STUDY GUIDE Name_____ Date_____ Period___

Equation of a circle:

$$(x-h)^2+(y-k)^2=r^2$$

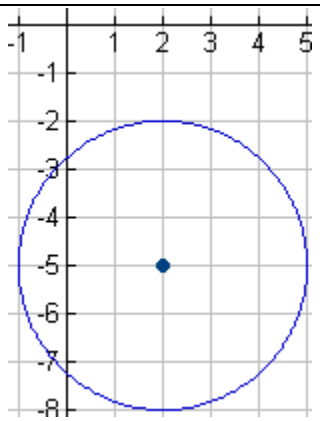
Where (h,k) is the center and r is the radius.

Ex: Write an equation for a circle with a radius of 8 and a center at (3,-2)

Answer:

$$(x-3)^2+(y+2)^2=64$$

1. What is the equation of the circle to the right?



2. what are the center and the radius of the following circle:

$(x+5)^2+(y+2)^2=9$?

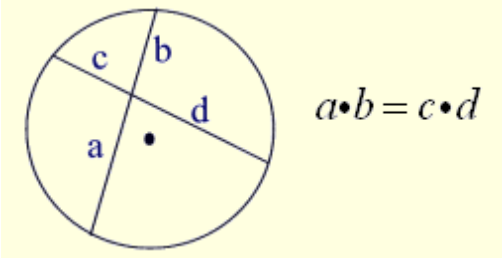
Completing the square:

Example	$4x^2-2x-5=0$
Get the variables you want to work with alone on one side.	$4x^2-2x=5$
Divide by a. Find b/2 and square it. Add that to both sides. Factor the perfect square. It should factor to $(x+b/2)^2$.	$x^2-\frac{1}{2}x=\frac{5}{4}$ $-\frac{1}{4}\rightarrow\frac{1}{16}$ $x^2-\frac{1}{2}x+\frac{1}{16}=\frac{5}{4}+\frac{1}{16}$ $(x-\frac{1}{4})^2=\frac{21}{16}$

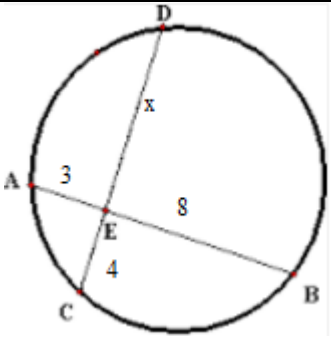
Use completing the square to put the following equations of a circle in standard form:

1. $x^2+y^2+16x-22y-20=0$

2. $x^2+y^2-12x+8y+32=0$



$a \cdot b = c \cdot d$

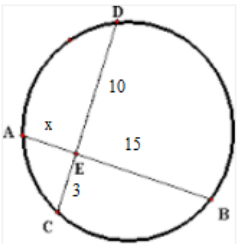


4x=3(8) simplify

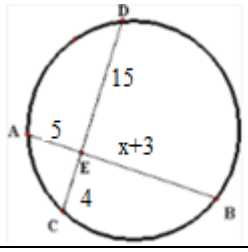
4x=24 divide by 4

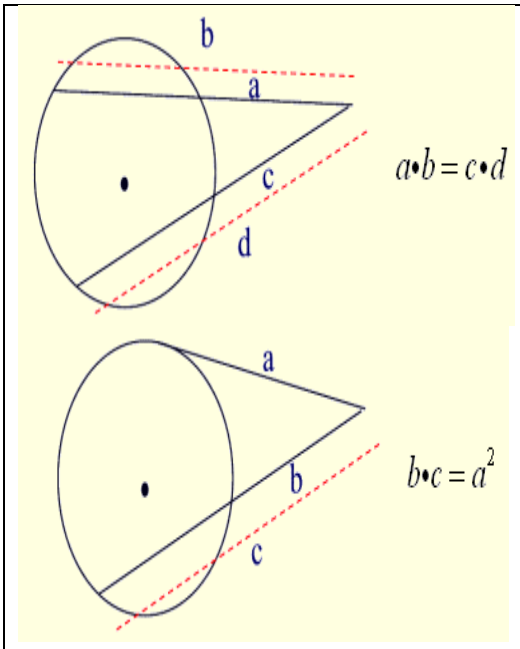
X=6

1.

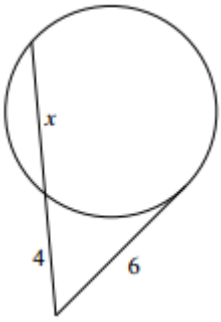


2.





outside · whole = outside · whole



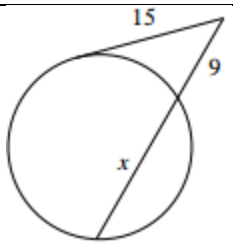
$4(x+4) = 6(6)$ simplify

$4x + 16 = 36$ subtract 16

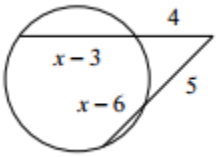
$4x = 20$ divide by 4

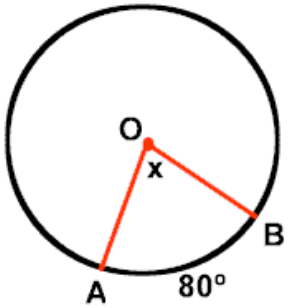
$x = 51$

1.



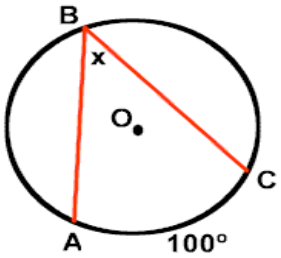
2.





Central angle = intercepted arc

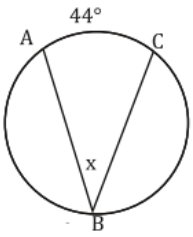
X=80



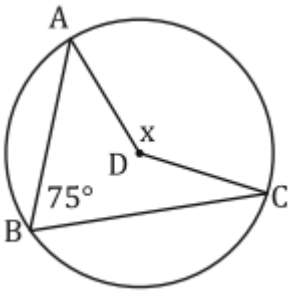
Inscribed angle = ½ (intercepted arc)

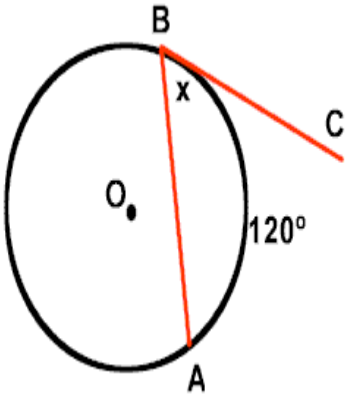
X= 50

1.



2.



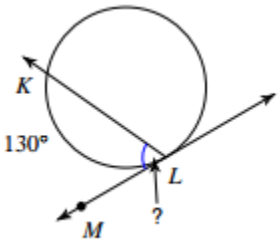


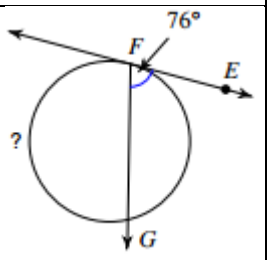
Tangent Chord Angle =

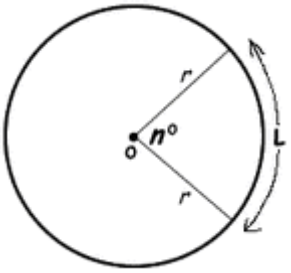
$\frac{1}{2}$ Intercepted Arc

$m\angle ABC = \frac{1}{2} m\overset{\frown}{AB}$

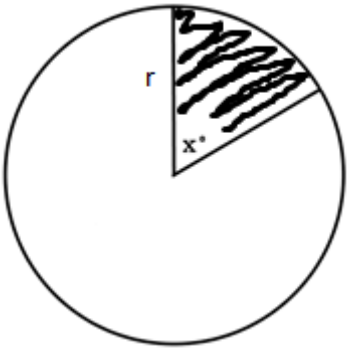
$x = \frac{1}{2}(120)$ $x = 60$







ARC LENGTH: $L = 2\pi r(\frac{n^o}{360^o})$



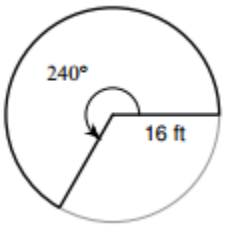
SECTOR AREA: $A = \pi r^2(\frac{x^o}{360^o})$

Find the arc length

$L = 2\pi 11(\frac{315^o}{360^o})$

L = 60.5 feet

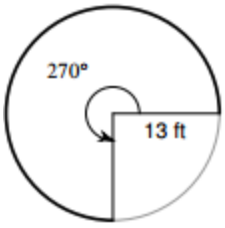
Find the sector area



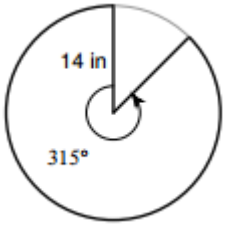
$A = \pi 16^2\left(\frac{240^o}{360^o}\right)$

A = 536.2

arc length:

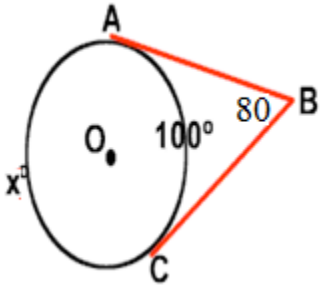


Sector area:



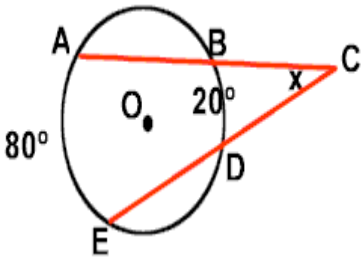
You are eating a doughnut. The missing circle in the middle has a radius of 0.2 inches. The entire doughnut has a radius of two inches. Your first bite takes 70 degrees out of the circle. What is the remaining area of the doughnut?

$m\angle ABD = \frac{1}{2}(m\overset{\frown}{AD} - m\overset{\frown}{AC})$

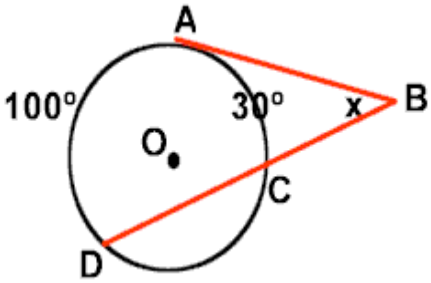


$x - 100 = 2(80)$ simplify
$x - 100 = 160$ add
$x = 260$

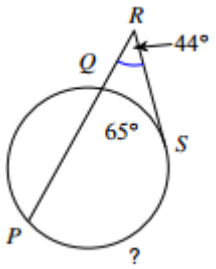
(big arc) – (small arc) = 2(angle)

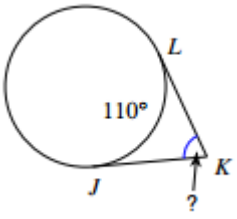


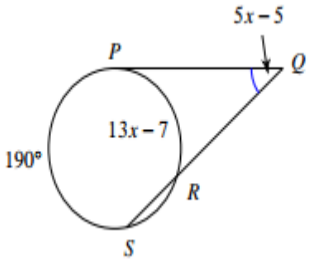
$80 - 20 = 2x$ simplify
$60 = 2x$ divide
$x = 30$

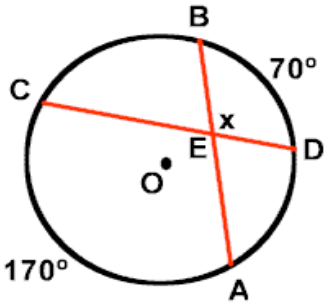


$100 - 30 = 2x$ simplify
$70 = 2x$ divide
$x = 35$









Angle Formed Inside by Two Chords =

$\frac{1}{2}$ **Sum** of Intercepted Arcs

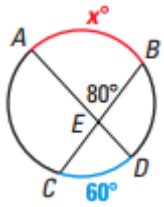
$$m\angle BED = \frac{1}{2}\left(m\overset{\frown}{AC} + m\overset{\frown}{BD}\right)$$

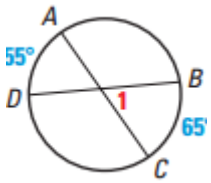
OR $arc + arc = angle + angle$

$170 + 70 = x + x$ simplify

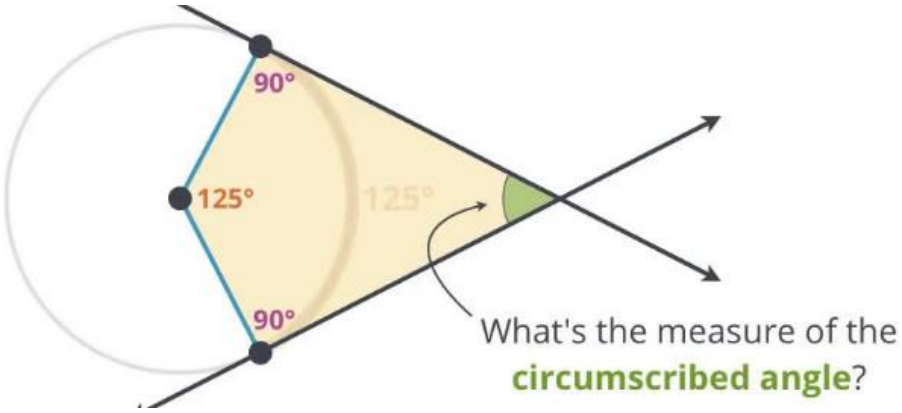
$240 = 2x$ divide

$x = 120$



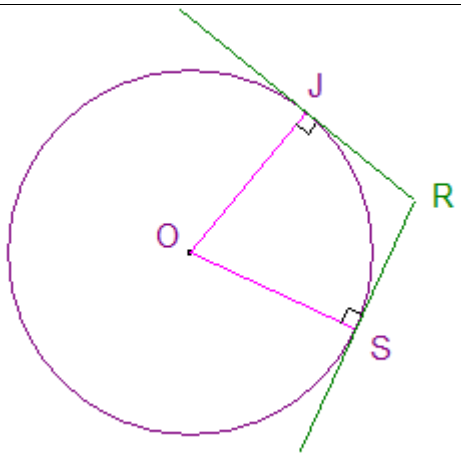


A circumscribed angles and their arcs are always supplementary.



$x + 125 = 180$ subtract

$x = 55$



Find angle R if angle O is 70 degrees.