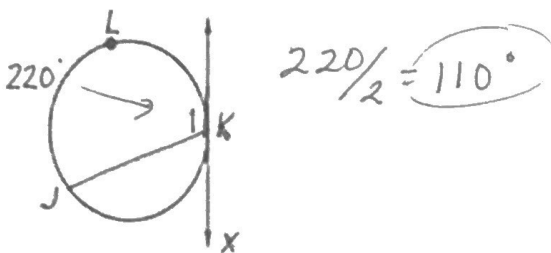


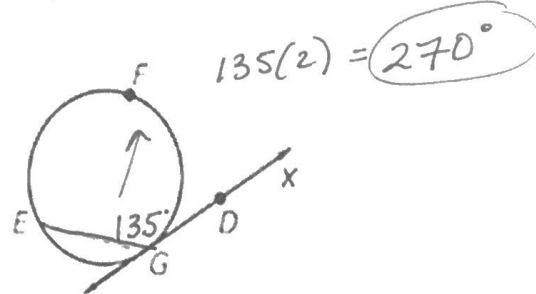
# Angle Relationships (Vertex On, Inside & Outside)

Name	Theorem	Hypothesis	Conclusion
<b>Tangent Chord Theorem</b> <u>(Vertex On)</u>	If a tangent and a chord intersect at a point on the circle, then the measure of each angle formed is one half the measure of its intercepted arc.		

**Example:** Find the measure of angle 1.

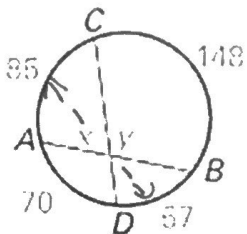


**Example:** Find the measure of arc EFG.



Name	Theorem	Hypothesis	Conclusion
<b>Interior Angles of a Circle Theorem</b> <u>(Vertex Inside)</u>	If two chords intersect <b>inside</b> the circle, then the measure of each angle is half the sum of the measures of the arcs intercepted by the angle and its vertical angle.		$\text{inside } \angle = \frac{\text{arc } 1 + \text{arc } 2}{2}$

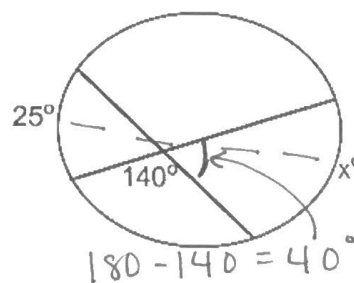
**Example:** Find x and y.



$$x = \frac{85 + 57}{2} = 71^\circ$$

$$y = \frac{70 + 148}{2} = 109^\circ \quad \text{or} \quad 180 - 71 = 109^\circ$$


**Example:** Find the value of x.



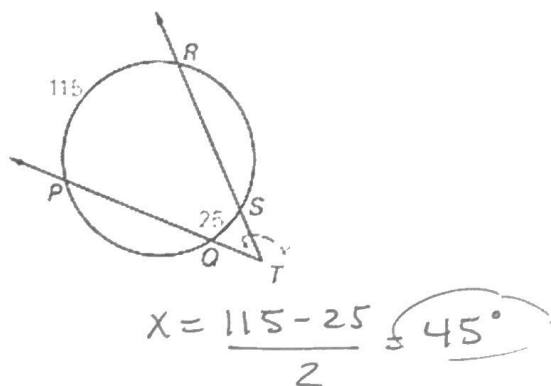
$$2 \cdot 40 = x + 25 \cdot 2$$

$$80 = x + 25$$

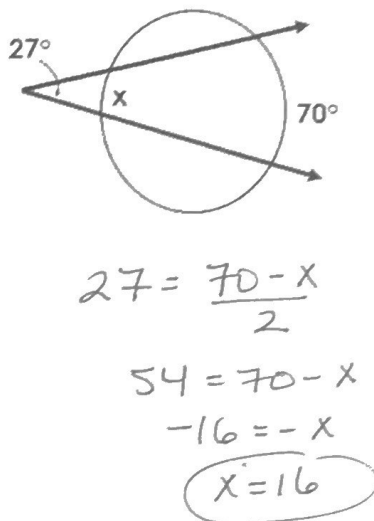
$$55 = x$$

Name	Theorem	Hypothesis	Conclusion
Exterior Angles of a Circle Theorem (Vertex Outside)	If a tangent and a secant, two tangents, or two secants intersect <b>outside</b> the circle, then the measure of the angle formed is half the difference of the measures of the intercepted arcs.		outside $\angle = \frac{\text{Big arc} - \text{Small arc}}{2}$

Example: Find the value of x.



Example: Find the value of x.



Example: Find the value of x.

