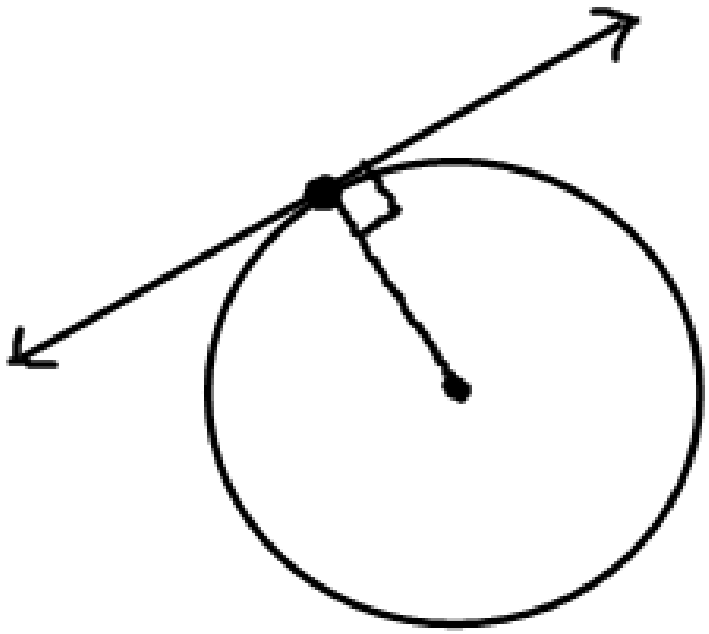
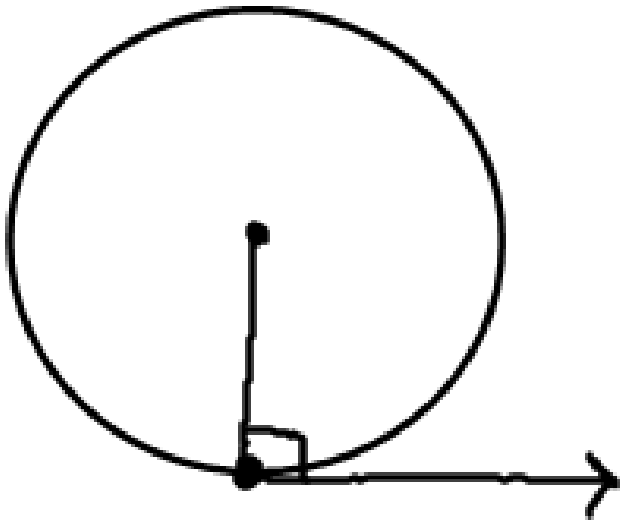
10 - 5
Tangents

tangent: line or ray intersecting a circle at exactly one point

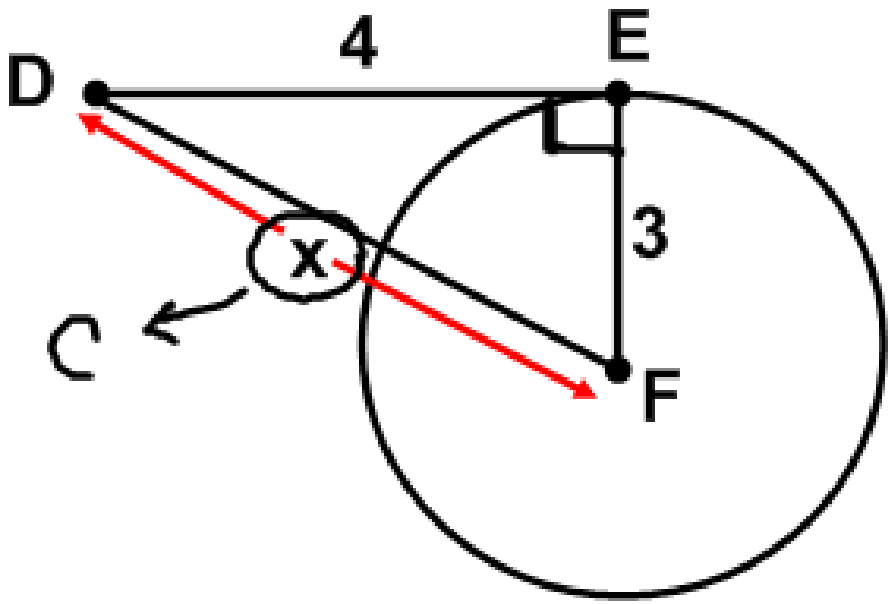




Theorem 10.9

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

Ex: $\overline{ED}$ is tangent to $\odot F$ at point E. Find x.



$3^2 + 4^2 = x^2$

$9 + 16 = x^2$

$25 = x^2$

$5 = x$

Theorem 10.10

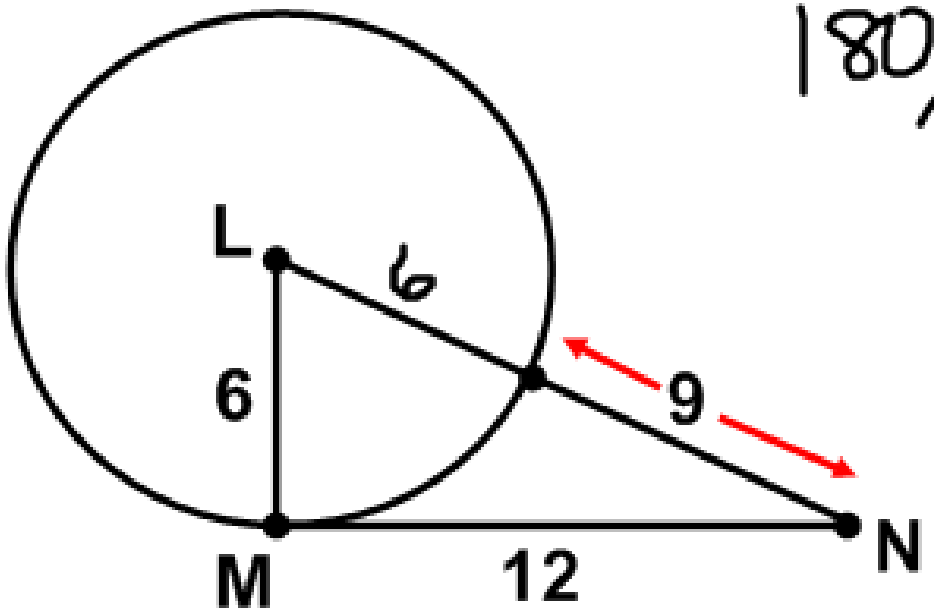
If a line is perpendicular to a radius of a circle at its endpoint on the circle, then the line is tangent to the circle.

Ex: Determine whether $\overline{MN}$ is tangent to $\odot L$.

$6^2 + 12^2 = 15^2$

$36 + 144 = 225$

$180 \neq 225$



no

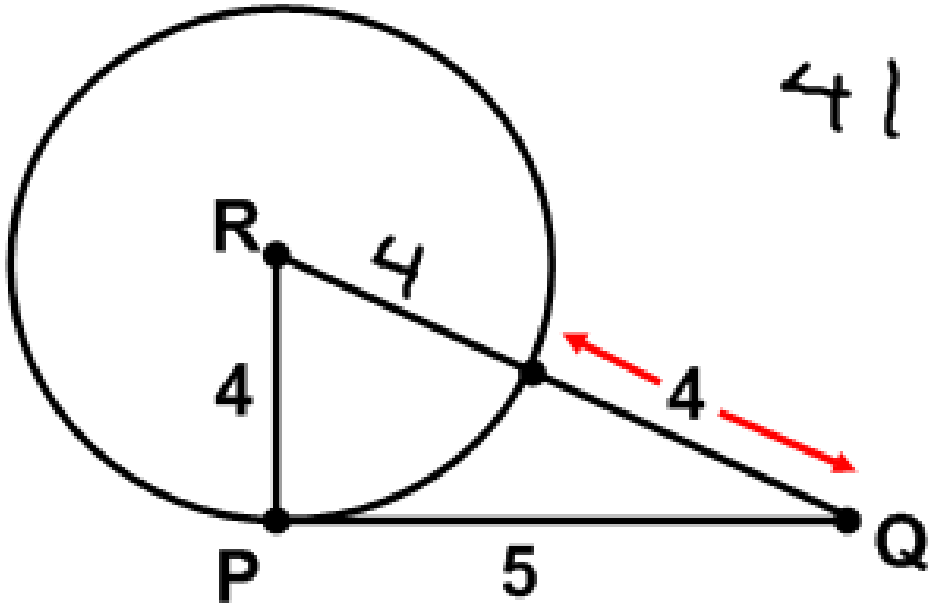
Ex: Determine whether $\overline{PQ}$ is tangent to $\odot R$.

$4^2+5^2=8^2$

$16+25=64$

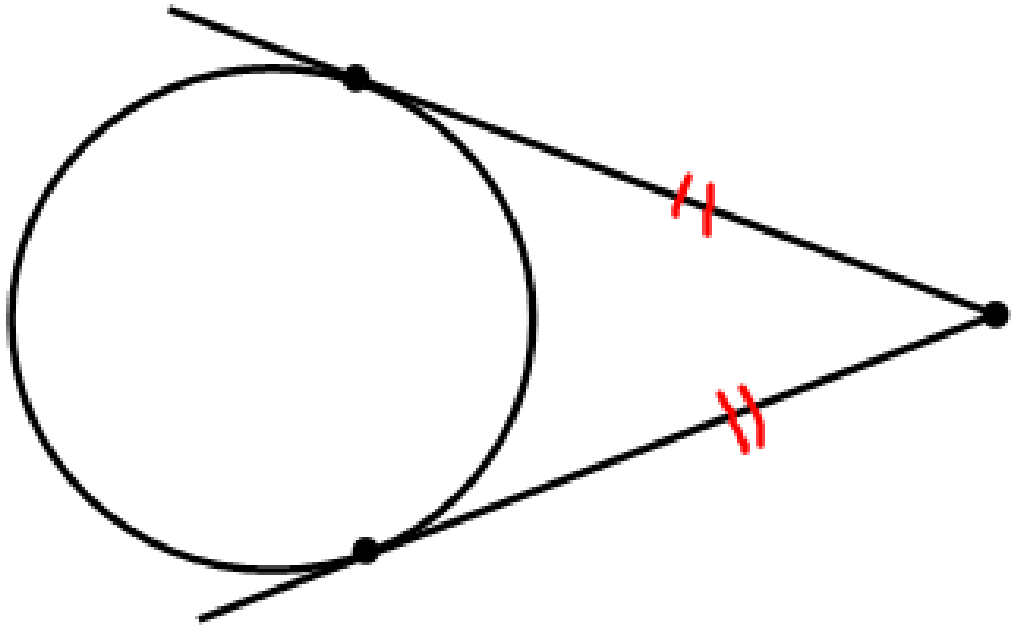
$41 \neq 64$

NO

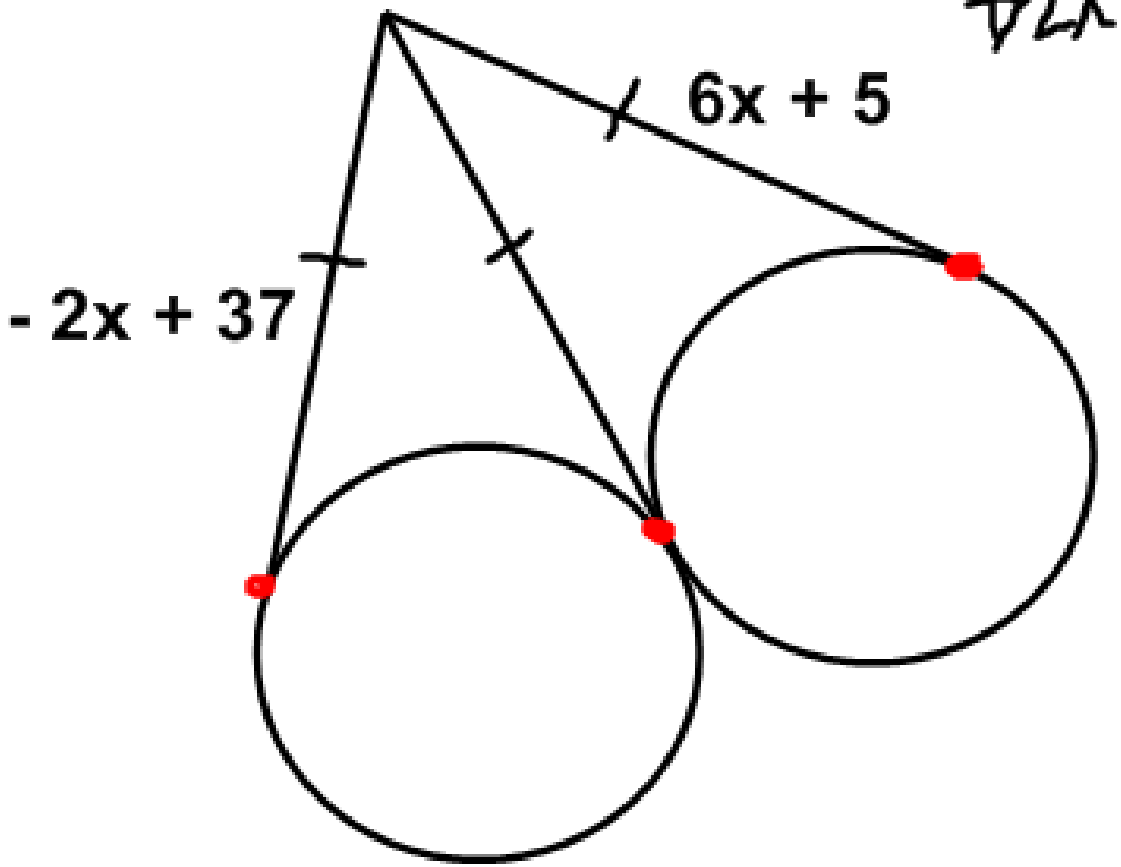


Theorem 10.11

If two segments from the same exterior point are tangent to a circle, then they are congruent.



Ex: Find x. Assume that segments that appear tangent to circles are tangent.



$-2x + 37 = 6x + 5$

$+2x \qquad +2x$

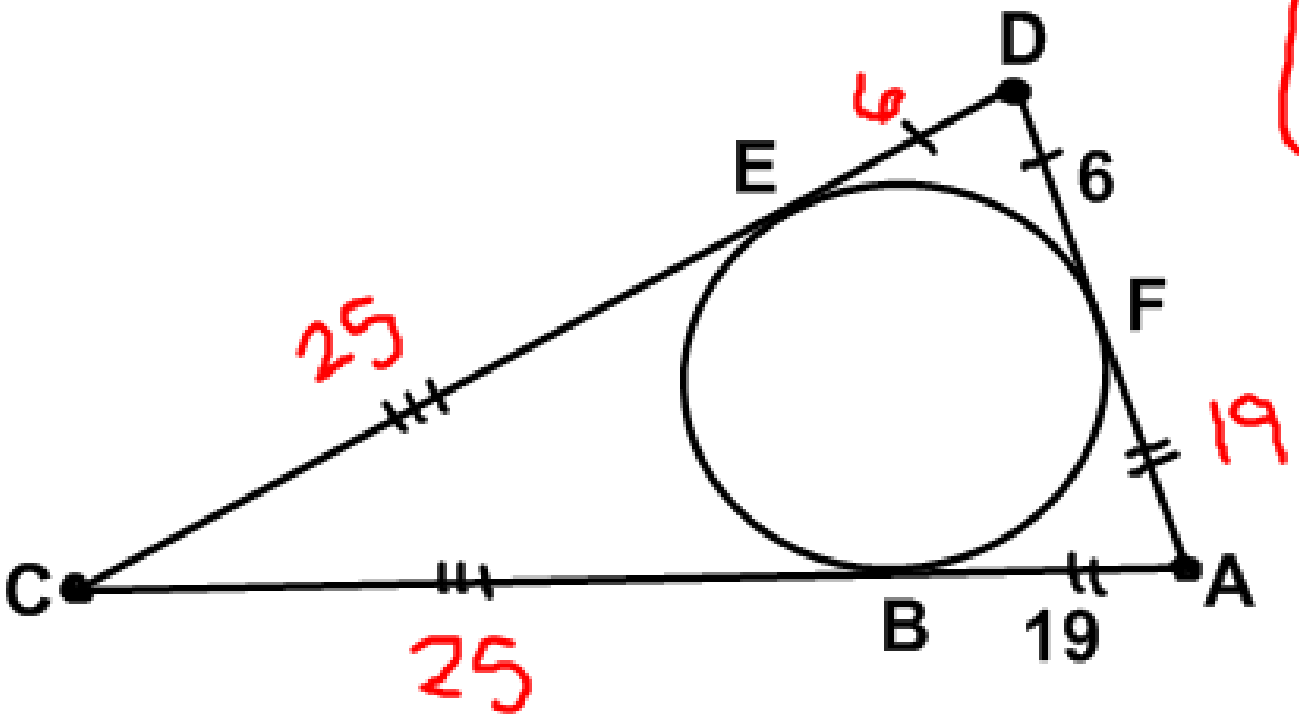
$37 = 8x + 5$

$-5 \qquad -5$

$32 = 8x$

$4 = x$

Ex: Find the perimeter of $\triangle ADC$ if $EC = DE + AF$.



100

Homework:

10 - 5 WS