

$\angle AEP$ is a _____ angle.

A _____ angle is an angle with rays _____ to the circle. It is equal to _____ of the _____ between the _____ arcs.

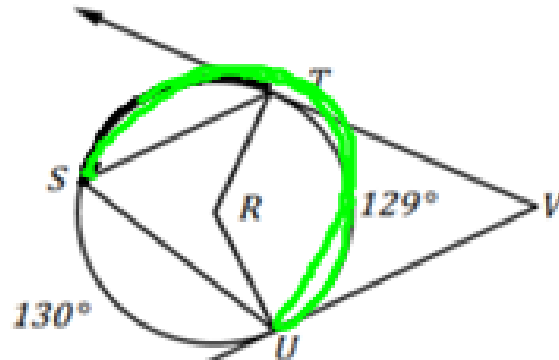
The circumscribed angle and the central angle formed by the same arcs are Supplementary angles.

$$m\angle E + m\angle ACP = 180$$

Let's Practice!

3. Find each of the following angles and arcs formed in circle R .

- a. $m\angle RTV = 90$
 b. $m\angle TRU = 129$
 c. $m\angle TVU = 51$
 d. $m\angle TSU = 64.5$
 e. $m\widehat{ST} = 101$
 f. $m\widehat{STU} = 230$



$$\frac{129}{2} = 64.5$$

$$180 - 129 = 51$$

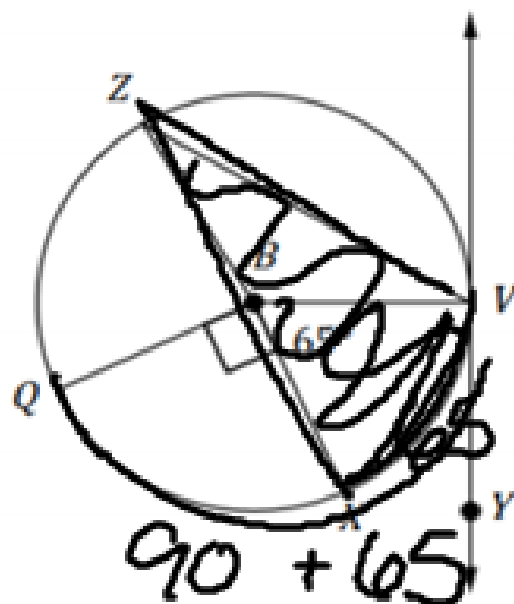
$$360 - (130 + 129)$$

$$101 + 129 = 230$$

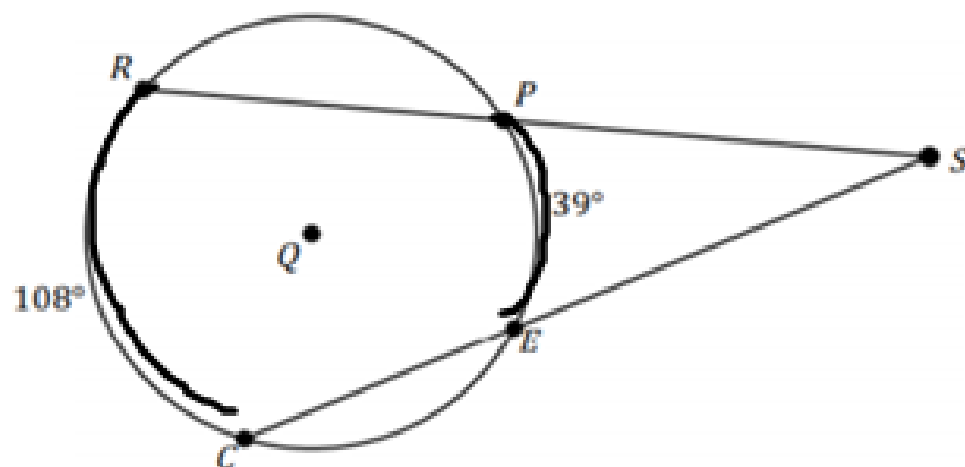
4. Find each of the following angles and arcs formed in circle B .

- a. $m\angle YVB = 90$
 b. $m\widehat{VX} = 65$
 c. $m\angle VZX = 32.5$
 d. $m\widehat{VQ} = 155$

$$\frac{1}{2}(65)$$



Consider the diagram below where $\angle RSC$ is formed by two secants intersecting outside of circle Q .



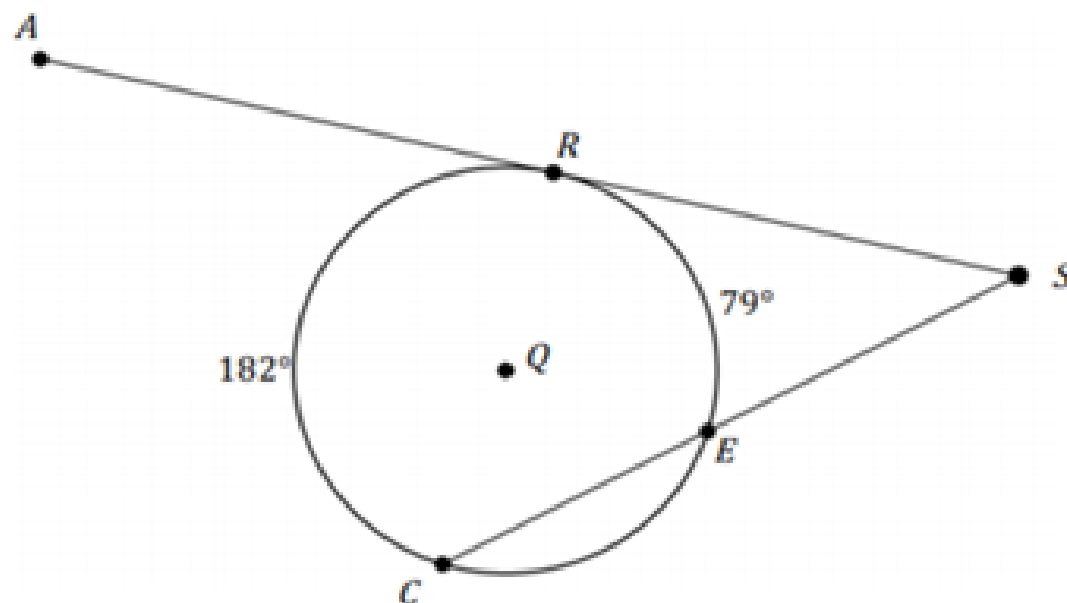
Identify the intercepted arcs.

\widehat{RC} & \widehat{PE}

Determine $m\angle RSC$.

$$\frac{1}{2}(108 - 39) = 34.5$$

1. Consider the diagram below, where $\angle ASC$ is formed by a tangent line and a secant line intersecting outside of circle Q .



- a. What are the intercepted arcs in the above diagram?

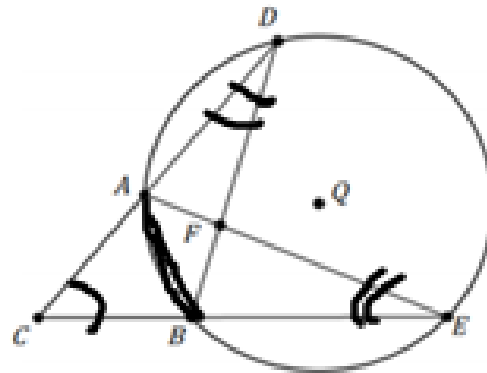
\widehat{RE} & \widehat{RC}

- b. Determine $m\angle ASC$.

$$\frac{1}{2}(182 - 79) = 51.5$$

Informal Assessment:

1. Consider the diagram below.



Which of the following statements is correct?

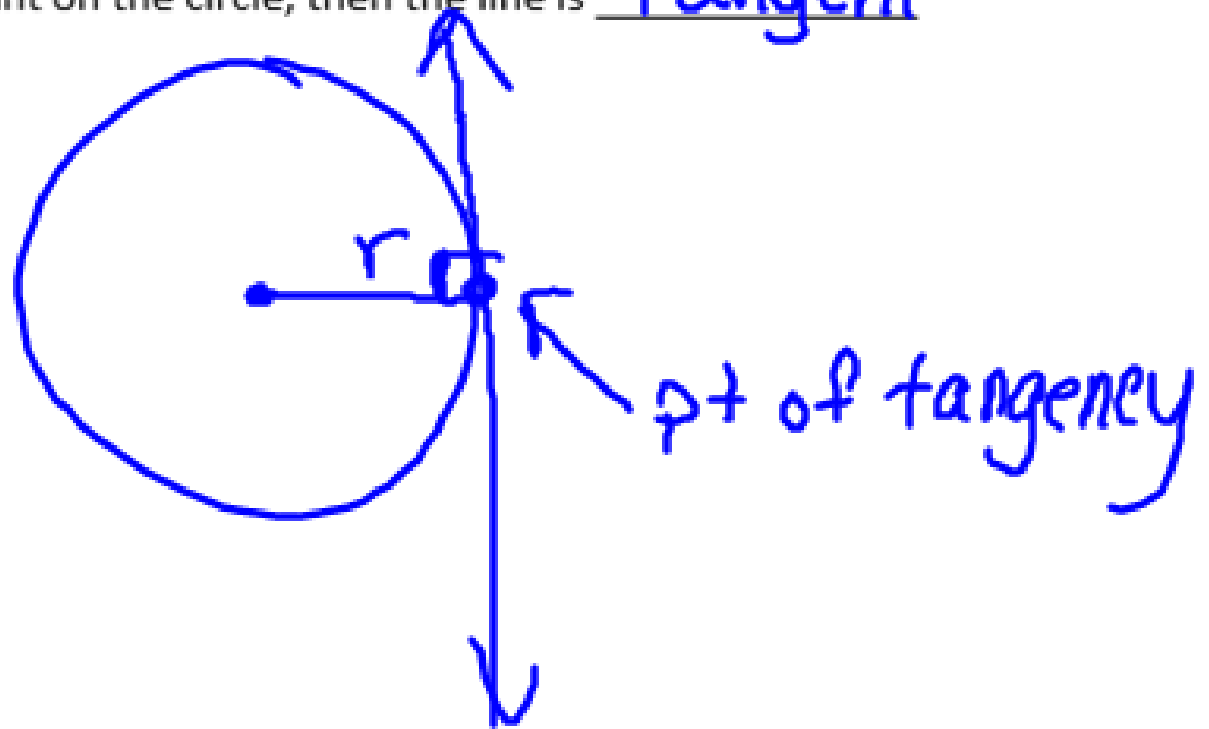
- $\triangle DCB \sim \triangle ECA$ by Angle-Angle Similarity
- $\angle ACB \cong \angle ADE$ by definition of an angle formed by two secants intersecting outside of a circle
- $\angle DAE \cong \angle DEB$ by Alternate Interior Angles Theorem
- $m\angle BFE = m\angle BE$ by definitions of central angles and inscribed angles

Tangent + Theorem

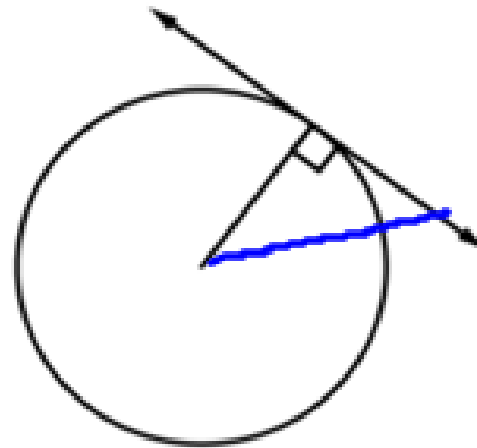
If a line is tangent to a circle, then the line is perpendicular to the radius from the point of tangency.

Converse:

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



How could we prove the Tangent Theorem using the figure below?



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

Tangent Segment Theorem

If two segments are tangent to the same exterior point, they are congruent.

