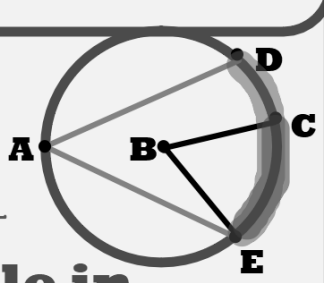
Unit 9 Leseson 6: Secants, Tangents, & Angle Measure

Objectives: Find measure of angles formed by lines that intersect on or inside or outside the circle.

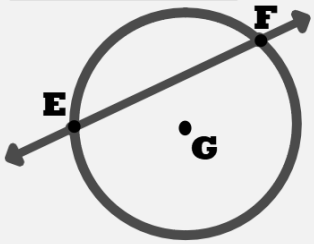
reminders: central angle $\angle B \cong \overset{\frown}{CE}$

inscribed angle $\angle A = \frac{1}{2}\overset{\frown}{DE}$



tangent: A line that intersects a circle in exactly one point.

Secant: **a line that intersects a circle in exactly 2 points. (contains a chord)**



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Objectives: Find measure of angles formed by lines that intersect on or inside or outside the circle.

- **vertex on the circle (not inscribed)**

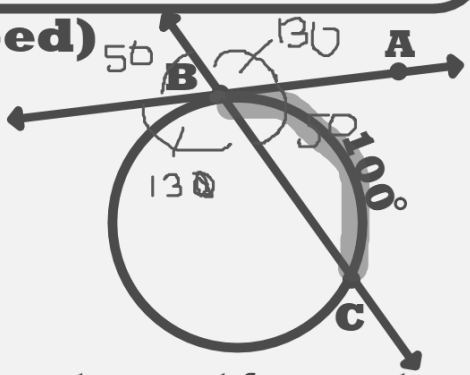
angle =1/2 arc

(formed by a secant and a tangent.)

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

$= \frac{1}{2}(100)$

$m\angle ABC = 50^\circ$



tangent & secant

- **vertex inside the circle (formed by 2 secants)**

angle=1/2 the sum of the intercepted arcs

sum = add

$m\angle DBE = \frac{1}{2}(68+62)$

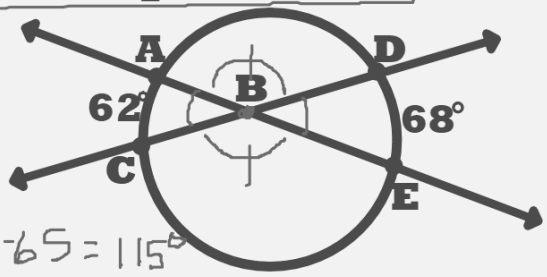
$m\angle DBE = \frac{1}{2}(130)$

$m\angle DBE = 65^\circ$

$m\angle ABC = 65^\circ$

$m\angle ABD = 180-65 = 115^\circ$

$m\angle CBE = 115^\circ$



2 secants

Unit 9 Leseson 6: Secants, Tangents, & Angle Measure

Objectives: Find measure of angles formed by lines that intersect on or inside or outside the circle.

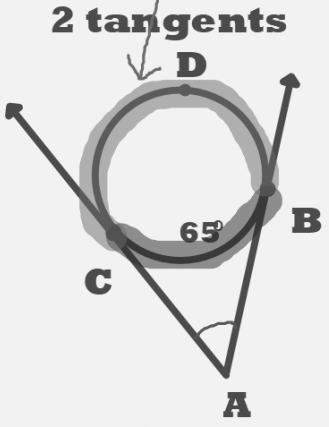
- **vertex <u>outside</u> of the circle**
  angle=1/2 the difference of the intercepted arcs

larger arc - smaller arc

subtract

$360 - 65 = 295$

2 tangents

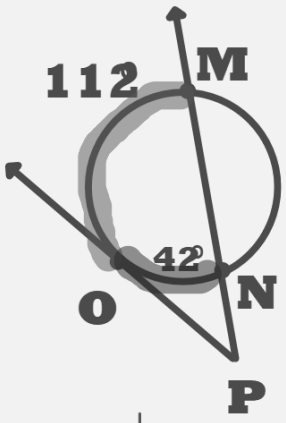


$m\angle A = \frac{1}{2}(295 - 65)$

$= \frac{1}{2}(230)$

$m\angle A = 115°$

tangent and secant

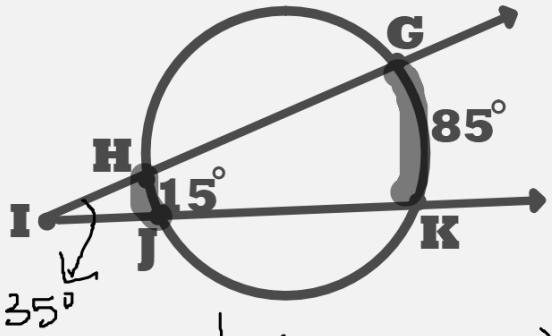


$m\angle P = \frac{1}{2}(112 - 42)$

$\frac{1}{2}(70)$

$m\angle P = 35°$

2 secants



$m\angle I = \frac{1}{2}(85 - 15)$

$= \frac{1}{2}(70)$

$m\angle I = 35°$

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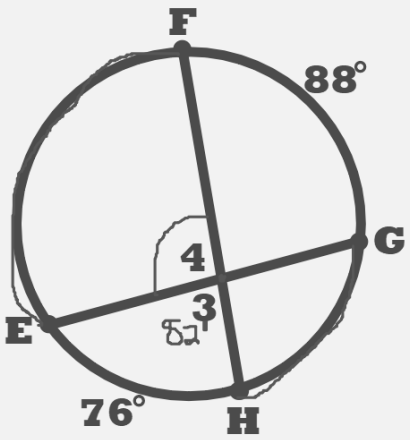
Objectives: Find measure of angles formed by lines that intersect on or inside or outside the circle.

1. Find m∠4



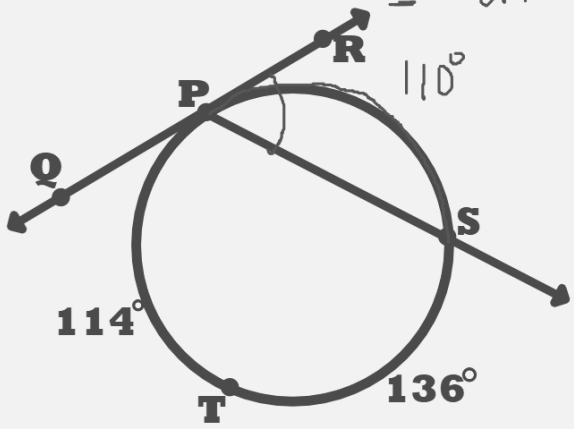
Find ∠3 first.

$\angle 3 = \frac{1}{2}(76 + 88) = \frac{1}{2}(164) = 82°$

∠3 + ∠4 are a linear pair

$\angle 4 = 180 - 82 = \boxed{98°}$

2. Find m∠RPS on



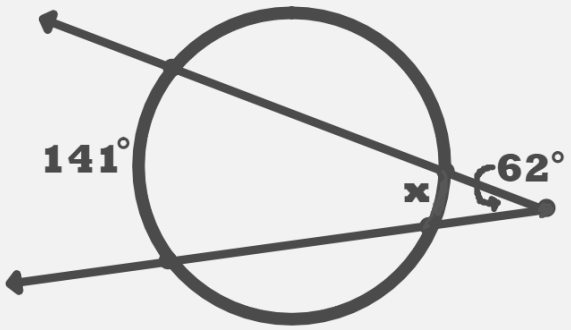
114 + 136 = 250

$\overset{\frown}{RS} = 360 - 250 = 110°$

$\angle RPS = \frac{1}{2}(110) = \boxed{55°}$

Unit 9 Leseson 6: Secants, Tangents, & Angle Measure
Objectives: Find measure of angles formed by lines that intersect on or inside or outside the circle.

3. Find x.



$\angle = \frac{1}{2}(\text{large} - \text{small})$ (large arc, small arc)

$2 \cdot 62 = 2 \cdot \frac{1}{2}(141 - x)$

$124 = 1(141 - x)$

$124 = 141 - x$

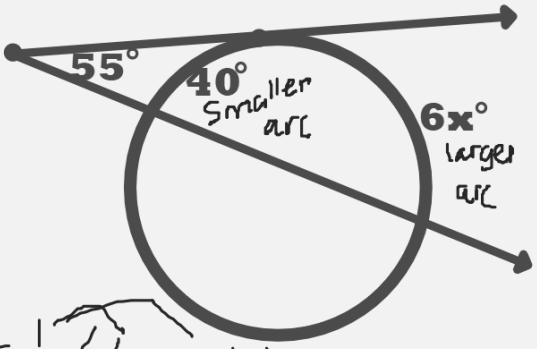
$-141 \quad -141$

$-17 = -x$

$\frac{-17}{-1} = \frac{-x}{-1}$

$x = 17$

4. Find x.



$55 = \frac{1}{2}(6x - 40)$

$55 = 3x - 20$

$+20 \quad +20$

$\frac{75}{3} = \frac{3x}{3}$

$25 = x$

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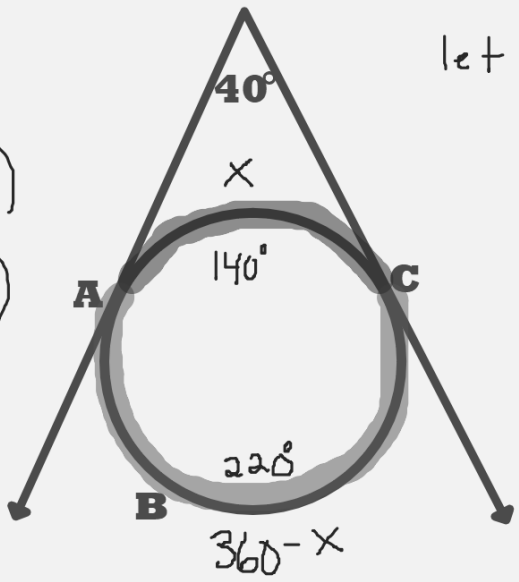
5. Find $m\overset{\frown}{ABC}$



let x = m small arc

$m\angle = \frac{1}{2}(\text{large} - \text{small})$

$40 = \frac{1}{2}(360 - x - x)$

$40 = \frac{1}{2}(360 - 2x)$

$40 = 180 - x$

$-180 \quad -180$

$-140 = -x$

$140^\circ = x \quad m\overset{\frown}{AC} = 140^\circ$

$m\overset{\frown}{ABC} = 360 - 140 = \boxed{220^\circ}$