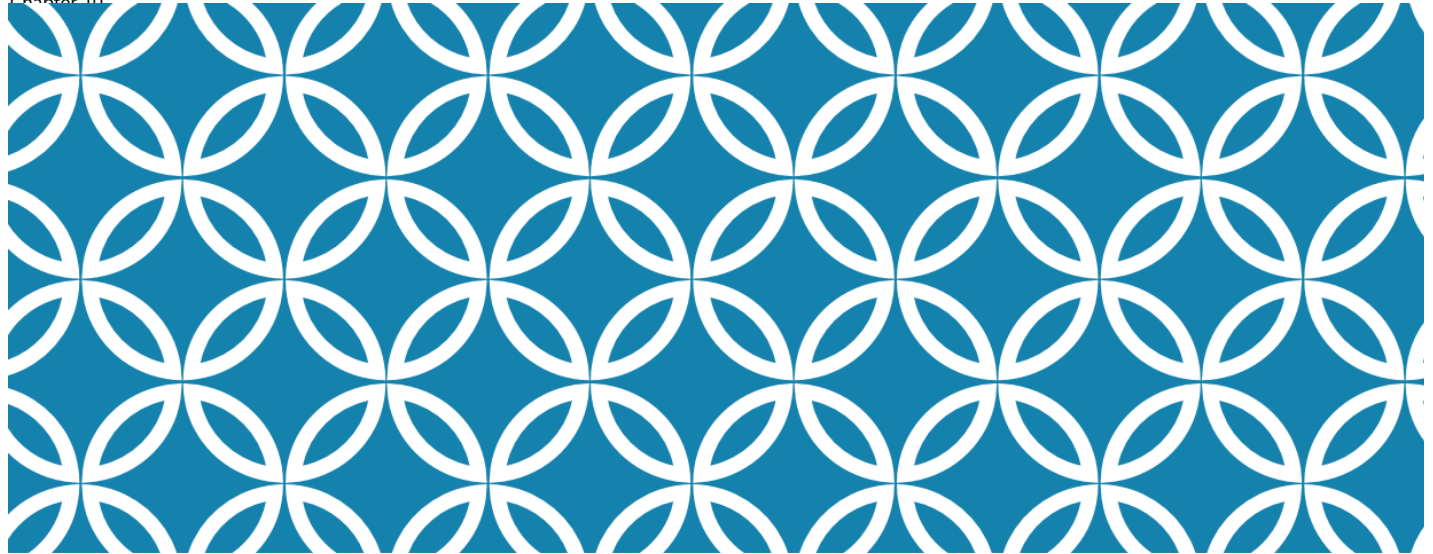


Chapter 10 Circles

Saturday, April 23, 2022 5:42 PM

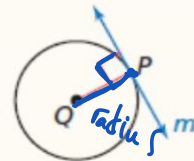
Click Below to use powerpoint

<https://app.peardeck.com/student/tstdcuztk>Geometry
Chapter 10CHAPTER 10:
CIRCLES

Geometry

 Theorems
Theorem 10.1 Tangent Line to Circle Theorem

In a plane, a line is tangent to a circle if and only if the line is perpendicular to a radius of the circle at its endpoint on the circle.

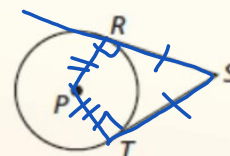


Line m is tangent to $\odot Q$
if and only if $m \perp \overline{QP}$.

Proof Ex. 47, p. 536

Theorem 10.2 External Tangent Congruence Theorem

Tangent segments from a common external point are congruent.



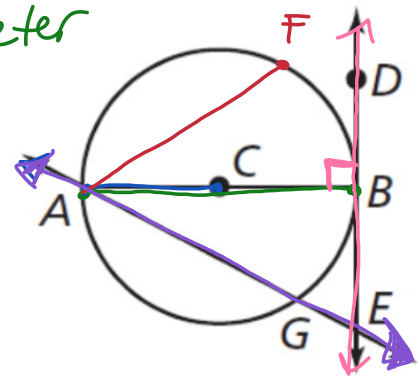
Proof Ex. 46, p. 536

If $\overline{SR}$ and $\overline{ST}$ are tangent segments, then $\overline{SR} \cong \overline{ST}$.

Students, drag the icon!

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

a. $\overline{AC}$ Radiusb. $\overline{AB}$ diameterc. $\overline{DE}$ tangentd. $\overline{AE}$ secante. $\overline{AF}$ chord

Students, draw anywhere on this slide!

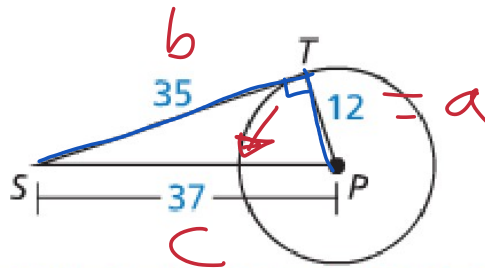
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Do not remove this barIs $\overline{ST}$ tangent to $\odot P$? yes

$$a^2 + b^2 = c^2$$

$$12^2 + 35^2 = 37^2$$

$$144 + 1225 = 1369$$

$$1369 = 1369 \checkmark$$

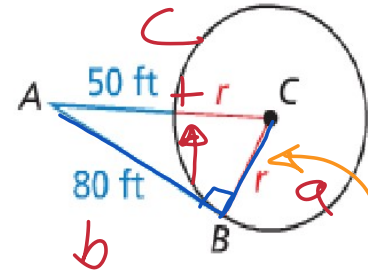


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In the diagram, point B is a point of tangency. Find the radius r of $\odot C$.

$$\begin{aligned}
 a^2 + b^2 &= c^2 \\
 r^2 + 80^2 &= (50 + r)^2 \\
 r^2 + 6400 &= (50 + r)(50 + r) \\
 r^2 + 6400 &= 2500 + 50r + 50r + r^2 \\
 r^2 + 6400 &= 2500 + 100r + r^2 \\
 -r^2 \quad -2500 &\quad -r^2
 \end{aligned}$$



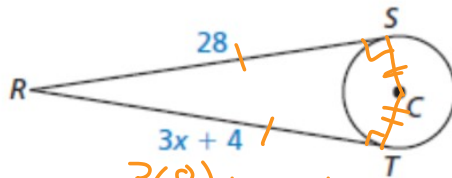
$$\frac{3900}{100} = \frac{100r}{100}$$

$$r = 39$$

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



$$\begin{aligned}
 28 &= 3x + 4 \\
 -4 &\quad -4 \\
 \hline
 24 &= 3x \\
 \frac{24}{3} &= \frac{3x}{3} \\
 8 &= x
 \end{aligned}$$

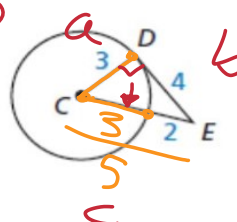
$$28 \stackrel{?}{=} 3(8) + 4 \checkmark$$

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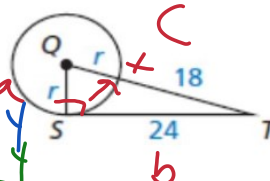
6. Is $\overline{DE}$ tangent to $\odot C$?

$$\begin{aligned}
 a^2 + b^2 &= c^2 \\
 3^2 + 4^2 &= 5^2 \\
 9 + 16 &= 25 \\
 25 &= 25 \checkmark
 \end{aligned}$$



7. $\overline{ST}$ is tangent to $\odot Q$. Find the radius of $\odot Q$.

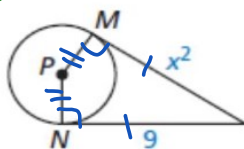
$$\begin{aligned}
 r^2 + 24^2 &= (r + 18)^2 \\
 r^2 + 576 &= r^2 + 36r + 324 \\
 -r^2 \quad -324 &\quad -r^2 \quad -324 \\
 252 &= 36r \\
 \frac{252}{36} &= \frac{36r}{36} \\
 7 &= r
 \end{aligned}$$



$$\begin{aligned}
 (r + 18)(r + 18) \\
 r^2 + 18r + 18r + 324 \\
 r^2 + 36r + 324
 \end{aligned}$$

8. Points M and N are points of tangency. Find the value(s) of x .

$$x^2 = 9 \quad x = \sqrt{9} \\ x = 3$$

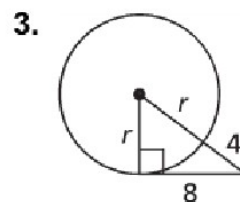
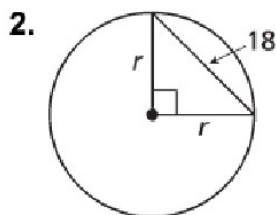
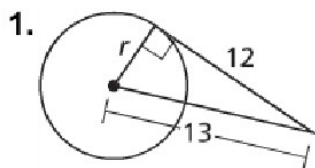


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Find the radius of the circle.



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Core Concept

Measuring Arcs

The **measure of a minor arc** is the measure of its central angle. The expression $m\widehat{AB}$ is read as "the measure of arc AB ."

The measure of the entire circle is 360° . The **measure of a major arc** is the difference of 360° and the measure of the related minor arc. The measure of a semicircle is 180° .

