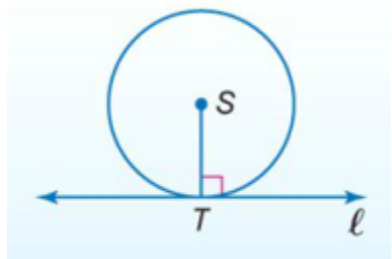
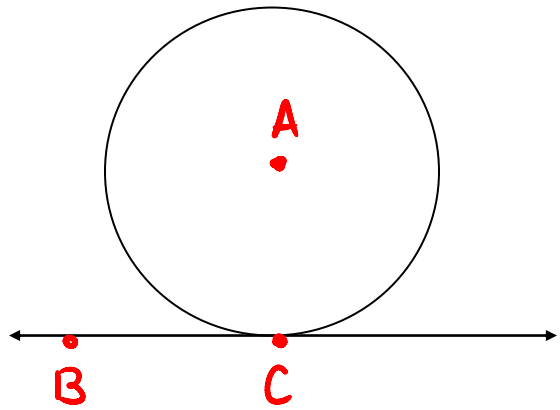


10.5 Tangents

\overline{BC} is tangent to Circle A

(Because it intersects Circle A at

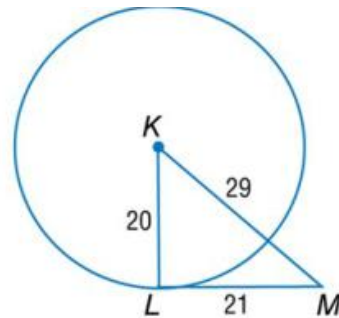
Exactly 1 point)



In a plane, a line is tangent to a circle if and only if it is perpendicular to a radius drawn to the point of tangency.

Ex.

\overline{KL} is a radius of $\odot K$. Determine whether \overline{LM} is tangent to $\odot K$. Justify your answer.



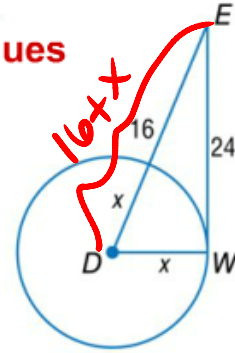
$$\begin{aligned}20^2 + 21^2 &= 29^2 \\400 + 441 &= 841 \\841 &= 841\end{aligned}$$

yes

EXAMPLE 3

Use a Tangent to Find Missing Values

In the figure, \overline{WE} is tangent to $\odot D$ at W . Find the value of x .



$$x^2 + 24^2 = (16+x)^2$$

$$x^2 + 576 = (16+x)(16+x)$$

$$x^2 + 576 = 256 + 16x + 16x + x^2$$

$$x^2 + 576 = 256 + 32x + x^2$$

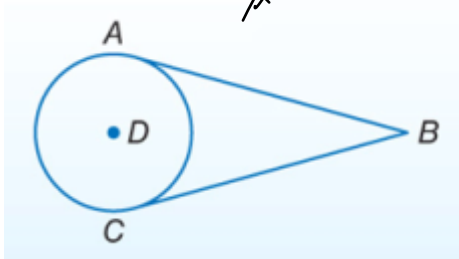
$$576 = 256 + 32x$$

$$-256 \quad -256$$

$$320 = 32x$$

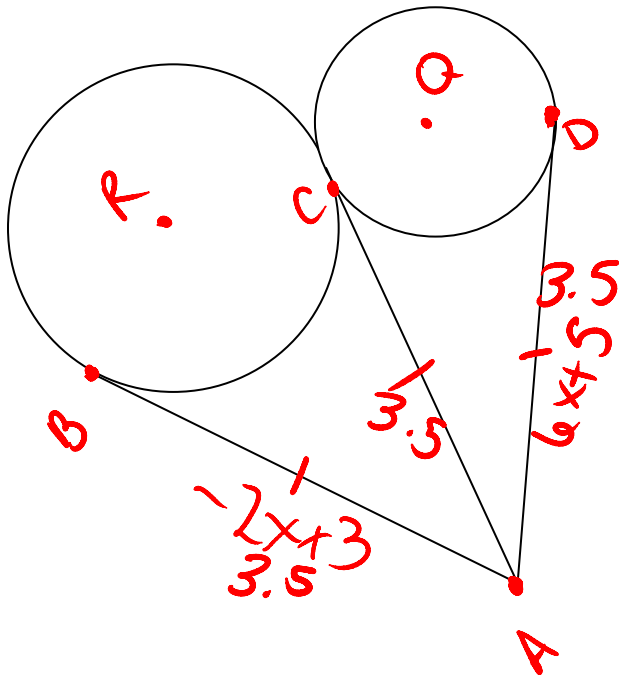
$$\frac{320}{32} = \frac{32x}{32}$$

$$10 = x$$



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

Ex. Find x . $\overline{AB}, \overline{AC}, \overline{AD}$ are tan.



$$-2x+3 = 6x+5$$

$$+2x \quad +2x$$

$$3 = 8x+5$$

$$-5 \quad -5$$

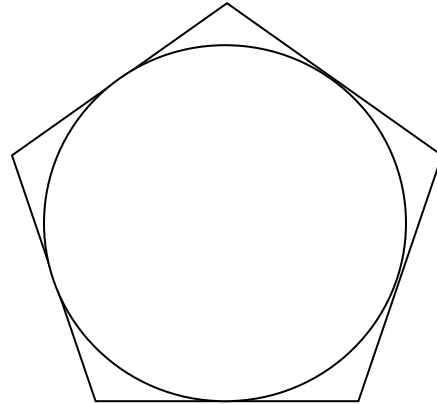
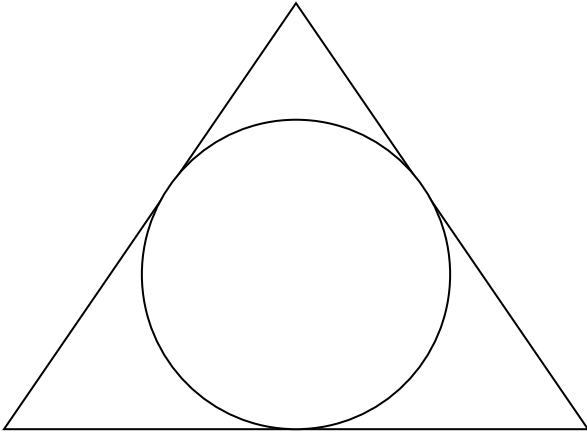
$$-2 = 8x$$

$$\frac{-2}{8} = \frac{8x}{8}$$

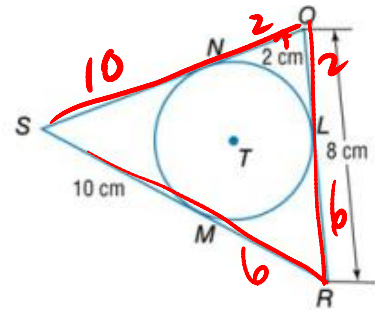
$$-\frac{1}{4} = x$$

Circumscribed Polygons

Notice every side of the polygon is tangent to the circle



PACKAGING The round cookies are marketed in a triangular package to pique the consumer's interest. If $\triangle QRS$ is circumscribed about $\odot T$, find the perimeter of $\triangle QRS$.



36cm