

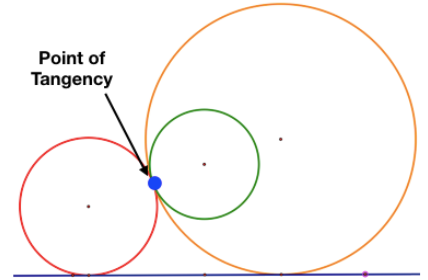
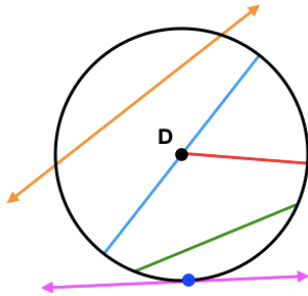
Chapter 10

10.1 Lines and Segments That Intersect Circles

Vocabulary

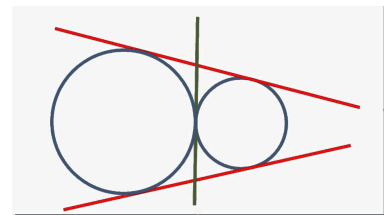
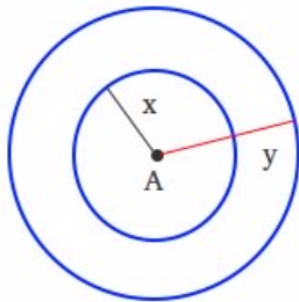
Tangent Circles are _____

Chord
Secant

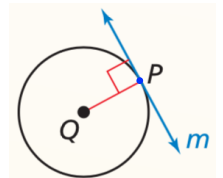


Concentric Circles are _____

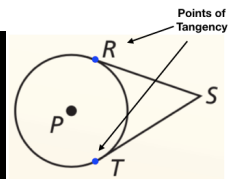
Common Tangents



<p>Tangent Line to Circle Theorem</p>	
----------------------------------------------	--



<p>External Tangent Congruence Theorem</p>	
---------------------------------------------------	--

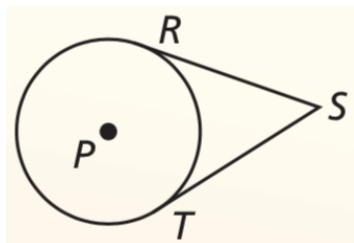


Construct a Proof

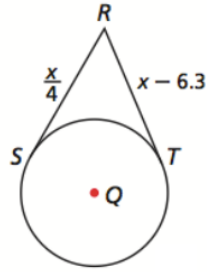
Given that SR and ST are tangents, prove SR is congruent to ST.

Statements

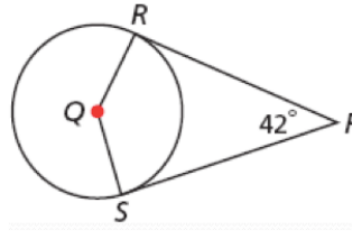
Reasons



a) Solve for RS



b) Solve for $m\angle Q$



10.2 Finding Arc Measures

Vocabulary

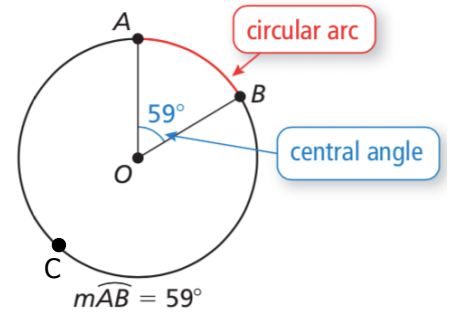
Central Angle:

Arc:

Minor Arc:

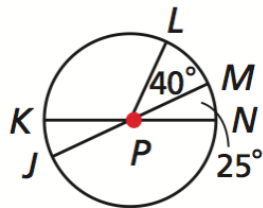
Major Arc:

Semicircle:



KN and JM are diameters.

a) Solve for $m\widehat{JKL}$



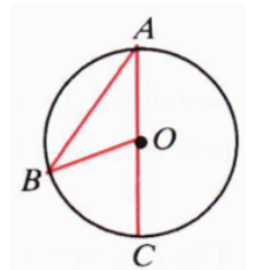
b) Solve for $m\widehat{LJN}$

$$m\angle A = 35^\circ$$

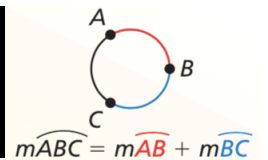
$$m\angle B =$$

$$m\angle BOC =$$

$$m\widehat{BC} =$$



Arc Addition Postulate	
-------------------------------	--



Example

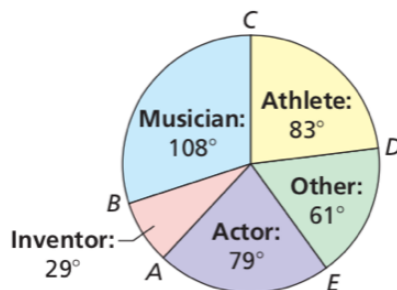
$$m\widehat{AC} =$$

$$m\widehat{ACD} =$$

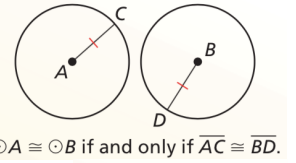
$$m\widehat{ADC} =$$

$$m\widehat{EBD} =$$

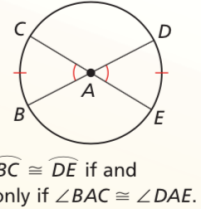
Whom Would You Rather Meet?



Congruent Circles Theorem	
----------------------------------	--

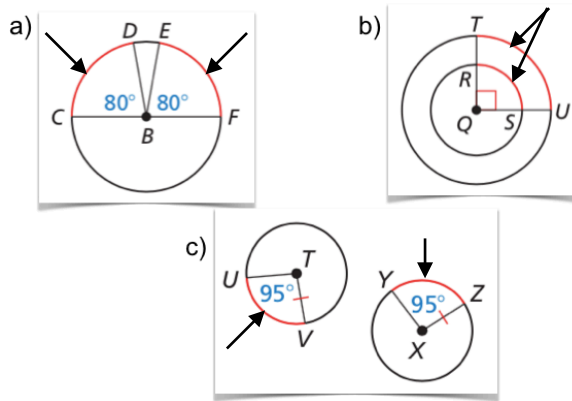


Congruent Central Angles Theorem	
-----------------------------------------	--



Similar Circles Theorem	
--------------------------------	--

Are the red arcs congruent?



10.3 Using Chords

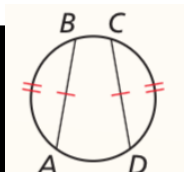
What is a chord?

Definition:

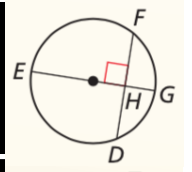
Is a diameter a chord? Radius?

How does it compare to a secant? A tangent?

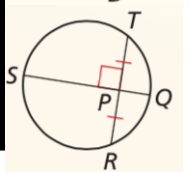
Congruent Corresponding Chords Theorem	
-----------------------------------------------	--



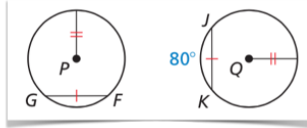
Perpendicular Chord Bisector Theorem	
---------------------------------------------	--



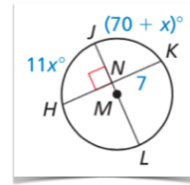
Perpendicular Chord Bisector Converse	
----------------------------------------------	--



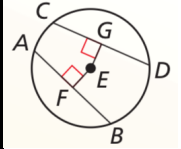
a) Solve for $m\widehat{FG}$



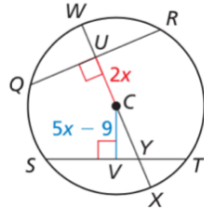
b) $\widehat{HK} =$
 $m\widehat{HK} =$
 Does $m\widehat{HL} = m\widehat{JK}$?
 Why or why not?



Equidistant Chords Theorem

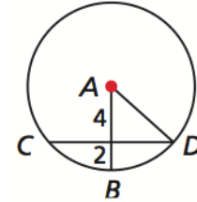


Given: $QR = ST = 16$,
 $CU = 2x$,
 $CV = 5x - 9$



What is the radius of circle C?

Given: $\overline{AB} \perp \overline{CD}$
 Solve for the length CD.



10.4 Inscribed Angles and Polygons

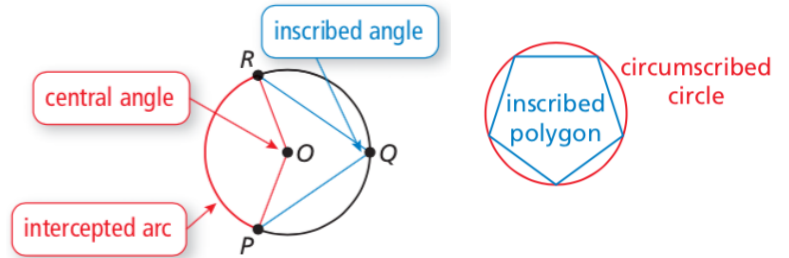
Vocabulary

Inscribed Angle:

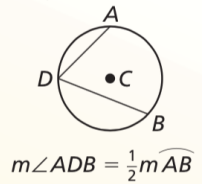
Intercepted Arc:

Inscribed Polygon:

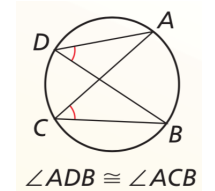
Circumscribed Circle:



Inscribed Angle Theorem

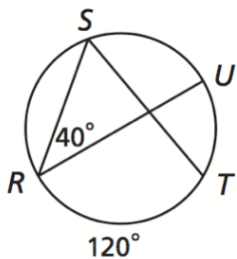


Inscribed Angles of a Circle Theorem



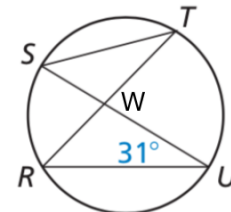
$m\angle RST =$

$m\widehat{SU} =$

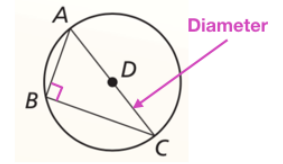


$m\widehat{RS} =$

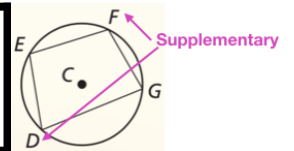
$m\angle STR =$



<p>Inscribed Right Triangle Theorem</p>	
------------------------------------------------	--

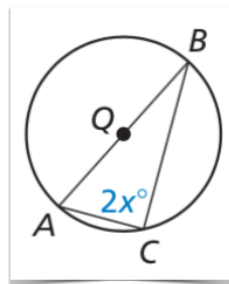


<p>Inscribed Quadrilateral Theorem</p>	
-----------------------------------------------	--

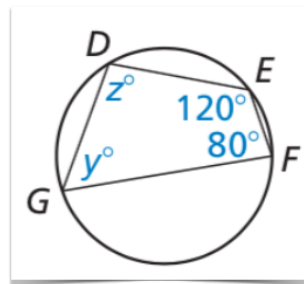


Why are $\angle F$ and $\angle D$ supplementary in diagram above right?

a) Solve for x .

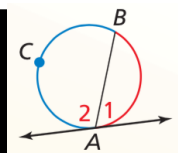


b) Solve for y and z .

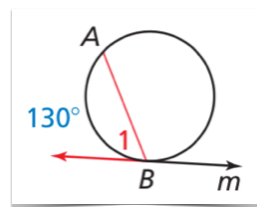


10.5 Angle Relationships in Circles

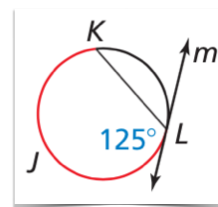
<p>Tangent and Intersected Chord Theorem</p>	
-----------------------------------------------------	--



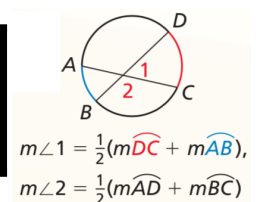
a) Solve for $\angle 1$



b) Solve for $m\widehat{KJL}$

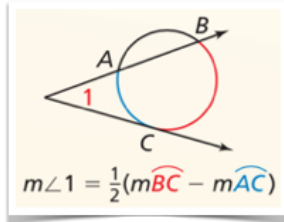


<p>Angles Inside the Circle Theorem</p>	
------------------------------------------------	--

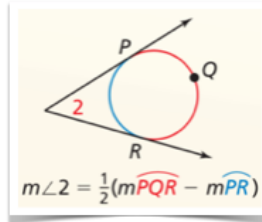


Angles Outside the Circle Theorem

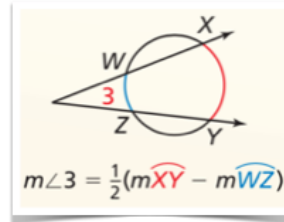
**Case 1:
Tangent-Secant**



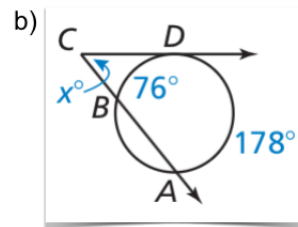
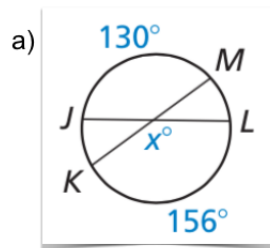
**Case 2:
Tangent-Tangent**



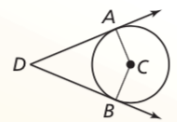
**Case 3:
Secant-Secant**



Calculate x.

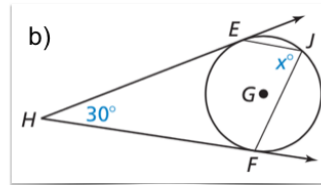
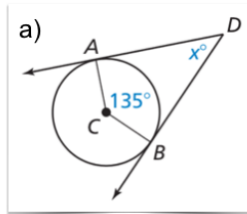


Circumscribed Angle Theorem



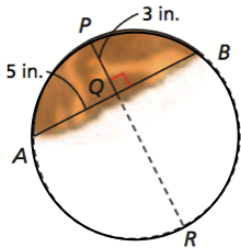
$m\angle ADB = 180^\circ - m\angle ACB$

Calculate x.



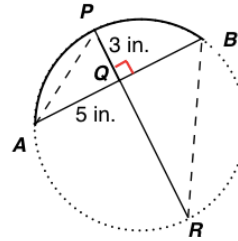
10.6 Segment Relationships in Circles

A shard of a Greek discus was found in an archaeological dig.

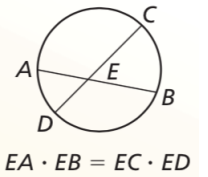


What was the original diameter PR?

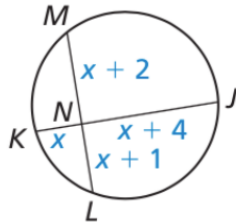
Use inscribed angles and similarity to find the diameter PR.



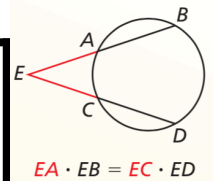
<p style="text-align: center;">Segments of Chords Theorem</p>	
----------------------------------------------------------------------	--



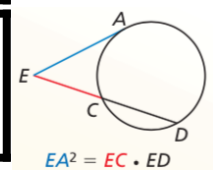
Calculate ML and JK.



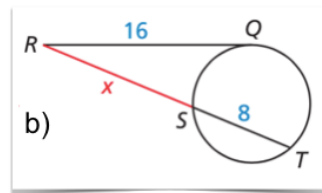
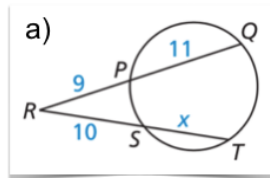
<p style="text-align: center;">Segments of Secants Theorem</p>	
-----------------------------------------------------------------------	--



<p style="text-align: center;">Segments of Secants and Tangents Theorem</p>	
------------------------------------------------------------------------------------	--



Calculate x.

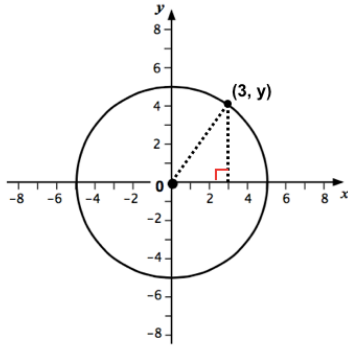


10.7 Circles in the Coordinate Plane

Circle with center $(0,0)$ and radius 5.

A point has coordinates $(3,y)$ on the circle. Write a value for y .

(Hint: Use Pythagorean Theorem)



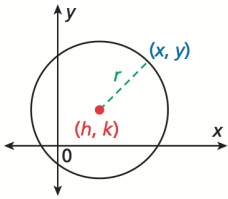
Circle with center $(0,0)$ and radius 5.

Find x and y for these points on the circle:

- $(1, y)$
- $(x, 1)$
- $(2, y)$
- $(x, 2)$

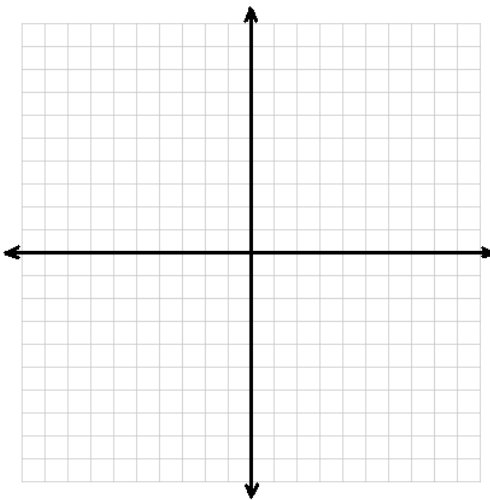
Circle Equation: From the Pythagorean Theorem. Center at the origin with radius r .

Standard Equation for Circle



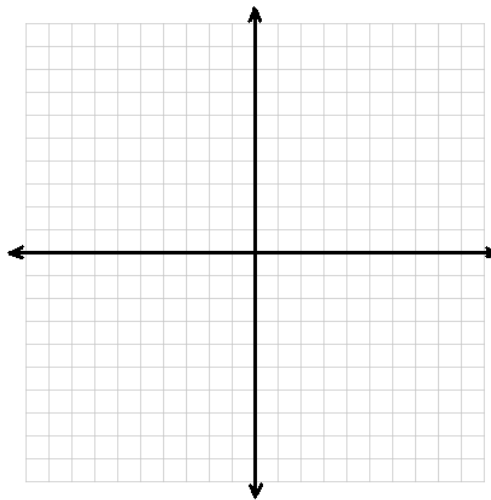
Equation: _____

Sketch the Circle



Standard Form

Rewrite the formula into standard form, then graph.



Coordinate Proof

Prove or disprove that the point $(\sqrt{2}, \sqrt{2})$ lies on the circle centered at the origin and containing the point $(2, 0)$.