

Geometry 12.1 Tangent Lines Name _____

A tangent to a circle is a line that intersects a circle at exactly one point.
(line must be in the same plane as the circle)

The point of tangency is the point where a tangent line intersects the circle.

To **INSCRIBE** means to draw inside. To **CIRCUMSCRIBE** means to draw about.

Theorem 12.1 – If a line is tangent to a circle, then the line is perpendicular to the radius drawn to the point of tangency.

Theorem 12.2 – If a line in the plane of a circle is perpendicular to a radius at its endpoints on the circle, then the line is tangent to the circle.

Theorem 12.3 – The two segments tangent to a circle from a point outside the circle are congruent.

Ex. 1 \overline{BA} is tangent to circle C at point A. Find the value of x.

Ex. 2 \overline{ML} and \overline{MN} are tangent to circle O. Find the value of x.

Ex. 3 A belt fits tightly around two circular pulleys, as shown. Find the distance between the centers of the pulleys. Round your answer to the nearest tenth.

Handwritten notes: *pt of tangency*, *tangent line*, 68° , $360 - 297 = 63^\circ$, $OP \approx 15.5 \text{ cm}$, $5^2 + 4^2 = OP^2$

May 11-11:54 AM

Ex. 4 \overline{ED} is tangent to circle O. Find the value of x.

Ex. 5 Is \overline{ML} tangent to circle N at L? Explain.

Ex. 6 Circle C is inscribed in quadrilateral XYZW. Find the perimeter of XYZW.

Ex. 7 Circle O is inscribed $\triangle PQR$ has a perimeter of 88 cm. Find QY.

Ex. 8 Is $\triangle NLM$ tangent to circle N at L? Explain.

Handwritten notes: $180 - 123 = 57^\circ$, $4^2 + 7^2 = 12^2$, $16 + 49 < 144$, *Obtuse*, $22 + 16 + 12 + 14 = 64 \text{ ft}$, $64 + 2x = 88$, $2x = 24$, $x = 12 \text{ cm}$, $16^2 + 12^2 = 32^2$, $256 + 144 < 1024$, *No*

May 11-11:55 AM