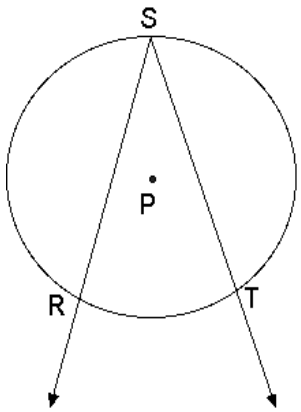
9.4 Notes: Inscribed Angles



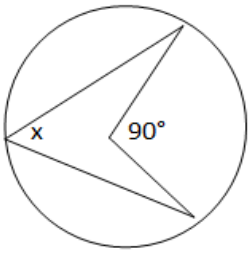
Definition: An **inscribed angle** has a vertex _____ a circle and sides that contain _____ of the circle.

An **intercepted arc** has endpoints in common with an inscribed angle and lies in the _____ of that angle.

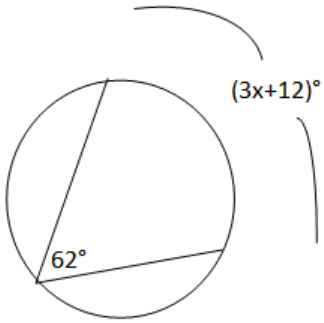
Theorem: If an angle is an inscribed angle, then its measure is _____ of its intercepted arc.

Examples: Find *x*.

1)

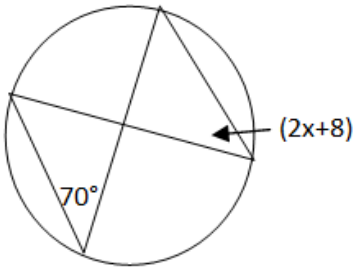


2)



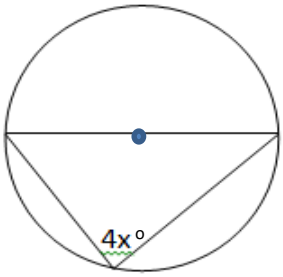
Theorem: If two inscribed angles of a circle intercept the same arc or congruent arcs, then the angles are congruent.

Example 3: Find *x*.



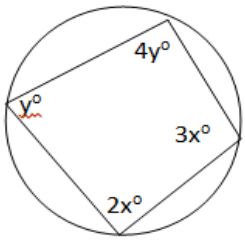
Theorem: An inscribed angle of a triangle intercepts a _____ *iff* the angle is a _____ angle.

Example 4:



Theorem: If a quadrilateral is inscribed in a circle, then its opposite angles are supplementary.

Example 5: Find *x* and *y*.



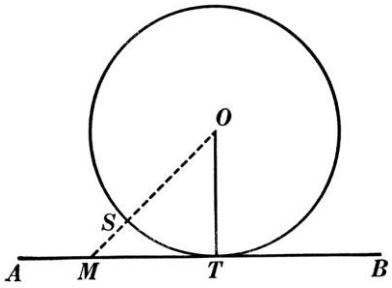
9.5 Notes: Tangents

A **tangent** is a line in the same plane as a circle that intersects the circle at exactly _____ point, called the **point of tangency**.

A **common tangent** is a line, ray, or segment that is tangent to two circles in the same plane.

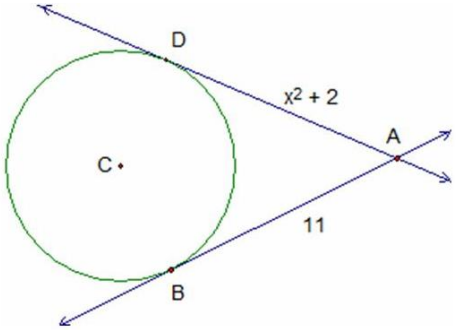
Theorem: In a plane, a line is tangent to a circle *iff* it is perpendicular to the radius drawn to the point of tangency.

Example 1: If OT = 8, MT = 12, and MS = 7, then is AB tangent to circle O?

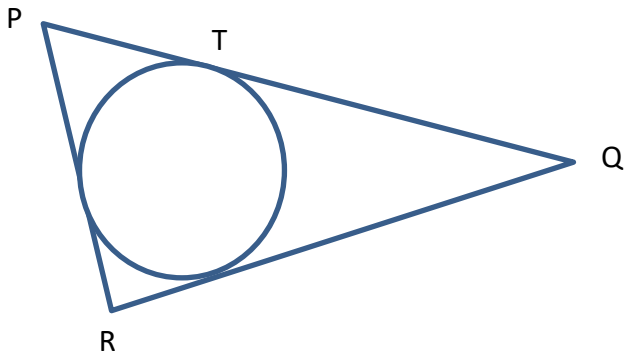


Theorem: It two tangents are drawn to a circle from the same external point, then the tangent segments are congruent.

Example 2: Find the value of *x* if AD and AB are tangent to circle C.



Example 3: Find PT, if the circle is inscribed in triangle PQR. PQ = 13, QR = 9, and PR = 10.



Example 4: KL is a common external tangent for circles O and P. Given that OK = 10, PL = 7, and OP = 22, find KL.