

Objective: The students will complete assignment 19.3 Tangents and Circumscribed Angles and will demonstrate their understanding with an accuracy rate of 70% or higher on Quiz-21 tomorrow.*

Standards

G-C.2. Identify and describe relationships among inscribed angles, radii, and chords.

WHAT DO YOU NEED?

Mathematics II

 A working *Chromebook*

 Math Notebook 

 **19.3 Tangents and Circumscribed Angles**

 **TURN IN LATE OR MISSING WORK**

**If accuracy of 70% or higher is not achieved, the student(s) will be required to retake it.*



ELECTRONIC DEVICES

The following is a list of items that are not allowed for use in the classroom. Students who are in possession of any of these items will have them confiscated and subjected through proper disciplinary steps listed below. **The item will then be released to a parent or guardian.**

Electronic devices such as cell phones, MP3 players, I-pods, and video games must be picked up by parents after the second offense.

Delhi High School will not be financially responsible for banned electronic devices that are not permitted on campus. The school is not responsible for electronic devices that are picked up by those whom it was confiscated from who may or may not be the rightful owner. The school reserves the right to refuse to conduct any investigations concerning items that are not permitted on campus. Items that are misplaced or borrowed by other students are the sole responsibility of the student.

1st Offense requires that the cell phone/Ipod/device be impounded and **returned to the student on Friday.**

2nd Cell phone/Ipod/device impounded and released only to the parent.

3rd Offense requires a parent conference.

4th Offense may result in an out of **school suspension** for continued defiance.

Items Not Allowed:

- C.D. Players
- MP3 Players
- I-Pods
- Video game devices
- Cigarette Lighters
- Hats

Expectations in this handbook: **Preparing you for college and careers.**

May 2018

Month

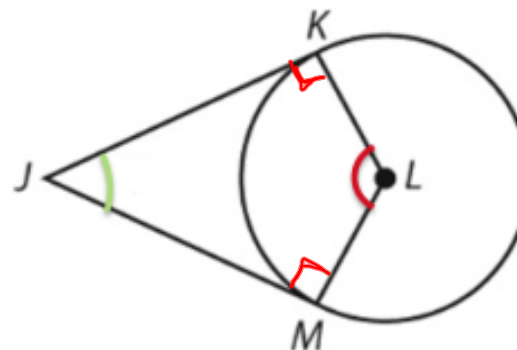
| Sun | Mon | Tue May 1 | Wed 2 | Thu 3 | Fri 4 | Sat 5 |
|--------------------|----------------------------------|---|-----------------------------------|-----------------------------------|--|---------------|
| | | | | | | Cinco de Mayo |
| 6 | 7 my.hrw.com 17.3 19.1 | 8 Quiz-19 | 9 PPT 17.4 PPT 19.2 | 10 my.hrw.com 17.4 19.2 | 11 Quiz-20 | 12 |
| 13 Mother's Day | 14 Review PPT 19.2 | 15 (sub) Exam-6 my.hrw.com | 16 Retake/Finish my.hrw.com | 17 Review for Final Quiz-21 | 18 (Quiz-?) Review for Final Review | 19 |
| 20 | 21 Review for Final Exam-6 | 22 (Quiz-?) Review for Final Retake/Finish | 23 Last Day for Late Work | 24 Final Exam 10% of Grade | 25 Final Exam 10% of Grade | 26 |
| 27 | 28 Memorial Day No School | 29 Make-up Final | 30 Grades Due!! | 31 | Jun 1 Last Day | 2 |

my.hrw.com

19.3 Tangents and Circumscribed Angles

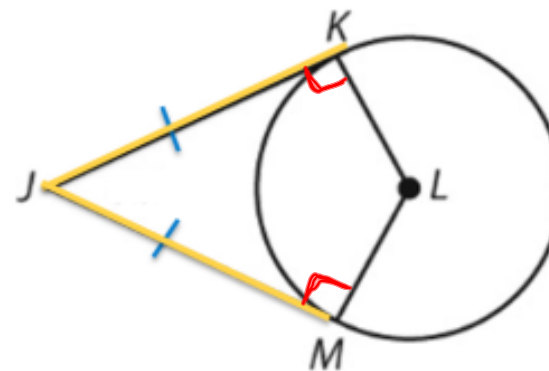
19.3

Circumscribed Angle Theorem:
A circumscribed angle of a circle and its associated central angle are supplementary.



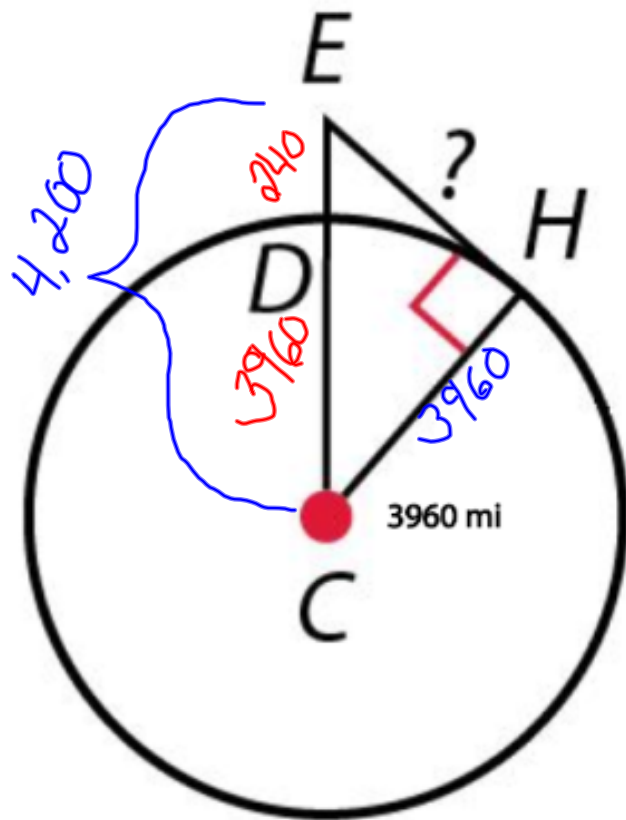
$$m\angle KJM + m\angle KLM = 180^\circ$$

If two segments are tangent to a circle from the same point, then the segments are congruent. $\overline{JK} = \overline{JM}$





The International Space Station orbits Earth at an altitude of about 240 miles. In the diagram, the Space Station is at point E. The radius of Earth is approximately 3,960 miles. To the nearest ten miles, what is EH, the distance from the space station to the horizon?



$$ED = 240 \text{ mi}$$

$$\begin{aligned} EC &= CD + ED \\ &= 3,960 \text{ mi} + 240 \text{ mi} \\ &= 4,200 \text{ mi} \end{aligned}$$

By the Pythagorean Theorem,

$$EC^2 = EH^2 + CH^2.$$

$$4,200^2 = EH^2 + 3,960^2$$

$$EH^2 = 4,200^2 - 3,960^2$$

$$EH^2 = \sqrt{1,958,400}$$

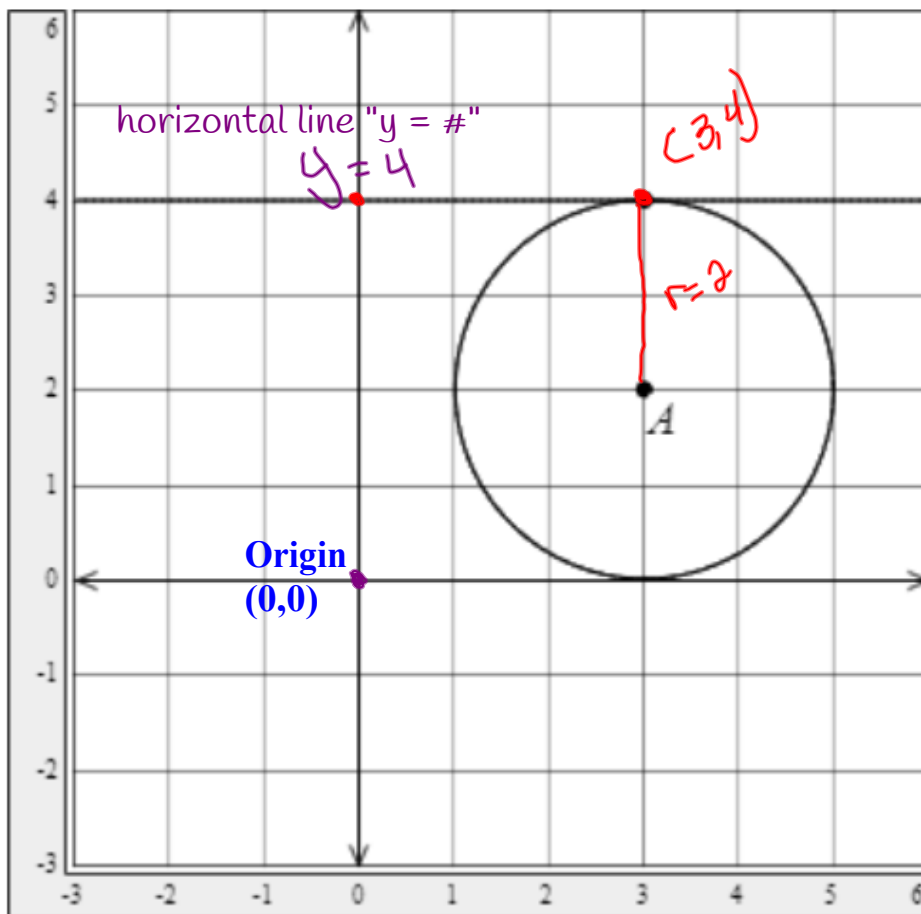
$$EH = 1399 \approx 1400$$

↖ 10's

The distance from the space station to the horizon is approximately 1,400 miles.

2

Find the length of the radius. Identify the point of tangency, and enter the equation of the tangent line at that point.

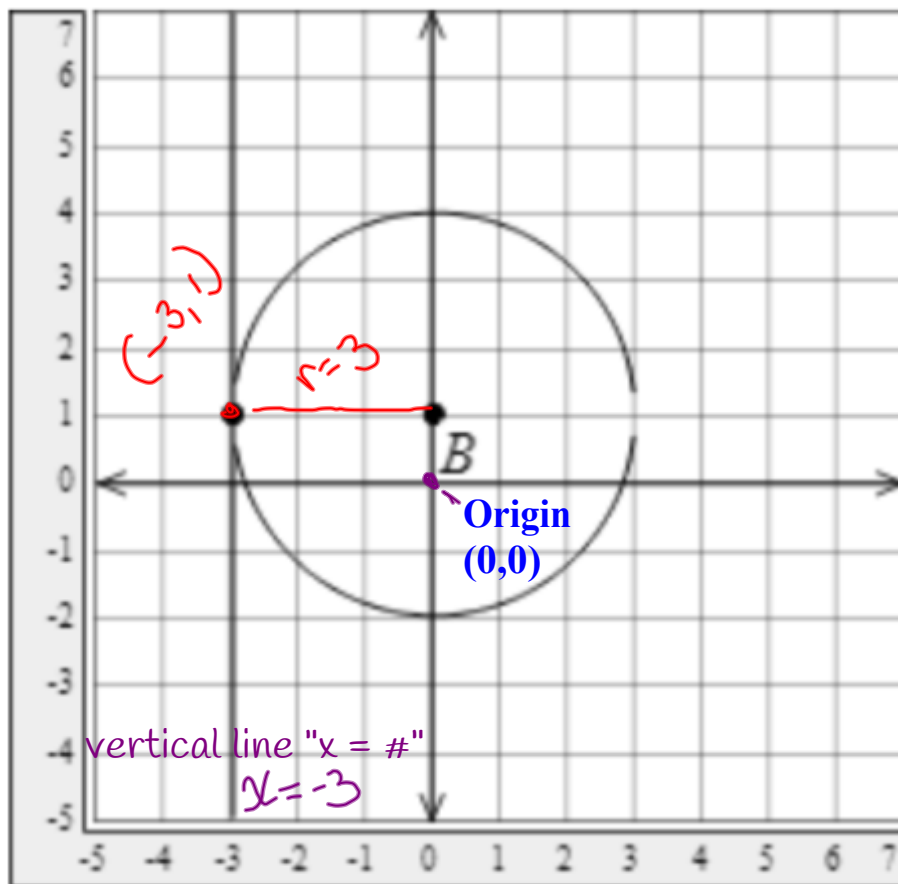


The radius of the circle is units, and the point of tangency is .

The equation of a horizontal line through this point is .

3

Find the length of the radius. Identify the point of tangency, and enter the equation of the tangent line at that point.

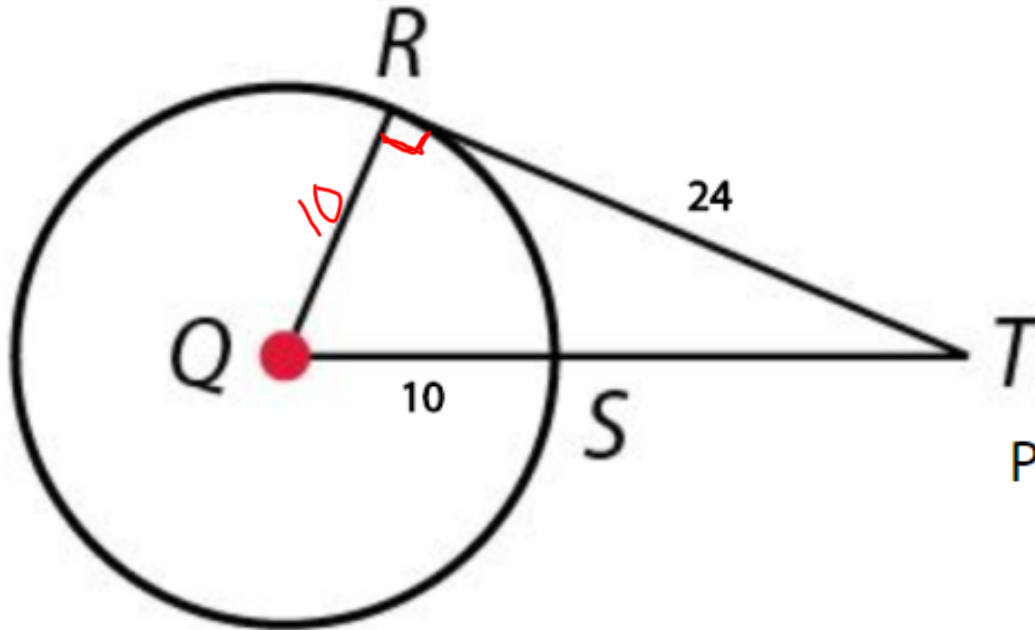


The radius of the circle is units, and the point of tangency is

The equation of a vertical line through this point is .

4

In the figure, $QS = 10$, $RT = 24$, and \overline{RT} is tangent to radius \overline{QR} with the point of tangency at R . Find QT .



Pythagorean Theorem
 $QT^2 = QR^2 + RT^2$.

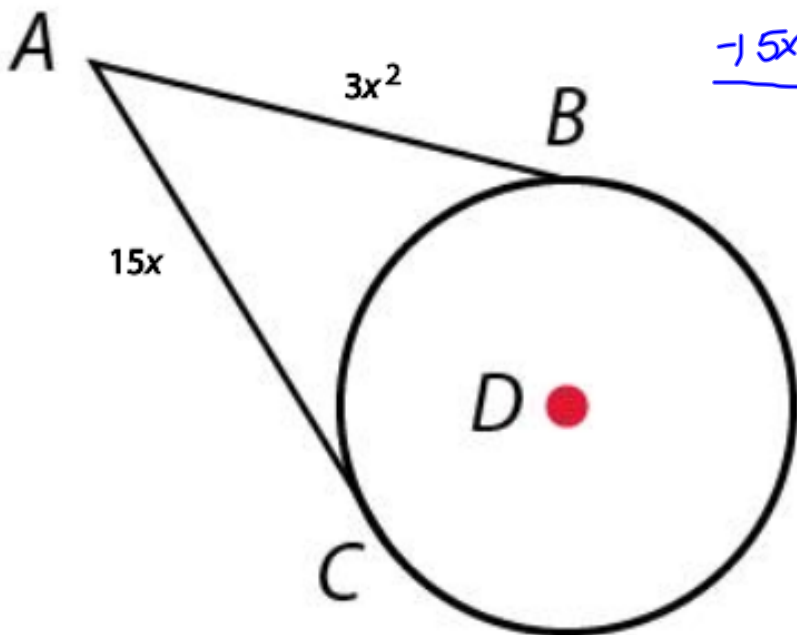
$$\begin{aligned} QT^2 &= 10^2 + 24^2 \\ &= 100 + 576 \\ &= 676 \end{aligned}$$

$$\begin{aligned} \sqrt{QT^2} &= \sqrt{676} \\ QT &= 26 \end{aligned}$$

$QT = \boxed{26}$

5

The segments in each figure are tangent to the circle at the points shown. Find each length.



$$\begin{aligned}
 3x^2 &= 15x \\
 -15x &\quad -15x \\
 \hline
 3x^2 - 15x &= 0 \\
 \boxed{3x} \cdot x - \boxed{3x} \cdot 5 &= 0 \\
 3x(x-5) &= 0 \\
 \begin{array}{l} \downarrow \\ 3x = 0 \\ \hline 3 \quad 3 \\ x = 0 \end{array} & \quad \begin{array}{l} \downarrow \\ x - 5 = 0 \\ \hline +5 \quad +5 \\ x = 5 \end{array}
 \end{aligned}$$

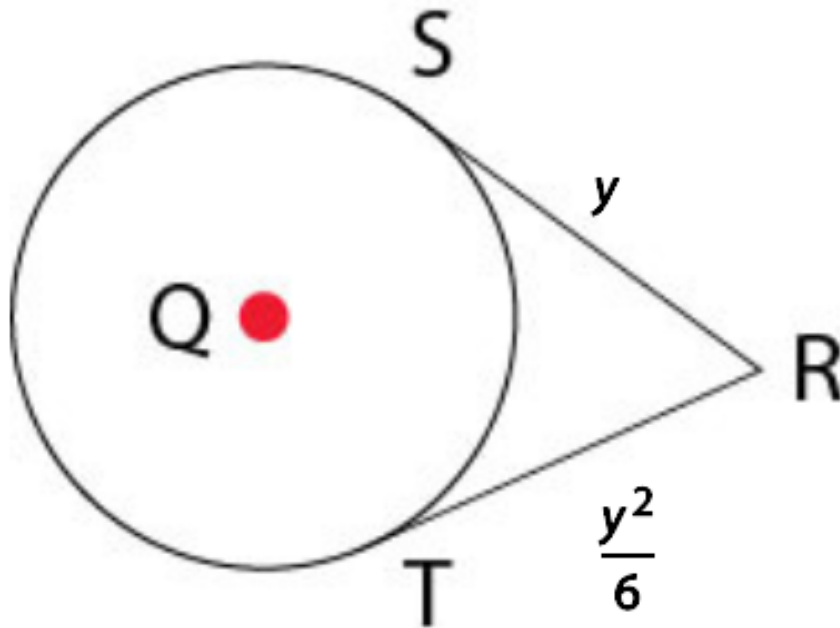
AC =

AB =

$15x = 15(5) = 75$

Two tangent segments from the same exterior point to the same circle will be congruent. Your answers should match.

- 6 The segments in each figure are tangent to the circle at the points shown.
Find each length.



$$RS = \boxed{6}$$

$$RT = \boxed{6}$$

Two tangent segments from the same exterior point to the same circle will be congruent. Your answers should match.

$$y = \frac{y^2}{6}$$

$$6y = y^2$$

$$0 = y^2 - 6y$$

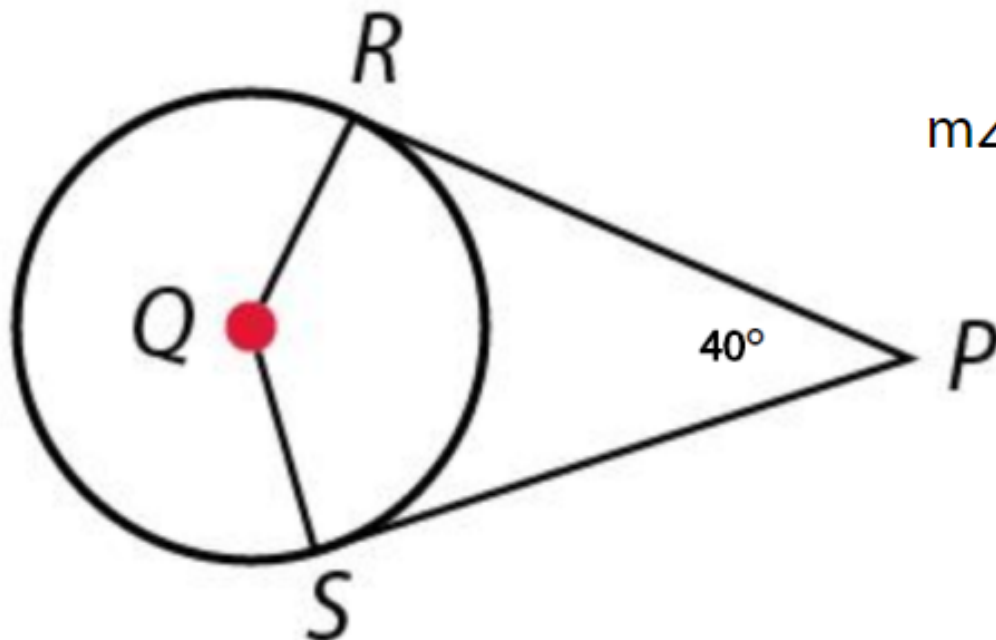
$$= y(y - 6)$$

The solutions are $y = 0$ or $y = 6$.
Choose $y = 6$.

$$SR = 6$$

$$RT = \frac{y^2}{6} = \frac{\overset{6}{\cancel{36}}}{\underset{1}{\cancel{6}}} = 6$$

7 \overline{PR} is tangent to circle Q at R and \overline{PS} is tangent to circle Q at S . Find $m\angle Q$.

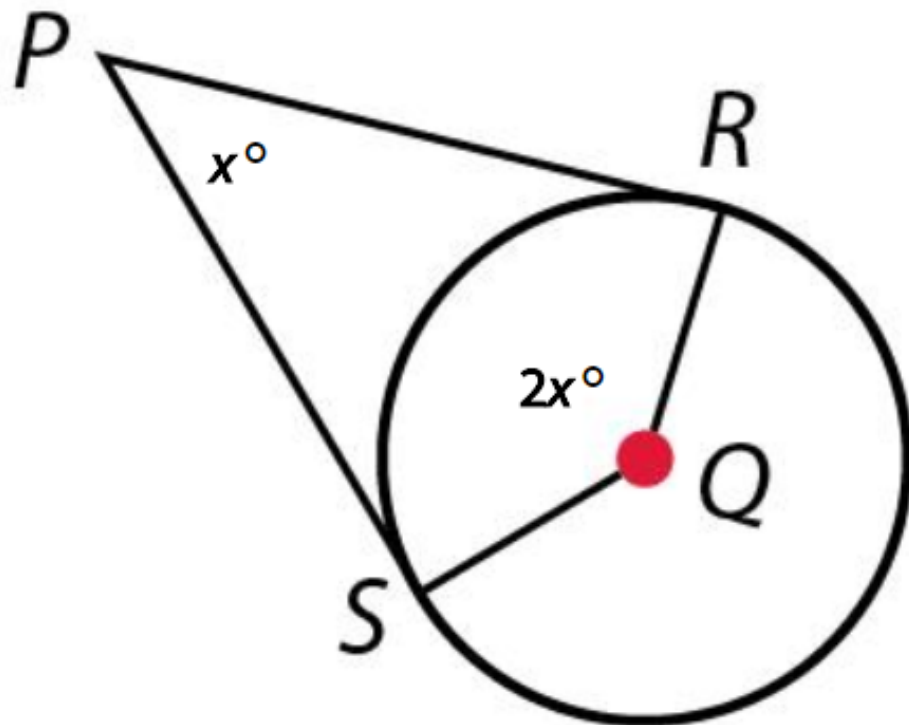


$$m\angle Q = 180^\circ - 40^\circ = 140^\circ.$$

$$m\angle Q = \boxed{140}^\circ$$

Notice that $\angle Q$ is supplementary with the angle formed at the exterior point.

- 8 \overline{PR} is tangent to circle Q at R and \overline{PS} is tangent to circle Q at S . Find $m\angle P$.



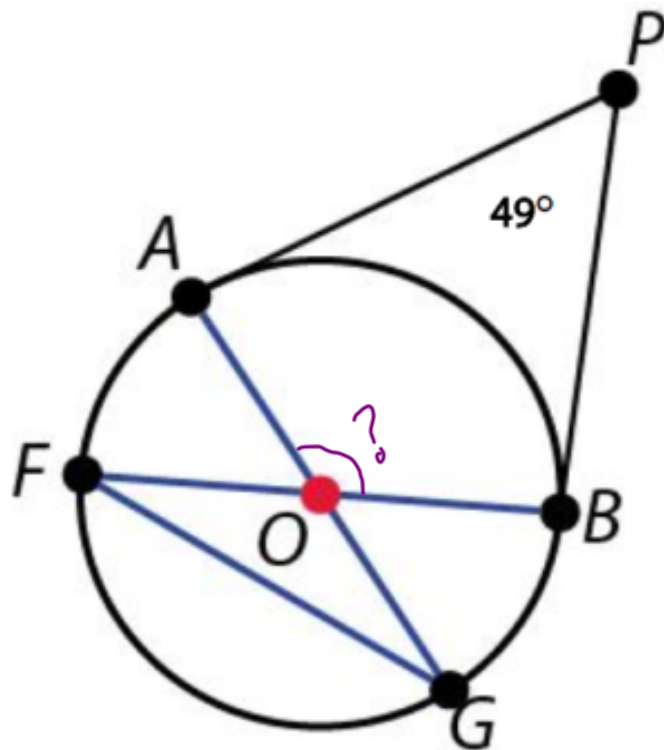
$$\begin{aligned}x + 2x &= 180 \\3x &= 180 \\x &= 60\end{aligned}$$

$$m\angle P = \boxed{60}^\circ$$

Notice that $\angle Q$ is supplementary with the angle formed at the exterior point.

9

\overline{PA} is tangent to circle O at A and \overline{PB} is tangent to circle O at B , and $m\angle P = 49^\circ$.
Use the figure to find the angle measure.

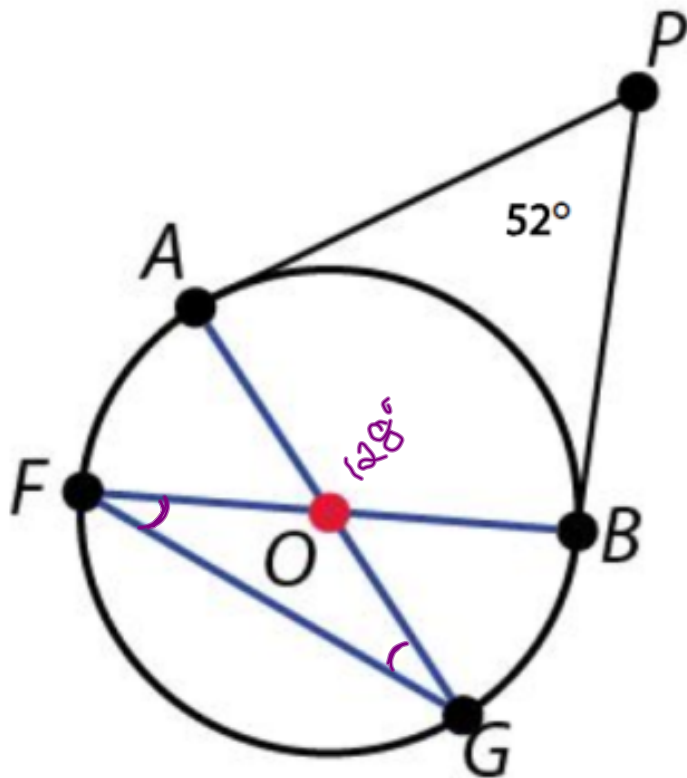


$$m\angle AOB = 180^\circ - 49^\circ = 131^\circ.$$

$$m\angle AOB = \boxed{131}^\circ$$

Notice that $\angle Q$ is supplementary with the angle formed at the exterior point.

- 10** \overline{PA} is tangent to circle O at A and \overline{PB} is tangent to circle O at B , and $m\angle P = 52^\circ$.
Use the figure to find the angle measure.



$$m\angle AOB = 180^\circ - 52^\circ = 128^\circ.$$

$$m\angle OGF = \frac{180 - 128}{2} = 26^\circ.$$

$m\angle OGF = \boxed{26}^\circ$ $\triangle FOB$ is isosceles, so its base angles are congruent.



Never say,
"I can't"
Always say,
"I'll try"