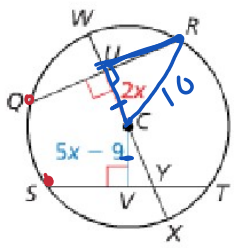
$a^2+b^2=c^2$



In the diagram, $QR = ST = 16$, $CU = 2x$, and $CV = 5x - 9$. Find the radius of $\odot C$.

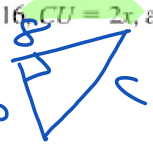
$2x = 5x - 9$

$-5x \quad -5x$

$-3x = -9$

$-3 \quad -3$

$x = 3$



$6^2+8^2=c^2$

$36+64=c^2$

$100=c^2$

$10=\sqrt{100}=c$

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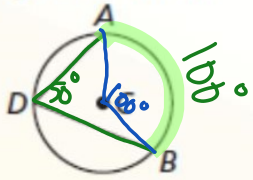
Theorem

Theorem 10.10 Measure of an Inscribed Angle Theorem

The measure of an inscribed angle is one-half the measure of its intercepted arc.



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

Proof Ex. 37, p. 560

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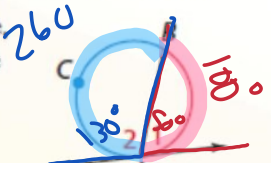
Theorem

Theorem 10.14 Tangent and Intersected Chord Theorem

If a tangent and a chord intersect at a point on a circle, then the measure of each angle formed is one-half the measure of its intercepted arc.



Proof Ex. 33, p. 568

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

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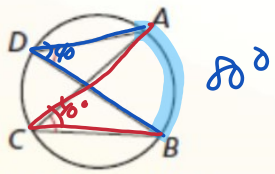
Theorem

Theorem 10.11 Inscribed Angles of a Circle Theorem

If two inscribed angles of a circle intercept the same arc, then the angles are congruent.



Proof Ex. 38, p. 560

$\angle ADB \cong \angle ACB$

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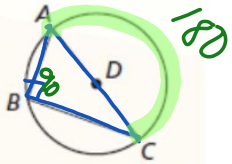
Theorems

Theorem 10.12 Inscribed Right Triangle Theorem

If a right triangle is inscribed in a circle, then the hypotenuse is a diameter of the circle. Conversely, if one side of an inscribed triangle is a diameter of the circle, then the triangle is a right triangle and the angle opposite the diameter is the right angle.

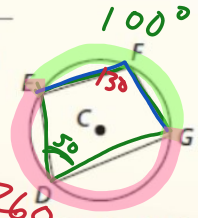


Proof Ex. 39, p. 560

$m\angle ABC = 90°$ if and only if $\overline{AC}$ is a diameter of the circle.

Theorem 10.13 Inscribed Quadrilateral Theorem

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



Proof Ex. 40, p. 560

D, E, F, and G lie on $\odot C$ if and only if $m\angle D + m\angle F = m\angle E + m\angle G = 180°$.

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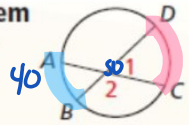
Theorems

Theorem 10.15 Angles Inside the Circle Theorem

If two chords intersect *inside* a circle, then the measure of each angle is one-half the *sum* of the measures of the arcs intercepted by the angle and its vertical angle.



60
40

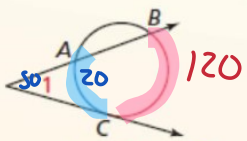
$m\angle 1 = \frac{1}{2}(m\overset{\frown}{DC} + m\overset{\frown}{AB})$, $60+40=\frac{100}{2}=50$

$m\angle 2 = \frac{1}{2}(m\overset{\frown}{AD} + m\overset{\frown}{BC})$

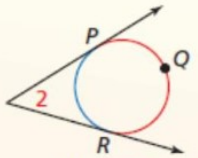
Proof Ex. 35, p. 568

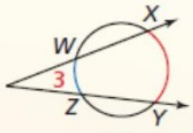
Theorem 10.16 Angles Outside the Circle Theorem

If a tangent and a secant, two tangents, or two secants intersect *outside* a circle, then the measure of the angle formed is one-half the *difference* of the measures of the intercepted arcs.



120





$m\angle 1 = \frac{1}{2}(m\overset{\frown}{BC} - m\overset{\frown}{AC})$ $m\angle 2 = \frac{1}{2}(m\overset{\frown}{PQR} - m\overset{\frown}{PR})$ $m\angle 3 = \frac{1}{2}(m\overset{\frown}{XY} - m\overset{\frown}{WZ})$

$120-20=\frac{100}{2}=50$

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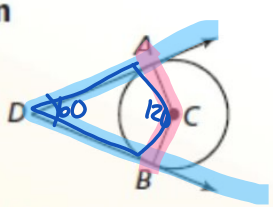
Theorem

Theorem 10.17 Circumscribed Angle Theorem

The measure of a circumscribed angle is equal to 180° minus the measure of the central angle that intercepts the same arc.



Proof Ex. 38, p. 568

$m\angle ADB = 180° - m\angle ACB$

$180 - 120 = 60$

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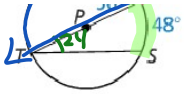
Find the indicated measure.

a. $m\angle T$ 24°

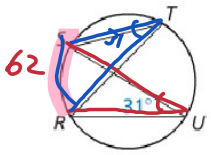
b. $m\overset{\frown}{QR}$ 80°



62° 31°

Find mRS and $m\angle STR$. What do you notice about $\angle STR$ and $\angle RUS$?

=



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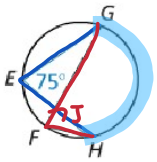
Given $m\angle E = 75°$, find $m\angle F$.

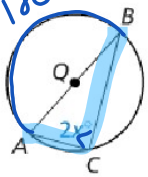
75°



150°

Find the value of each variable.

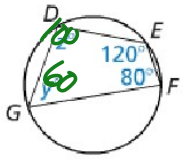
a. 180°



$x = 45°$

$2x = 90$

b.



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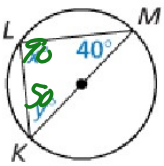
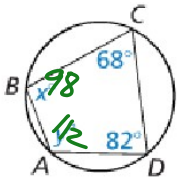
Find the value of each variable.

$10x + 8x = 180$
$18x = 180$
$x = 10$

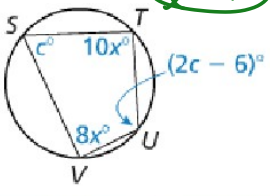
4.



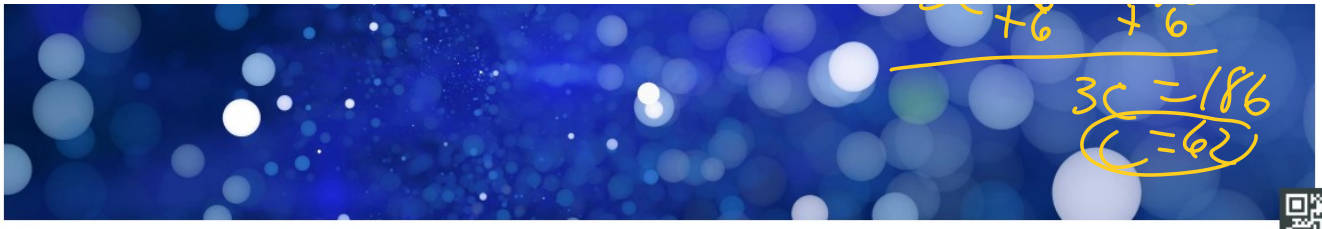
5.



6.



$2c - 6 + c = 180$
$3c - 6 = 180$



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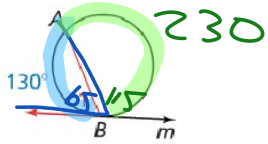
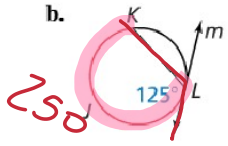
Line m is tangent to the circle. Find the measure of the red angle or arc.

a.

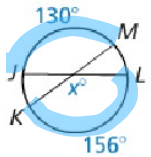


b.



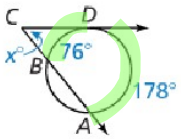
Find the value of x.

a.



$\frac{130+156}{2} = 143°$

b.



$\frac{178-76}{2} = 51°$

Students, draw anywhere on this slide!

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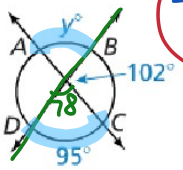
Find the value of the variable.

4.



$2(78 = y + 95)2$

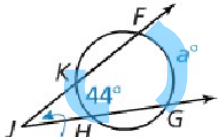
$\frac{156}{2} = \frac{y+95}{2}$

$156 = y + 95$

$-95 \quad -95$

$61 = y$

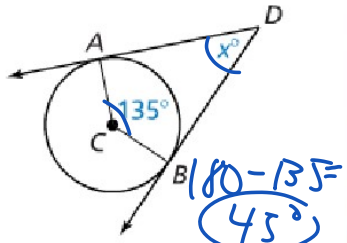
5.



104°

Find the value of x.

a.



$180 - 135 = 45°$

$2(30 = \frac{a-44}{2})2$

$60 = a - 44$

$+44 \quad +44$

$104 = a$

Students, draw anywhere on this slide!

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