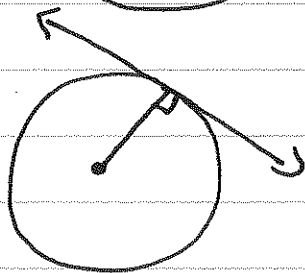
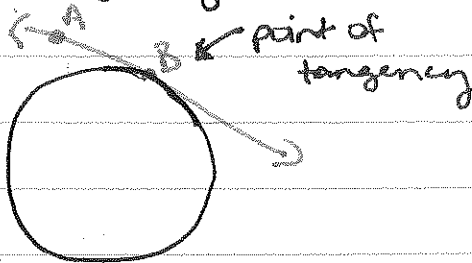


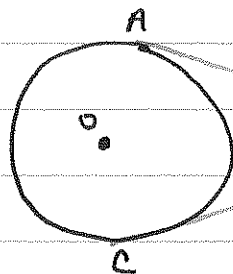
12.1 Tangent Lines

Tangent line: line that intersects the circle at one point

Point of tangency:

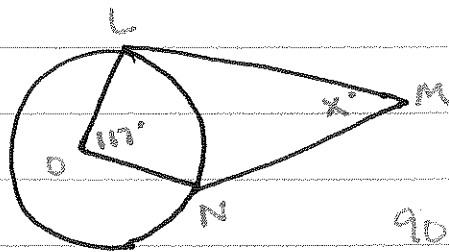


Tangent line and radius form a right angle



Two segments tangent to a circle that intersect at the same point are \cong

Ex. 1



Given: \overline{ML} & \overline{MN} are tangent to $\odot O$.

$$90 + 90 + 117 + x = 360$$

Ex. 2

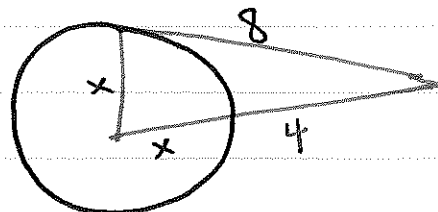
Assume that the lines that appear to be tangent are tangent. Find x

$$x^2 + 8^2 = (x+4)^2$$

$$x^2 + 64 = x^2 + 8x + 16$$

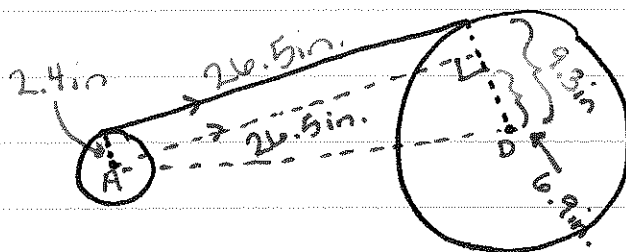
$$48 = 8x$$

$$6 = x$$



Ex. 3

A dirt bike chain fits tightly around two gears. The chain and gears form a figure like the one below. Find the distance between the centers of the gears



$$6.9^2 + 26.5^2 = AD^2$$

$$27.38 \text{ in} = AD$$