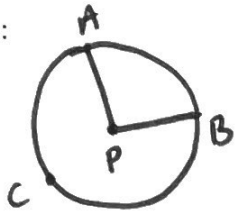
7.4 Central Versus Inscribed Angles Guided Notes

Central Angle: angle where vertex is on the center of circle.

Example:

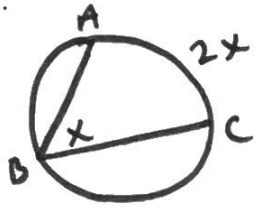


Formula:

Angle = arc

Inscribed Angle: Angle where the vertex is on the circle & whose sides contain chords of the circle.

Example:

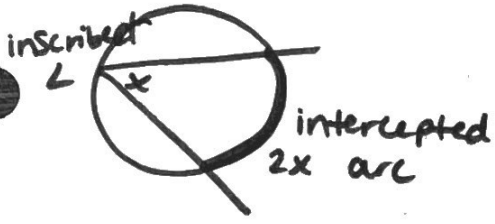


Formula:

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

Intercepted Arc: arc that the inscribed ∠ opens up to.

Example:



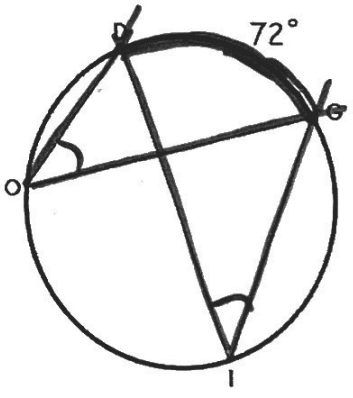
Formula:

arc = 2(angle)

Theorem: If two inscribed ∠'s intercept the same arc, then they are ≅.

Example:

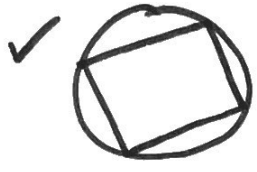
Find measure of ∠DOG & ∠DIG.



m∠DOG &
m∠DIG = 36°

The Difference between Inscribed and Circumscribed:

If all the vertices of a polygon touch the edge of the circle, the polygon is inscribed. The circle that contains the vertices is a circumscribed circle.



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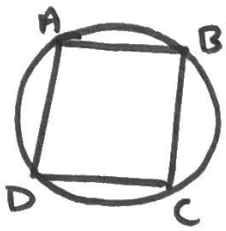
X NO

Theorem: a quadrilateral can be inscribed in a circle iff its opposite ∠'s are supplementary.

Interpretation of Theorem:

Example:



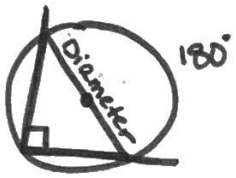
$m\angle A + m\angle C = 180°$

$m\angle B + m\angle D = 180°$

Theorem: If a right triangle is inscribed in a circle then the hypotenuse is the diameter of the circle.

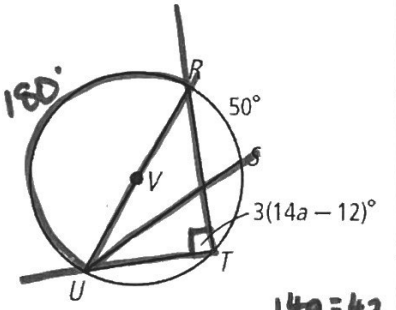
Converse: If one side of an inscribed right Δ is a diameter of the circle, then the Δ is a rt Δ & angle opp. diameter is a right ∠.

Example:



Examples:

1) $\angle RUS = 25°$



2) Solve for a:

$\frac{3(14a-12)}{3} = \frac{90}{3}$

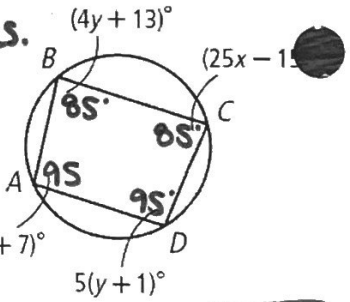
$14a - 12 = 30$

$+12 \quad +12$

$\frac{14a}{14} = \frac{42}{14}$

$a = 3$

3) Find angle meas. of ABCD.



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

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

$15x + 35 + 25x - 15 = 180$

$40x + 20 = 180$

$x = 4$

$4y + 13 + 5y + 5 = 180$

$y = 18$

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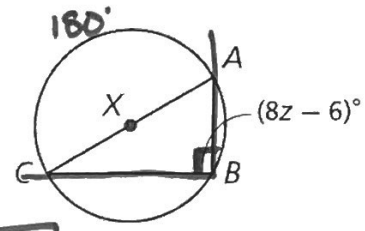
4) Find Z



$8z - 6 = 90$

$+6 \quad +6$

$\frac{8z}{8} = \frac{96}{8}$

$z = 12$

5) Find $m\angle EDF$

$2x + 3 = 75 - 2x$

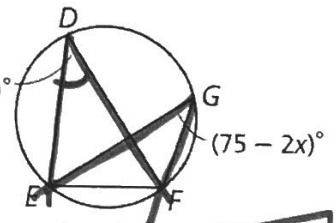
$+2x \quad +2x$

$4x + 3 = 75$

$-3 \quad -3$

$4x = 72$

$x = 18$



$2(18) + 3 = 39°$

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6) Find $m\angle PRU = 59°$

7) Find $m\overset{\frown}{SP} = 54°$