

10-6 Study Guide and Intervention

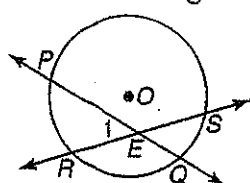
Secants, Tangents, and Angle Measures

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Lesson 10-6

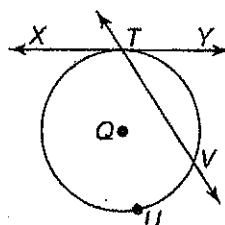
Intersections On or Inside a Circle A line that intersects a circle in exactly two points is called a **secant**. The measures of angles formed by secants and tangents are related to intercepted arcs.

- If two secants intersect in the interior of a circle, then the measure of the angle formed is one-half the sum of the measure of the arcs intercepted by the angle and its vertical angle.



$$m\angle 1 = \frac{1}{2}(m\overline{PR} + m\overline{QS})$$

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

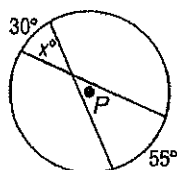


$$m\angle XTV = \frac{1}{2}m\overline{TUV}$$

$$m\angle YTV = \frac{1}{2}m\overline{TUV}$$

Example 1 Find x.

The two secants intersect inside the circle, so x is equal to one-half the sum of the measures of the arcs intercepted by the angle and its vertical angle.



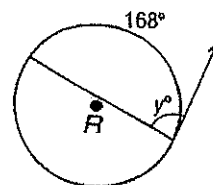
$$x = \frac{1}{2}(30 + 55)$$

$$= \frac{1}{2}(85)$$

$$= 42.5$$

Example 2 Find y.

The secant and the tangent intersect at the point of tangency, so the measure of the angle is one-half the measure of its intercepted arc.



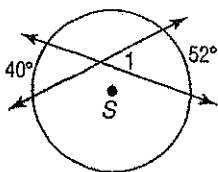
$$y = \frac{1}{2}(168)$$

$$= 84$$

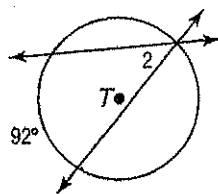
Exercises

Find each measure.

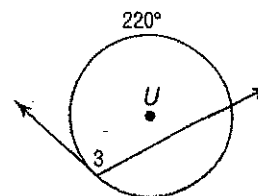
1. $m\angle 1$



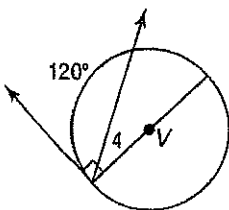
2. $m\angle 2$



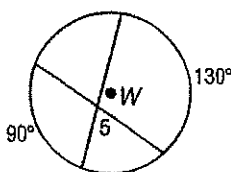
3. $m\angle 3$



4. $m\angle 4$



5. $m\angle 5$



6. $m\angle 6$

