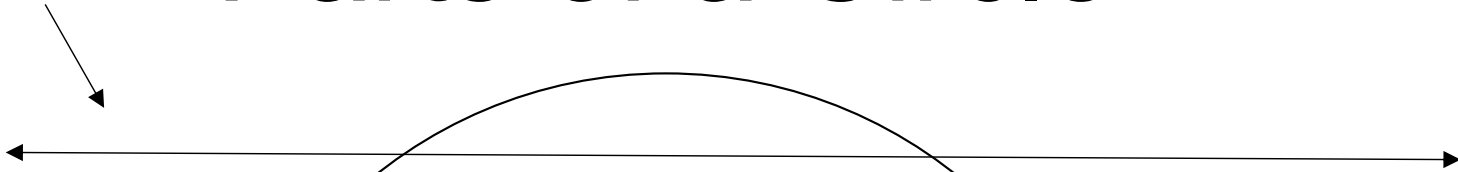


Circles

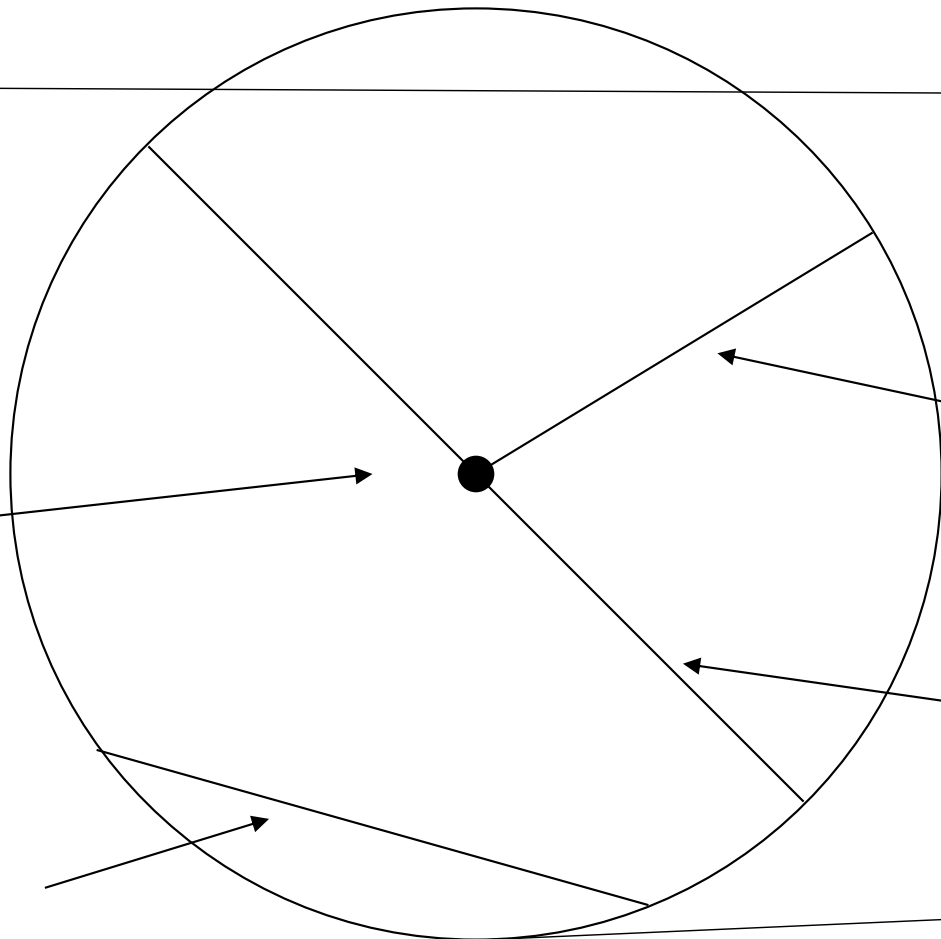
of life

Parts of a Circle

secant



radius



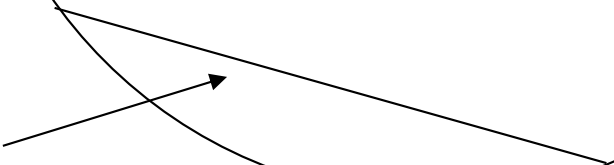
Center



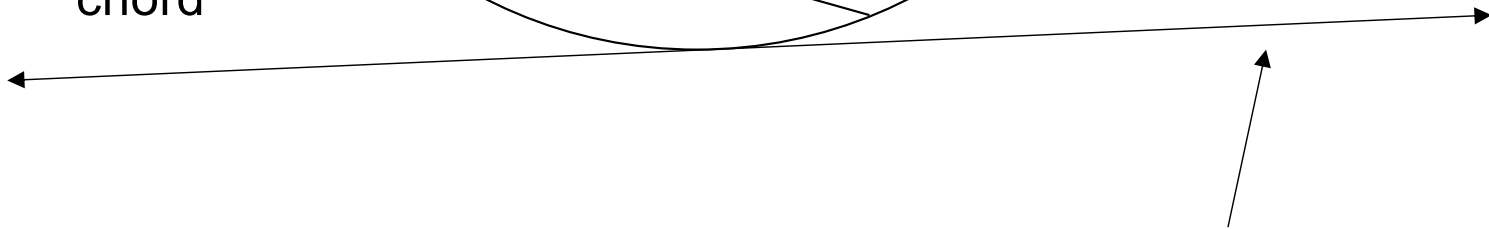
diameter



chord



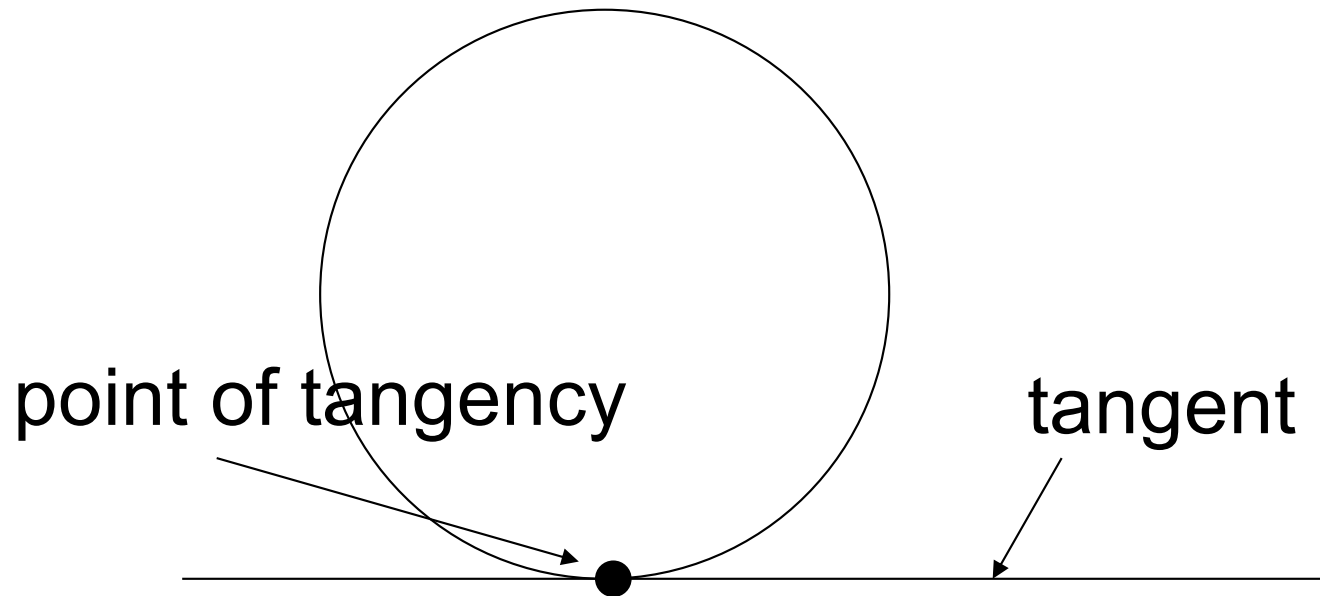
tangent

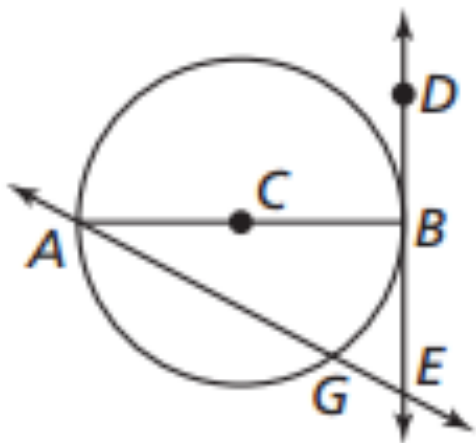


- Circle – the set of all points equal distance from the center
- Radius – a line from the the center to the edge of the circle
- Chord – a line segment with endpoints on the circle
- Diameter – a special chord that goes through the center
- Secant – a line that intersects a circle two times.

Definition

tangent – a line that intersects a circle in exactly one point





Tell whether the line, ray, or segment is best described as a *radius*, *chord*, *diameter*, *secant*, or *tangent* of $\odot C$.

a. \overline{AC} radius

b. \overline{AB} diameter



c. \overrightarrow{DE}

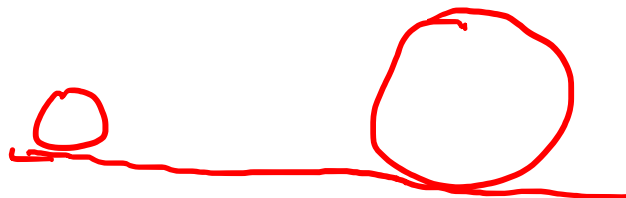
d. \overrightarrow{AE}

Tangent

~~Chord~~
Secant

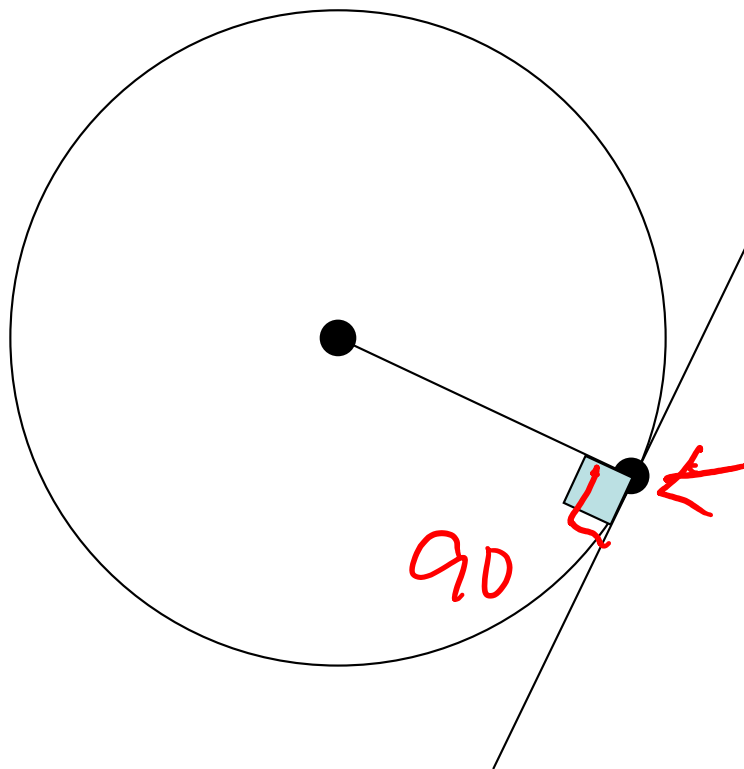
A little about Circles and Tangents

- Coplanar circles that intersect in one point are called Tangent circles. 
- Coplanar circles that have a common center are concentric circles 
- A line or segment that is tangent to two circles is called a **common tangent**.



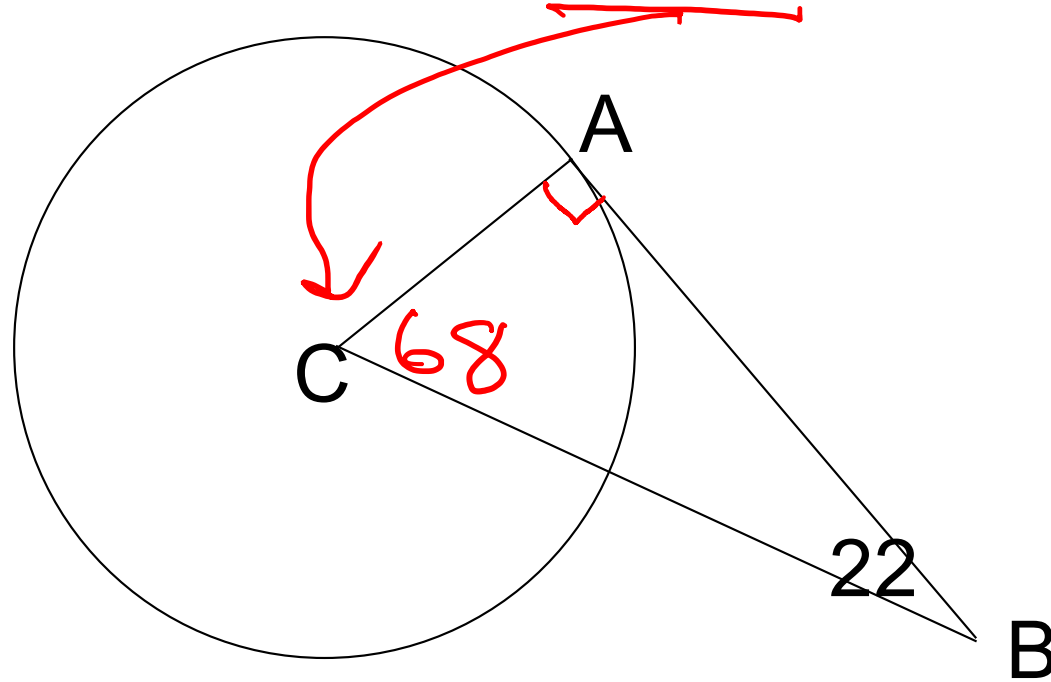
Theorem

- A line is tangent to a circle if and only if it is perpendicular to the radius drawn to the point of tangency



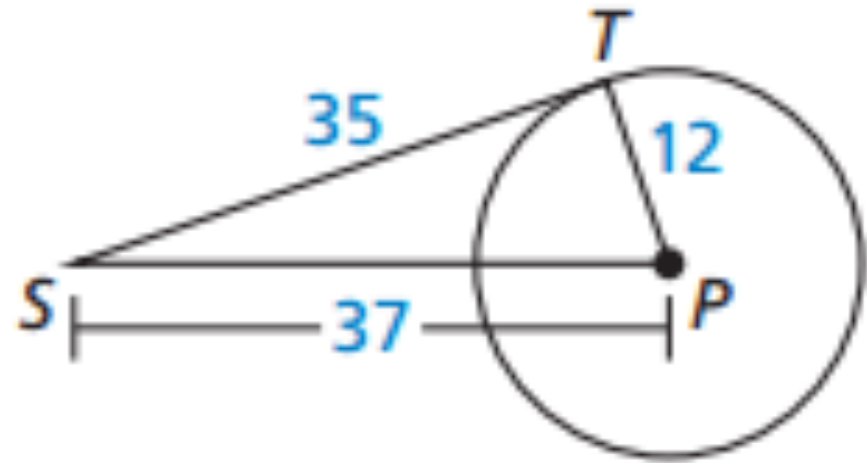
BA is tangent to the circle.

find $\angle CAB$ and $\angle ACB$



$$180 - 90 - 22$$

Is \overline{ST} tangent to $\odot P$?



Hint: Pythags

$$35^2 + \cancel{12}^2 = 37^2$$

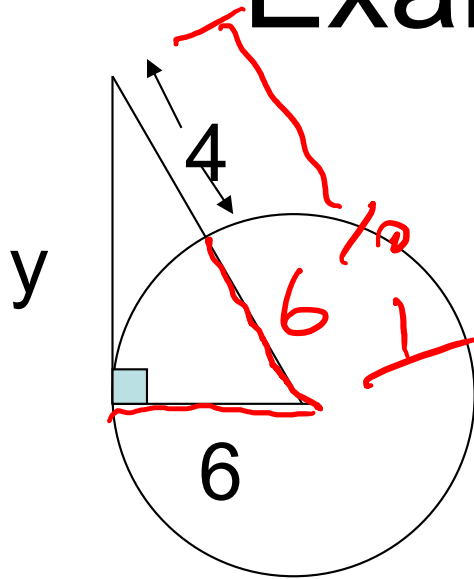
$$1225 + 144$$

$$1369$$

$$1369$$

yes tangent

Examples: Solve for y and x



Hint. Remember that the 6 side and the y side are perpendicular and that all radii in a circle are equal

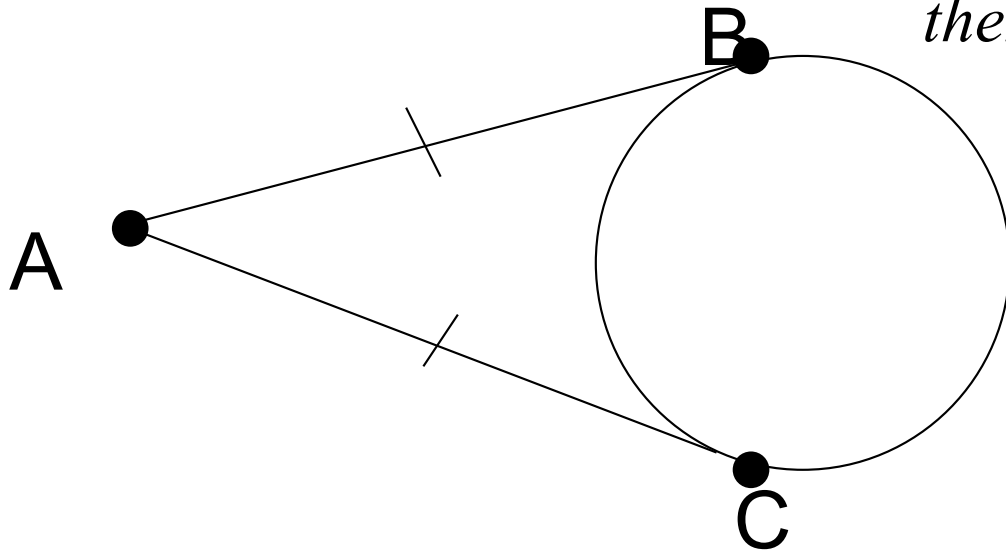
$$y^2 + 36 = 100$$
$$-36 \quad -36$$

$$y^2 = 64$$

$$y = 8$$

Ice Cream Cone Theorem

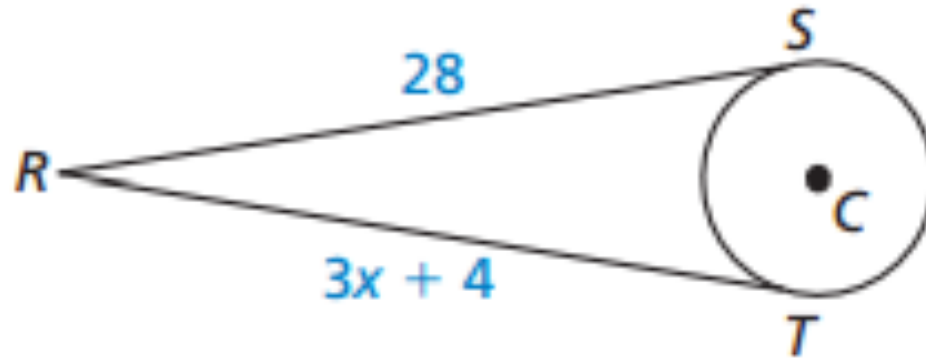
- If two segments from the same exterior point are tangent to a circle, then they are congruent



If \overline{AB} and \overline{AC} are tangents
then $\overline{AB} \cong \overline{AC}$

Ice Cream Cone
Theorem

\overline{RS} is tangent to $\odot C$ at S , and \overline{RT} is tangent to $\odot C$ at T . Find the value of x .



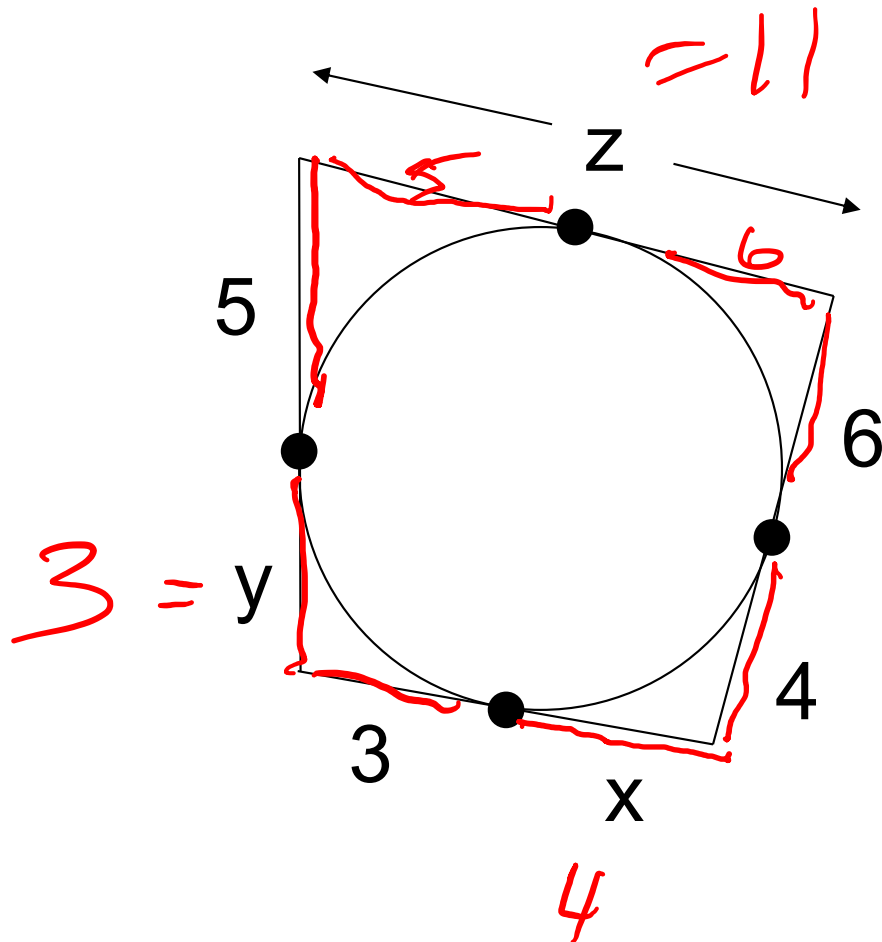
$$3x + 4 = 28$$

$$\begin{array}{r} -4 \quad -4 \\ \hline \end{array}$$

$$3x = 24$$

$$x = 8$$

Example



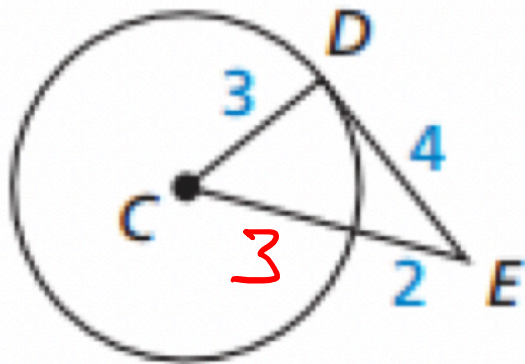
Find x , y , and z

$$x = 4$$

$$y = 3$$

$$z = 11$$

6. Is \overline{DE} tangent to $\odot C$?



$$3^2 + 4^2 \stackrel{?}{=} 5^2$$
$$9 + 16 = 25 \text{ yes}$$