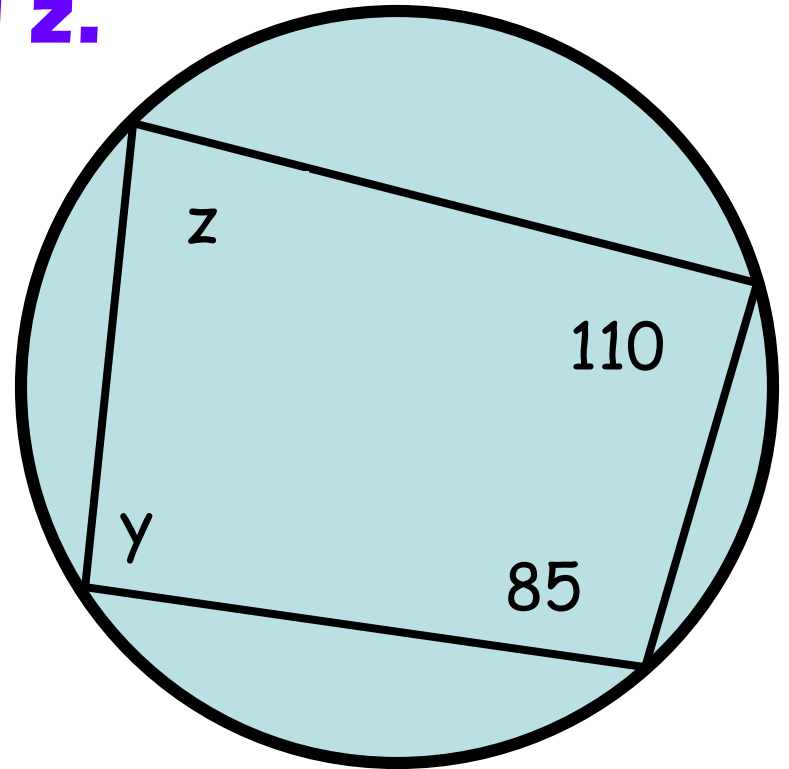
Example: Find y and z .

$$110 + y = 180$$

$$y = 70$$

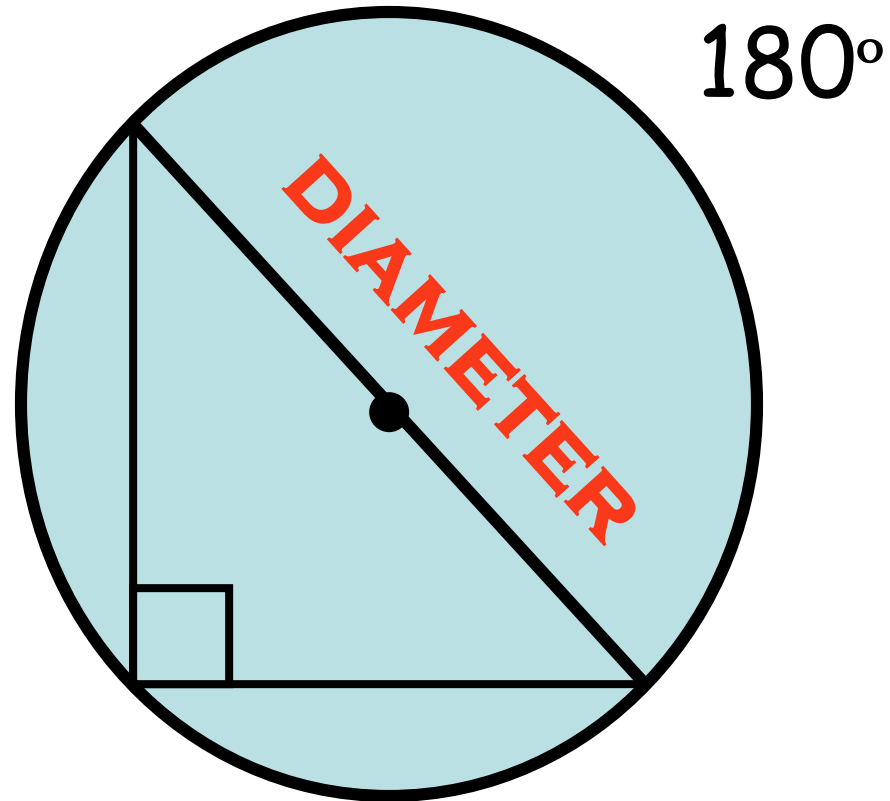
$$z + 85 = 180$$

$$z = 95$$



If a right triangle is inscribed in a circle then the hypotenuse is the **diameter of the circle**

AND the angle opposite the diameter is a **right angle.**

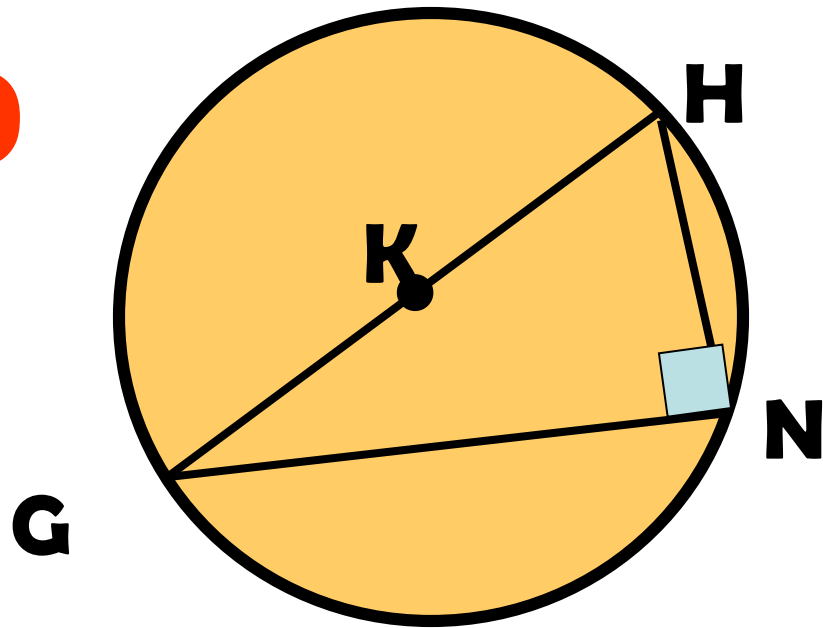


Example:

In $\odot K$, \overline{GH} is a diameter and $m\angle GNH = 4x - 14$.
Find the value of x .

$$4x - 14 = 90$$

$$x = 26$$



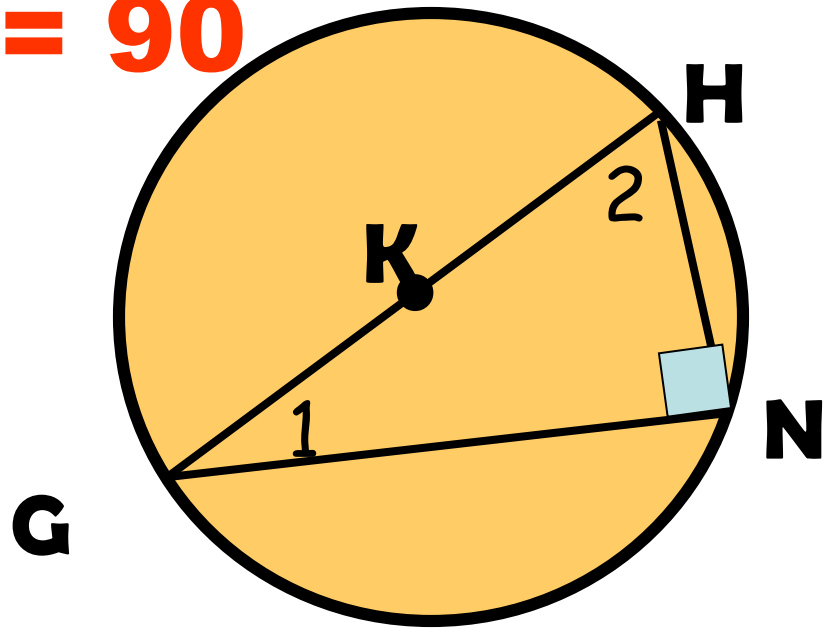
HINT: GH is also the hypotenuse.
Therefore, angle GNH is a right angle.

Example 7

$\odot K$ is a right triangle. In $\odot K$, $m\angle 1 = 6x - 5$ and $m\angle 2 = 3x - 4$. Find the value of x .

$$6x - 5 + 3x - 4 = 90$$

$$x = 11$$



HINT: Angle GNH is a right angle. Therefore, angles G & H are complementary.