

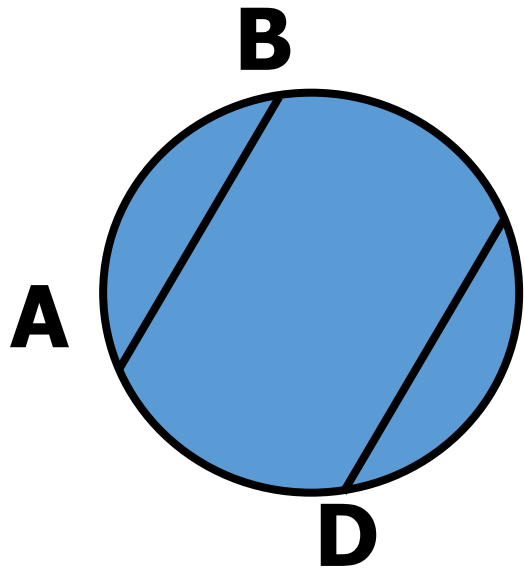


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Properties of Chords



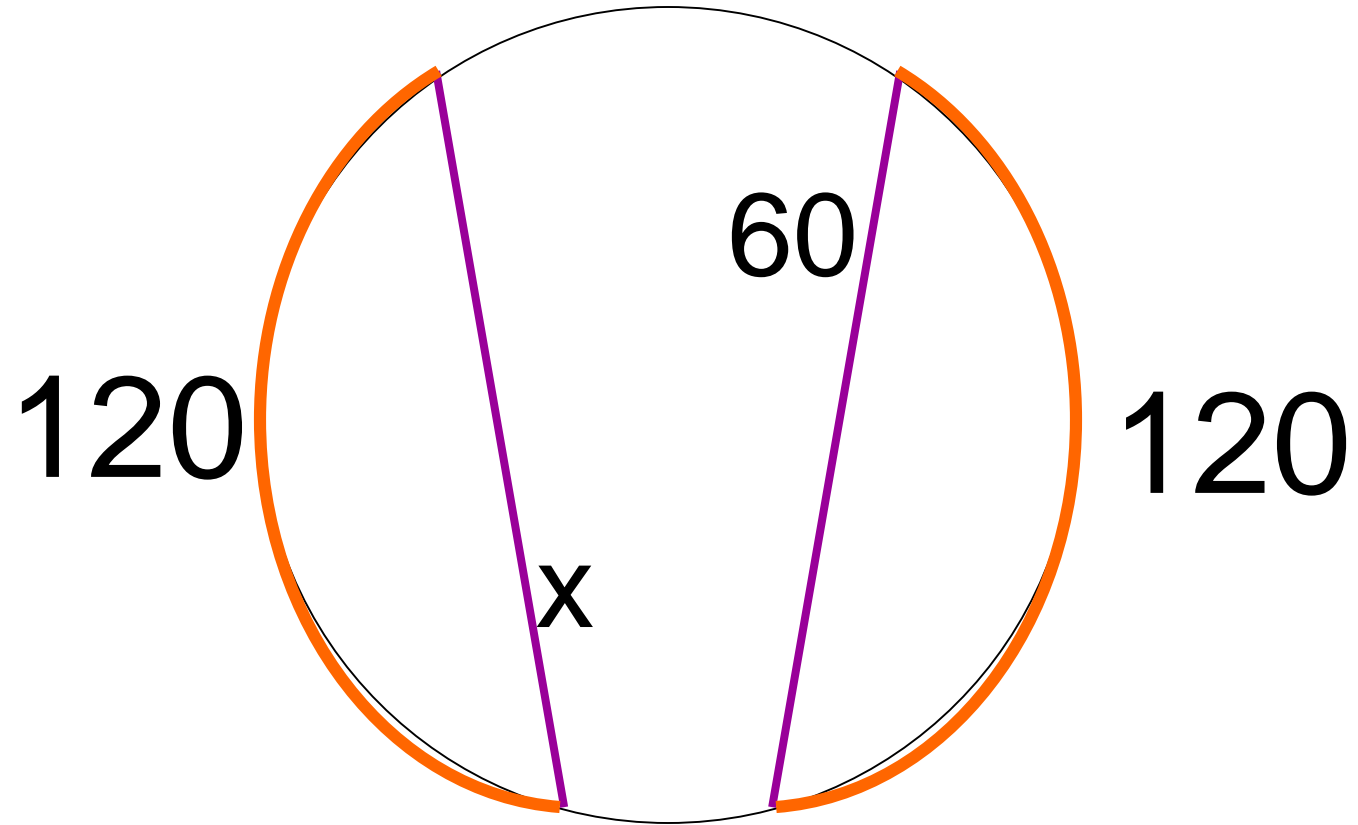
**In the same circle, or in congruent circles,
two minor arcs are congruent **if and only if**
their corresponding chords are congruent.**



C $\widehat{AB} \cong \widehat{CD}$ IFF $AB \cong DC$



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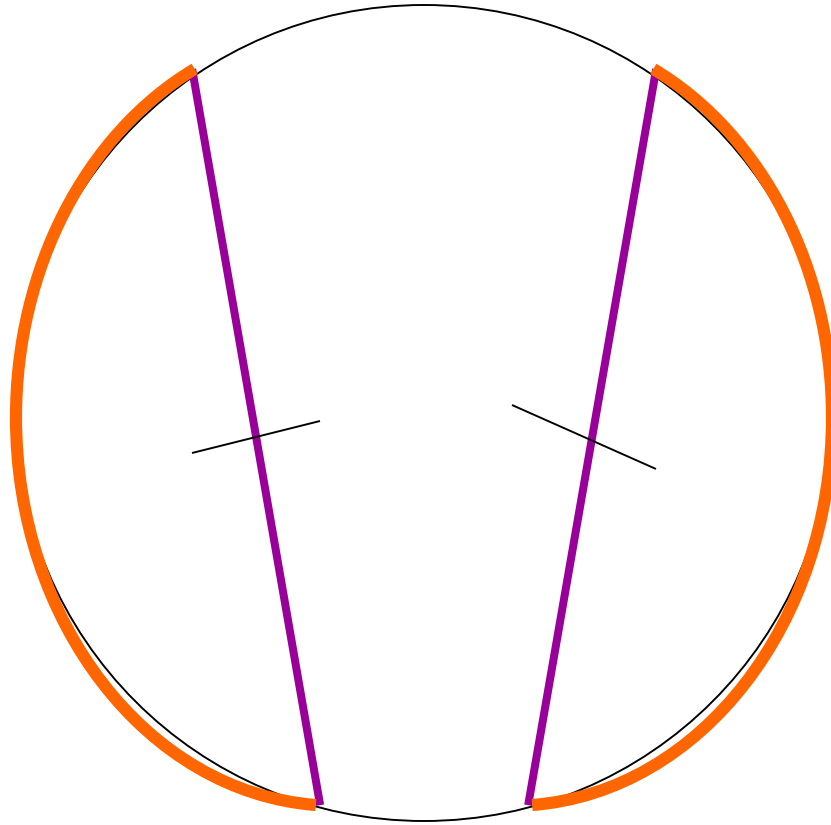


$$x = 60$$



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$2x$



$x + 40$

$$2x = x + 40$$

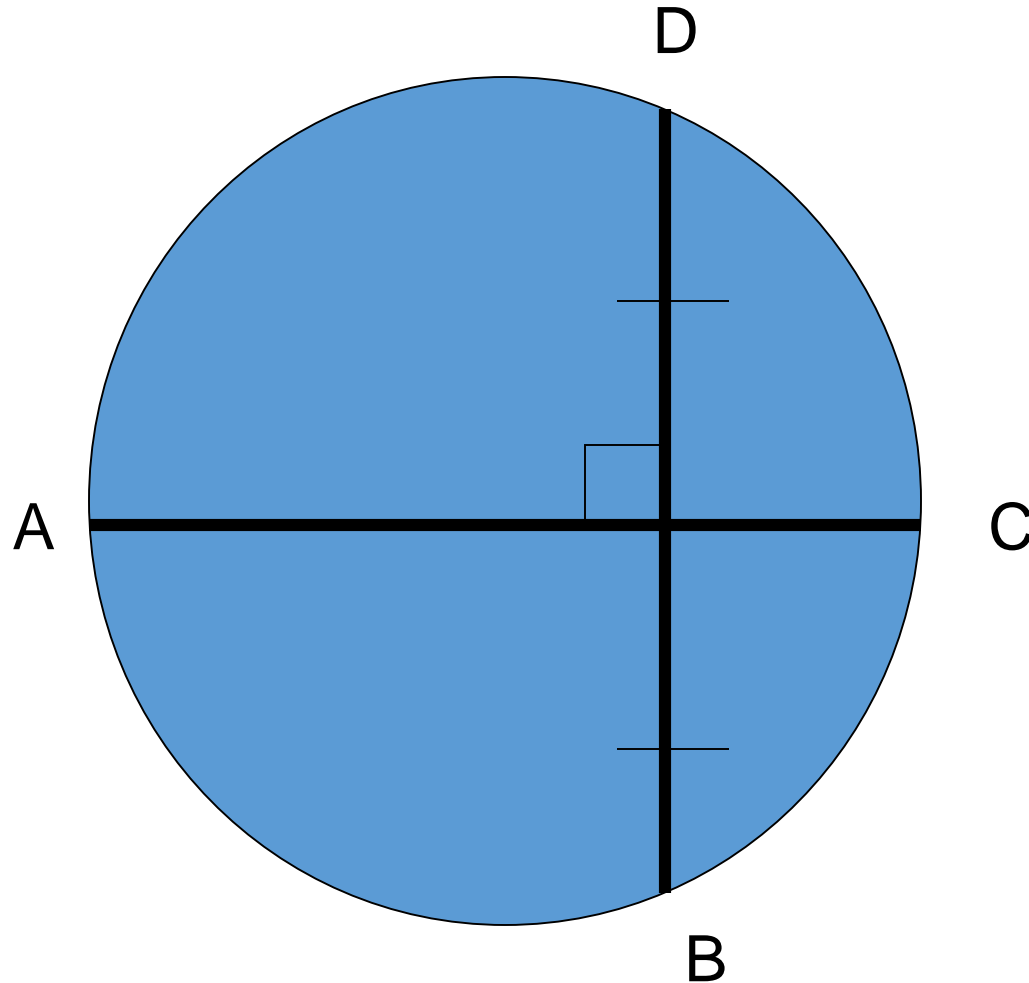
$$x = 40$$



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What can you tell me about segment AC if you know it is the perpendicular bisectors of segments DB ?

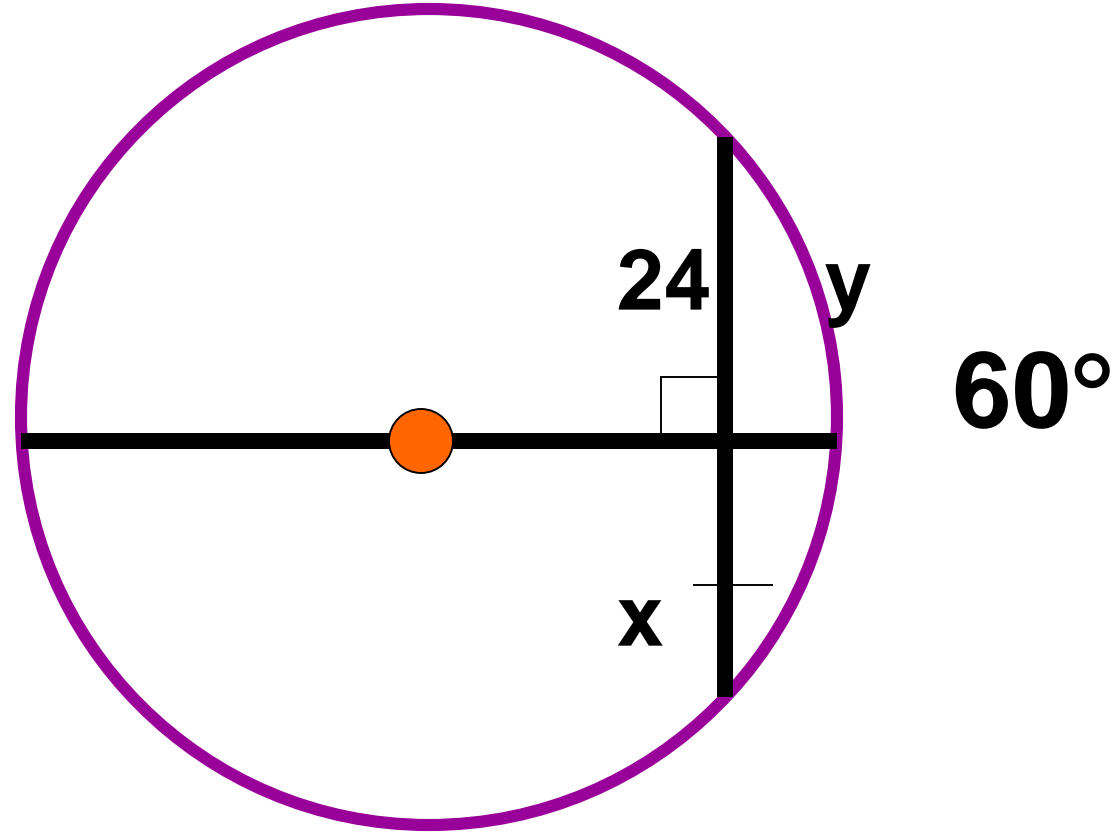
**It's the
DIAMETER!!!**



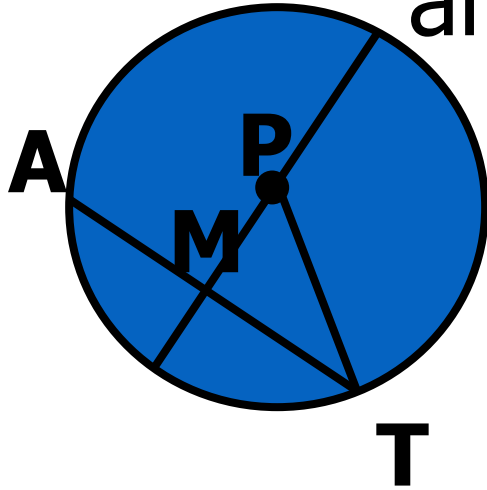


Ex. 1 If a diameter of a circle is perpendicular to a chord, then the diameter bisects the chord and its arc.

$$x = 24$$
$$y = 30^\circ$$



EX 2: In $\odot P$, if $PM \perp AT$, $PT = 10$,
and $PM = 8$, find AT .



$$MT = 6$$

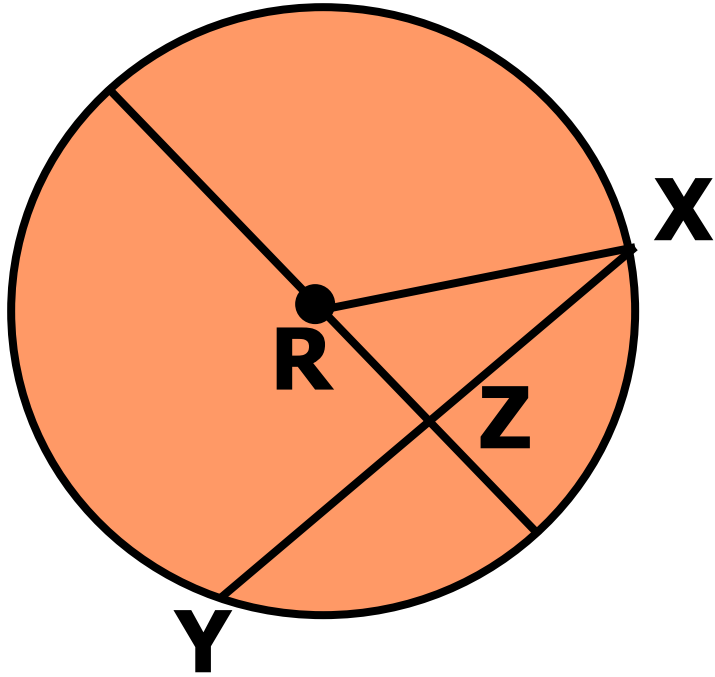
$$AT = 12$$



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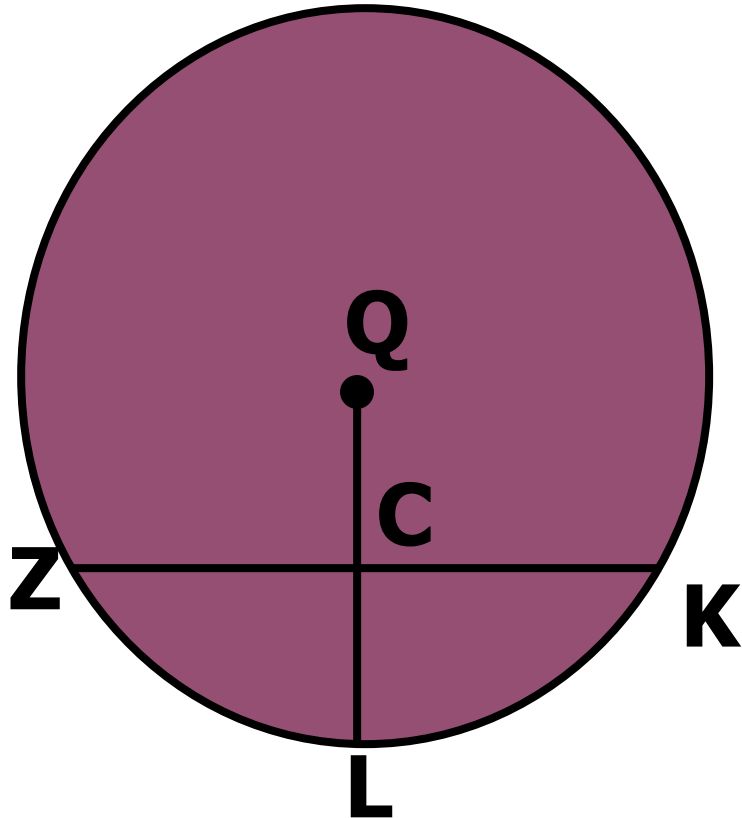
In $\odot R$, $XY = 30$, $RX = 17$, and $RZ \perp XY$.

Find RZ .



$$RZ = 8$$

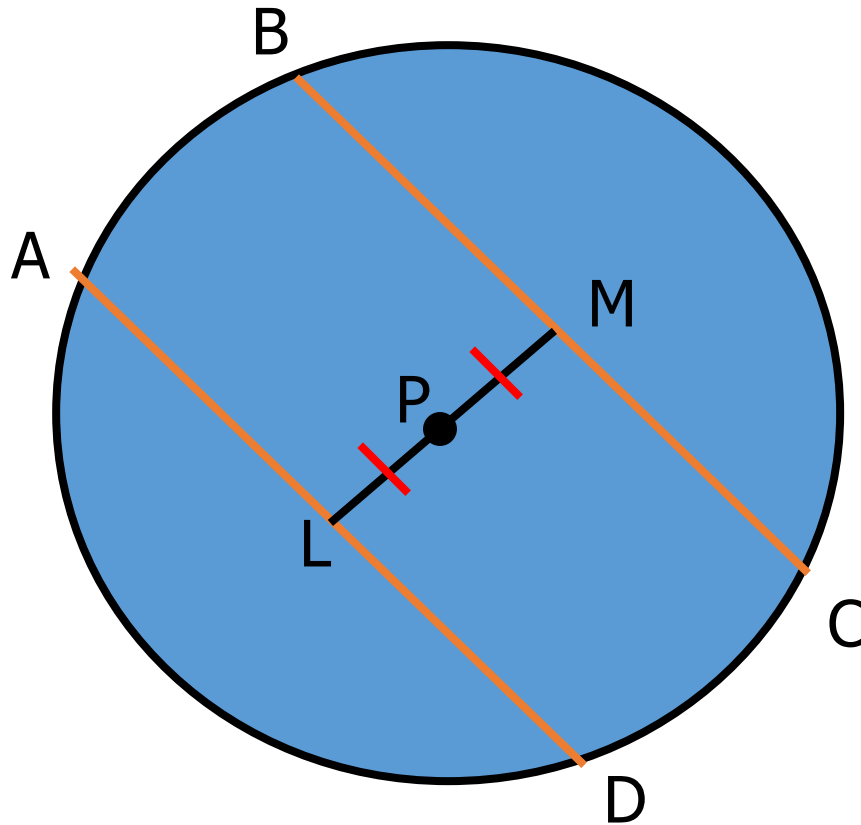
IN $\odot Q$, $\widehat{KL} \cong \widehat{LZ}$.
IF $CK = 2X + 3$ and
 $CZ = 4x$, find x .



$$x = 1.5$$



**In the same circle or in congruent circles,
two chords are congruent if and only if they
are equidistant from the center.**



$$AD \cong BC$$

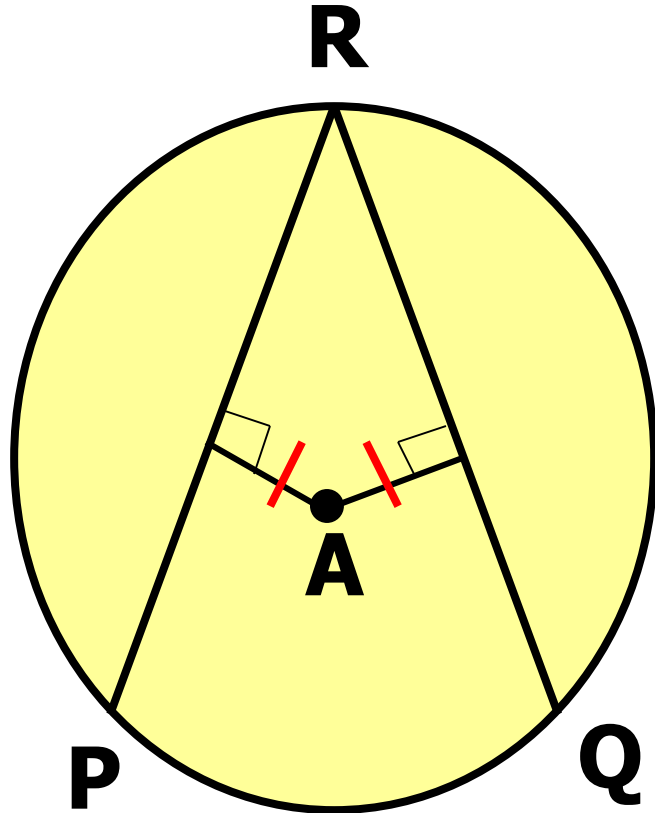
IFF

$$LP \cong PM$$



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In $\odot A$, $PR = 2x + 5$ and
 $QR = 3x - 27$. Find x .



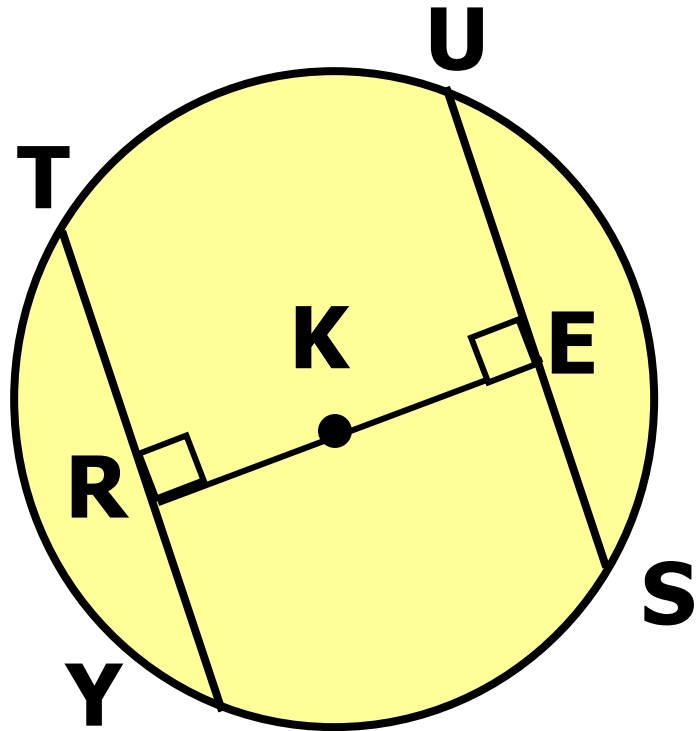
$$x = 32$$



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IN $\odot K$, K is the midpoint of RE .

If $TY = -3x + 56$ and $US = 4x$, find x .



$$x = 8$$



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Segment Lengths from Chords



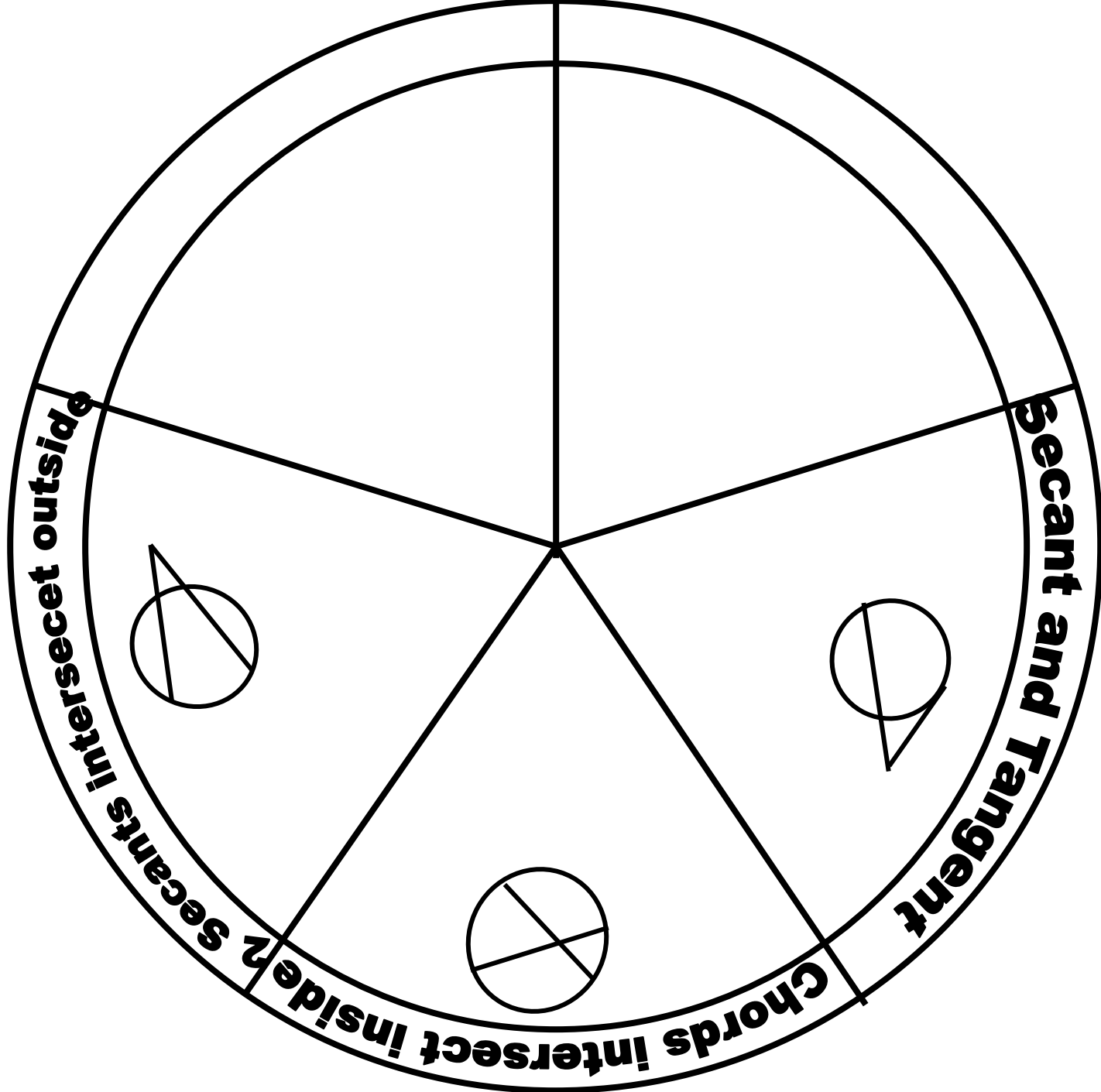
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Segment Lengths in Circles

- Find the lengths of segments of chords
- Find the lengths of segments of tangents and secants



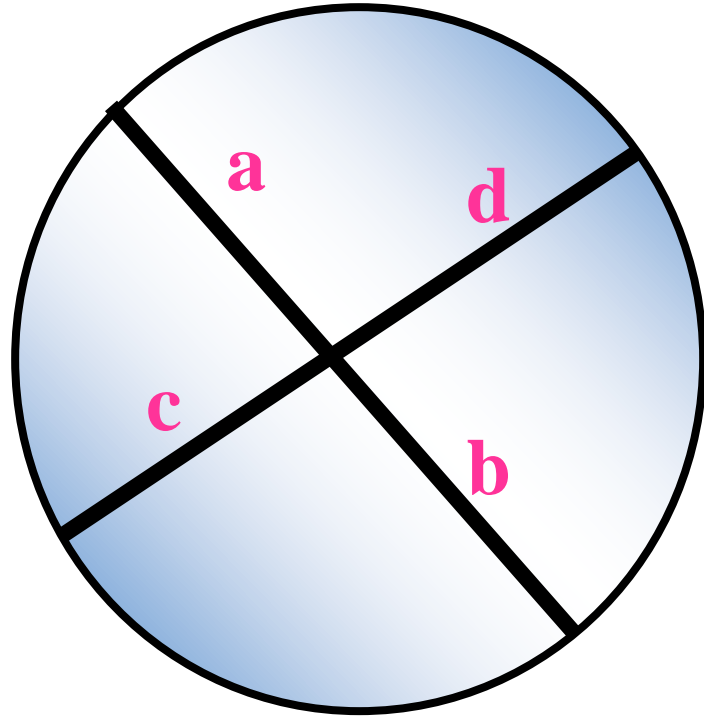
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Type 1: Two chords intersect INSIDE the circle



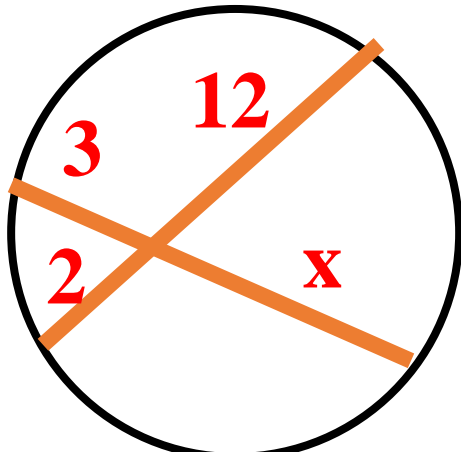
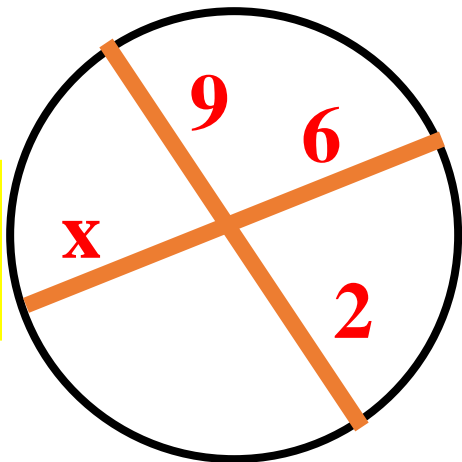
$$ab = cd$$

$$\text{part} \bullet \text{part} = \text{part} \bullet \text{part}$$

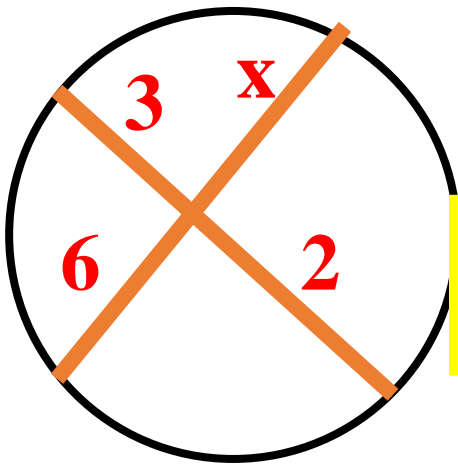


Solve for x.

$$x = 3$$



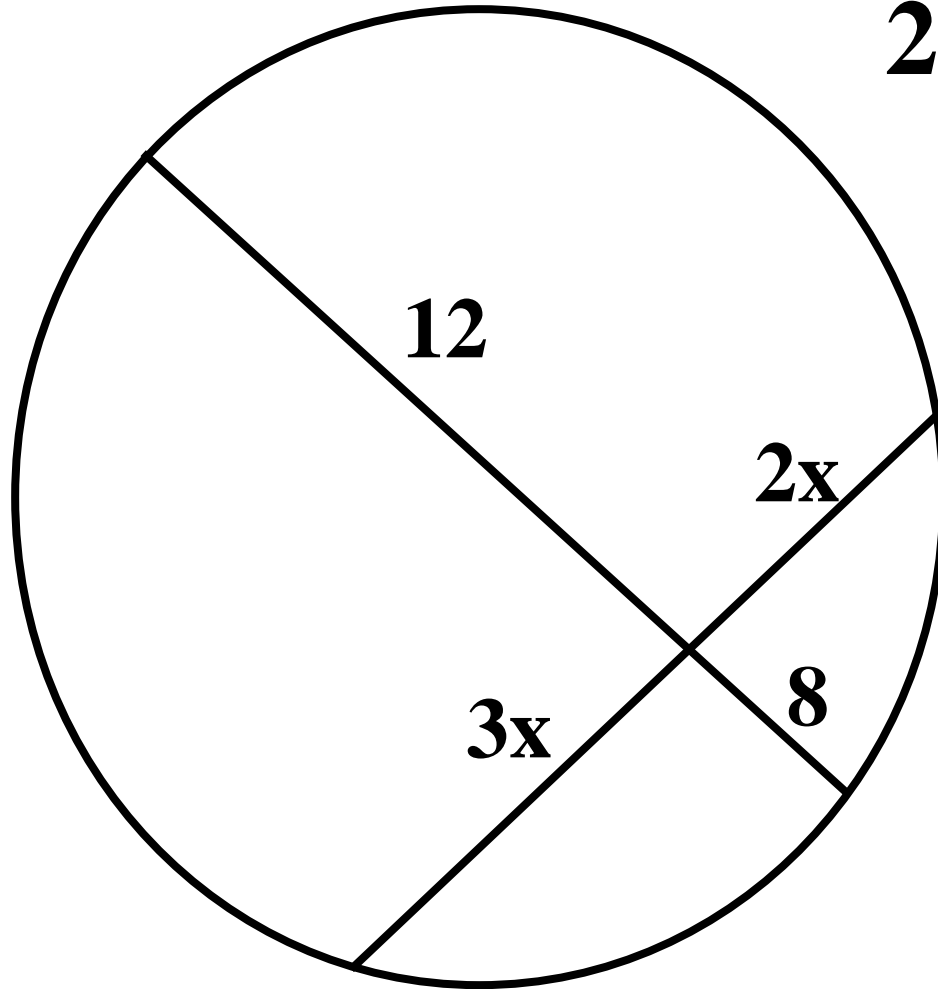
$$x = 8$$



$$x = 1$$



Solve for x.



$$2x \cdot 3x = 12 \cdot 8$$

$$6x^2 = 96$$

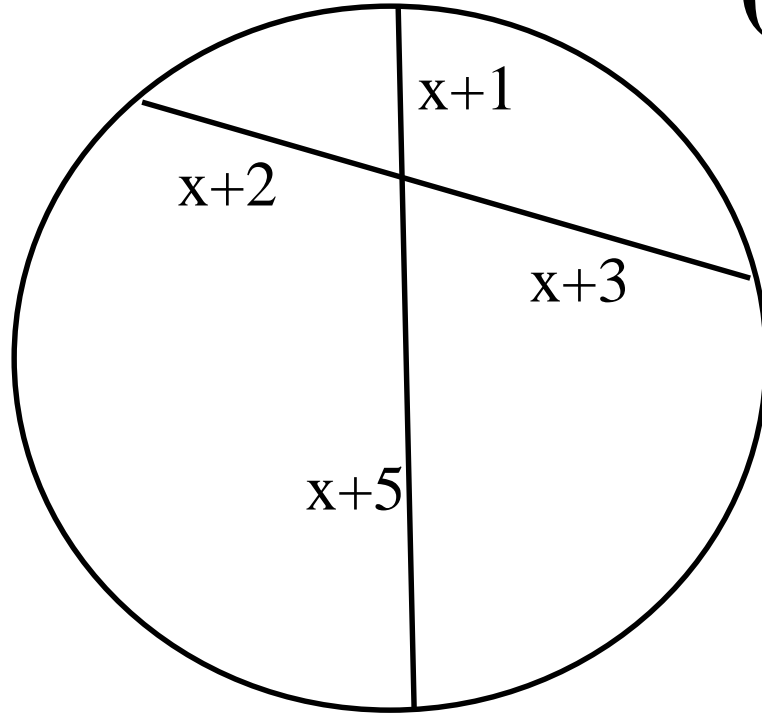
$$x^2 = 16$$

$$x = 4$$



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Solve for x.



$$(x+2)(x+3)=(x+1)(x+5)$$

$$x^2+5x+6 = x^2+6x+5$$

$$5x+6 = 6x+5$$

$$x = 1$$