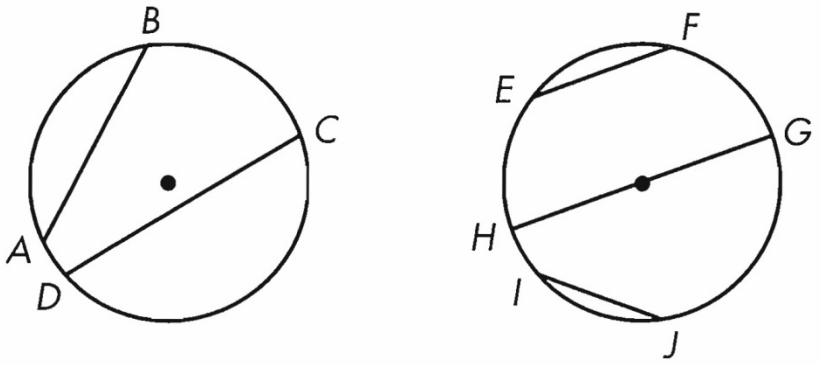
12.1 & 12.2

Parts of Circles, Tangent Lines, & Properties of Arcs

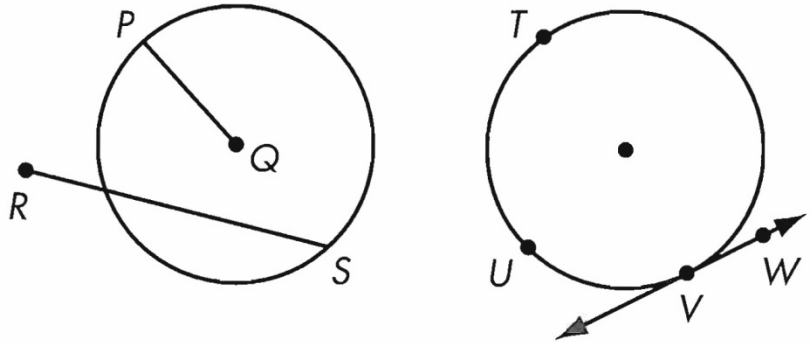
1. Define *chord*.

Chord



$\overline{AB}$, $\overline{CD}$, $\overline{EF}$, $\overline{GH}$, and $\overline{IJ}$ are chords.

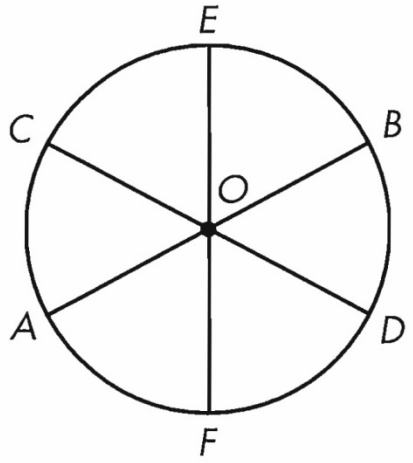
Not a chord



$\overline{PQ}$, $\overline{RS}$, $\overset{\frown}{TU}$, and $\overleftrightarrow{VW}$ are not chords.

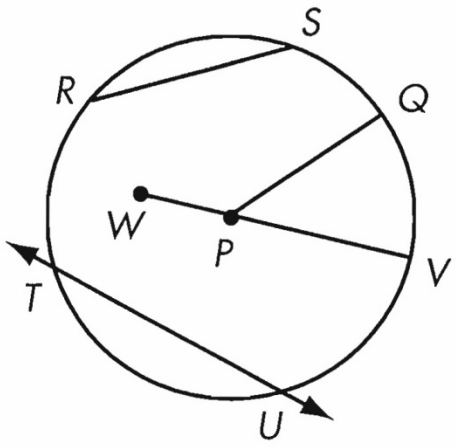
2. Define *diameter*.

Diameter



$\overline{AB}$, $\overline{CD}$, and $\overline{EF}$ are diameters of circle O.

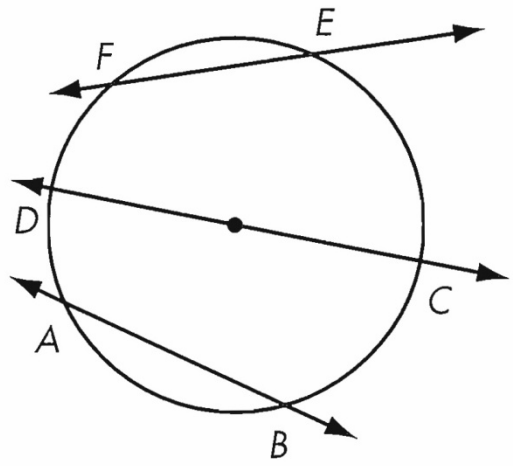
Not a diameter



$\overline{PQ}$, $\overline{RS}$, $\overleftrightarrow{TU}$, and $\overline{VW}$ are not diameters of circle P.

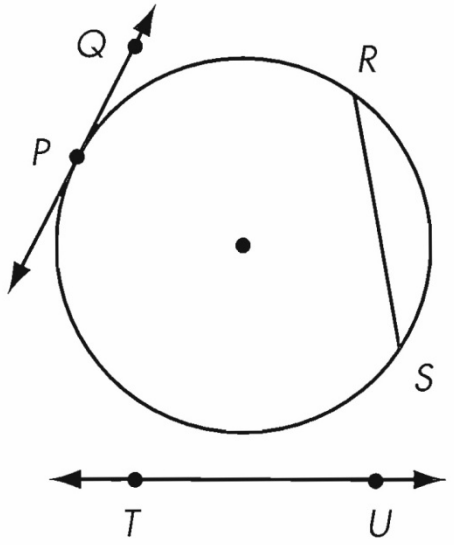
3. Define *secant.*

Secant



$\overleftrightarrow{AB}$, $\overleftrightarrow{CD}$, and $\overleftrightarrow{EF}$ are secants.

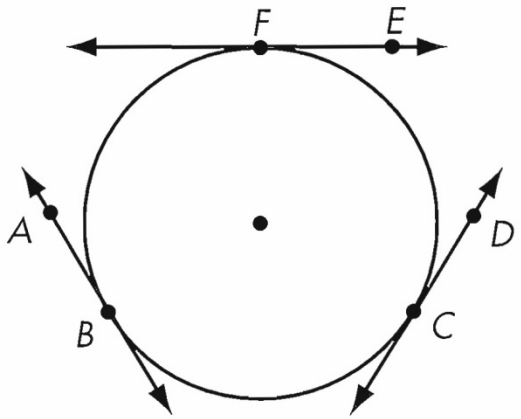
Not a secant



$\overleftrightarrow{PQ}$, $\overline{RS}$, and $\overleftrightarrow{TU}$ are not secants.

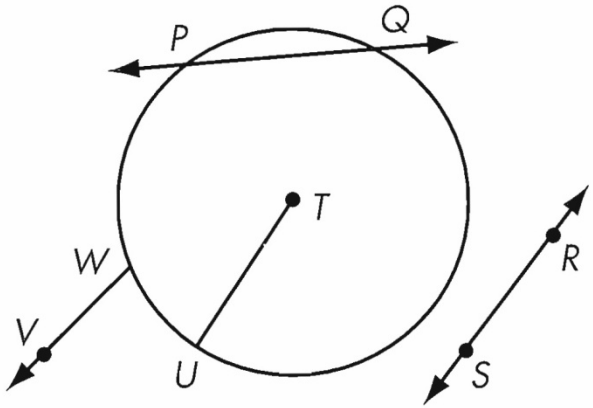
4. Define *tangent*.

Tangent



$\overleftrightarrow{AB}$, $\overleftrightarrow{CD}$, and $\overleftrightarrow{EF}$ are tangents.

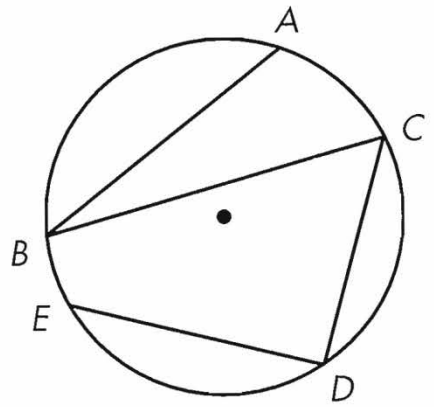
Not a tangent



$\overleftrightarrow{PQ}$, $\overleftrightarrow{RS}$, $\overline{TU}$, and $\overrightarrow{WV}$ are not tangents.

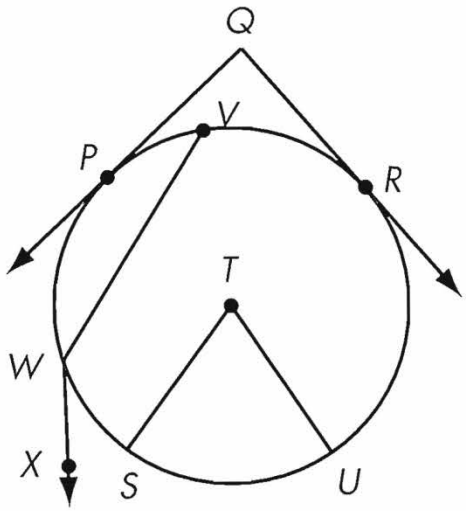
5.* Define *inscribed angle.*

Inscribed angle



$\angle ABC$, $\angle BCD$, and $\angle CDE$ are inscribed angles. They intercept arcs $\overset{\frown}{AC}$, $\overset{\frown}{BD}$, and $\overset{\frown}{EBC}$, respectively.

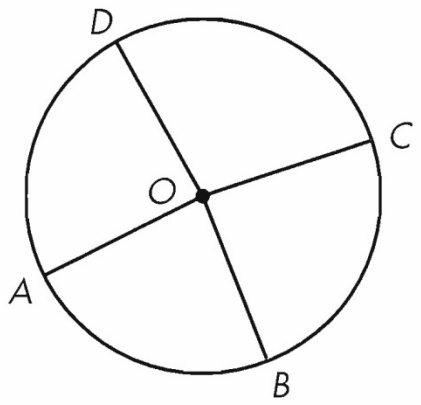
Not an inscribed angle



$\angle PQR$, $\angle STU$, and $\angle VWX$ are not inscribed angles.

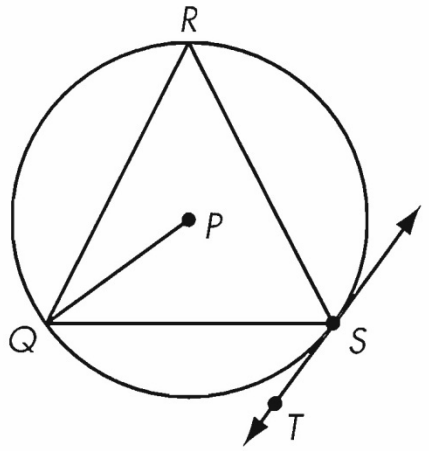
6. Define *central angle.*

Central angle



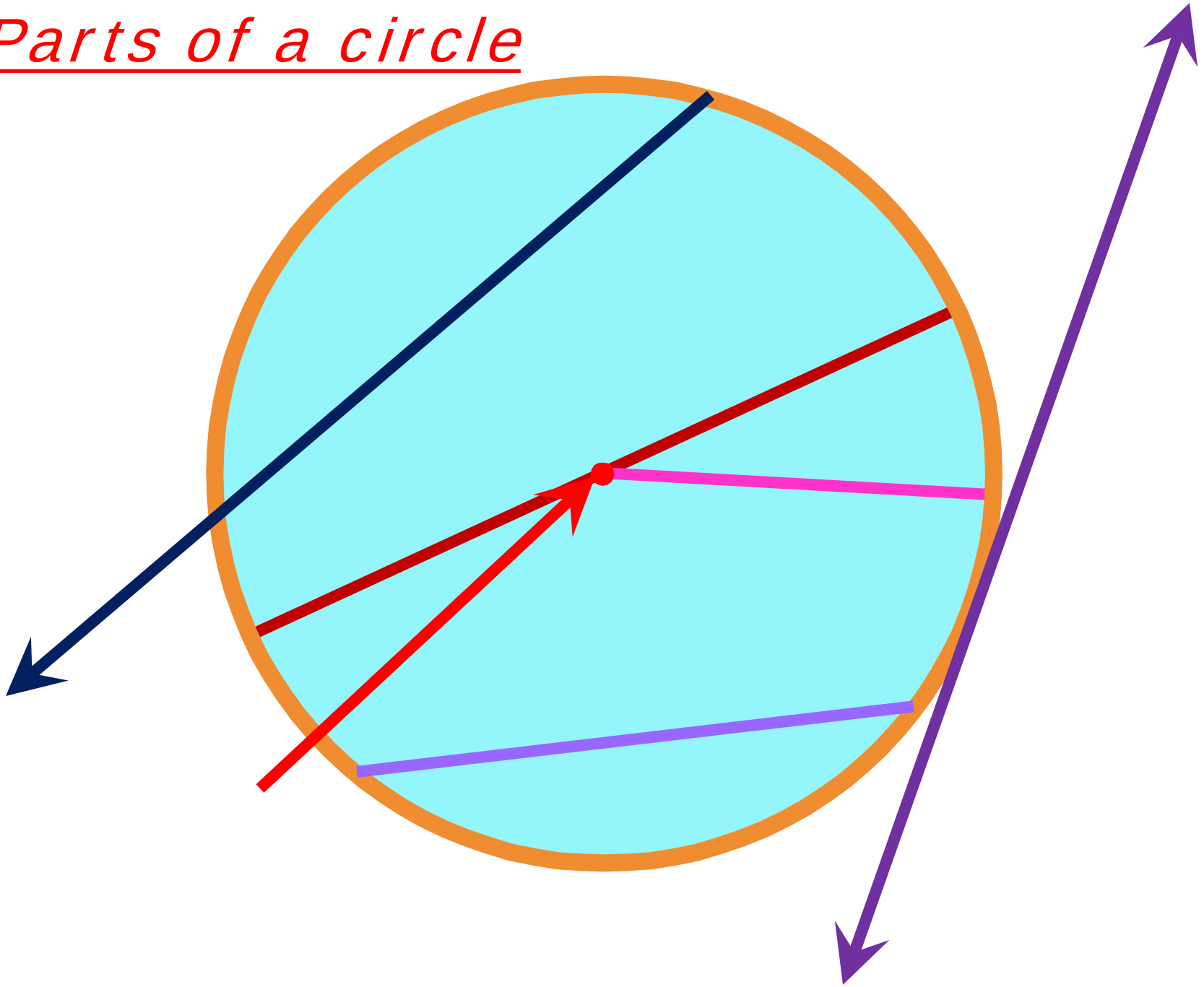
$\angle AOB$, $\angle BOC$, $\angle COD$, and $\angle DOA$ are central angles of circle O.

Not a central angle

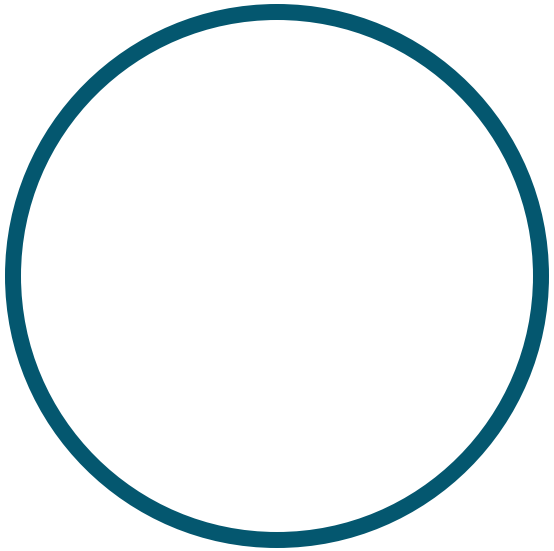


$\angle PQR$, $\angle PQS$, $\angle RQS$, and $\angle QST$ are not central angles of circle P.

Parts of a circle

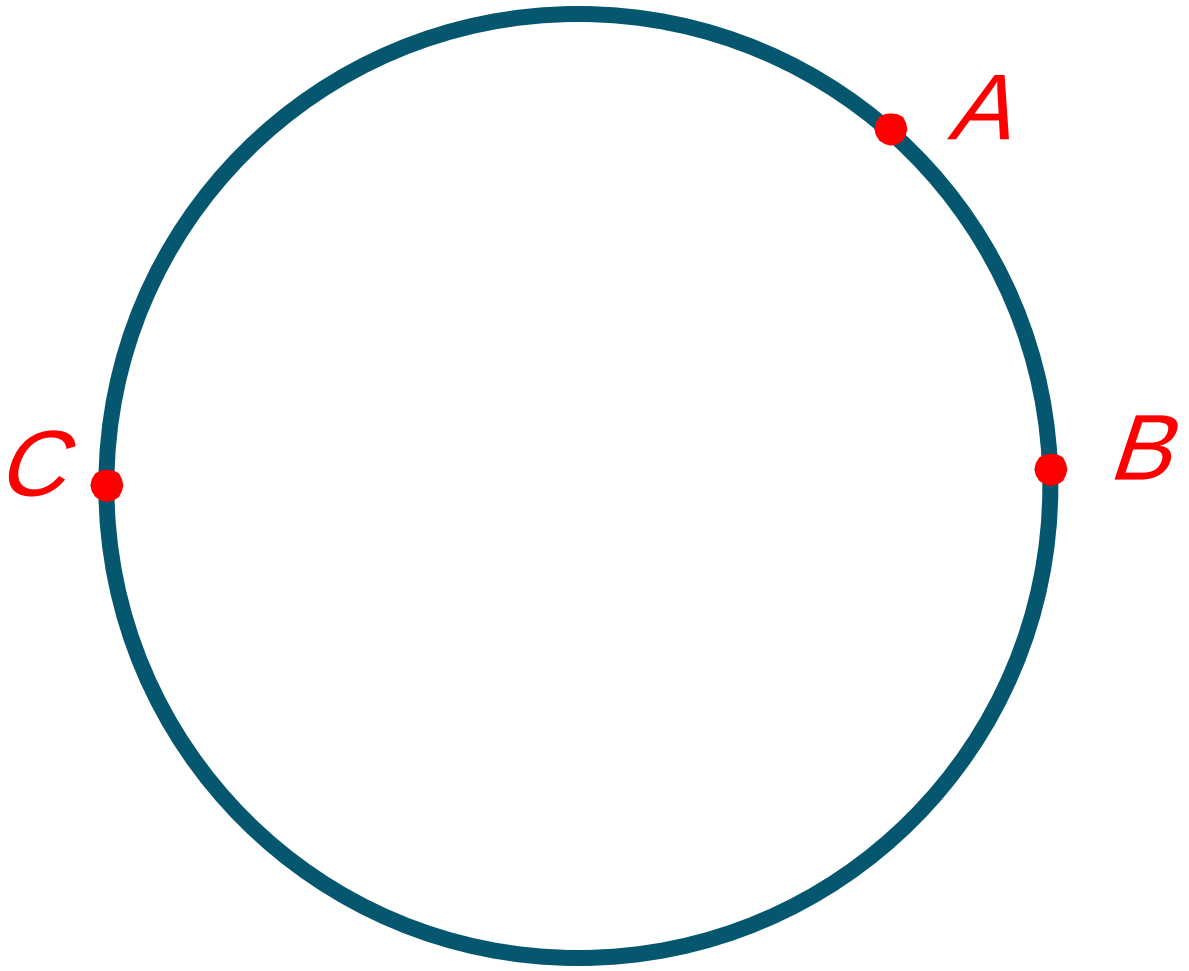


Concentric Circles



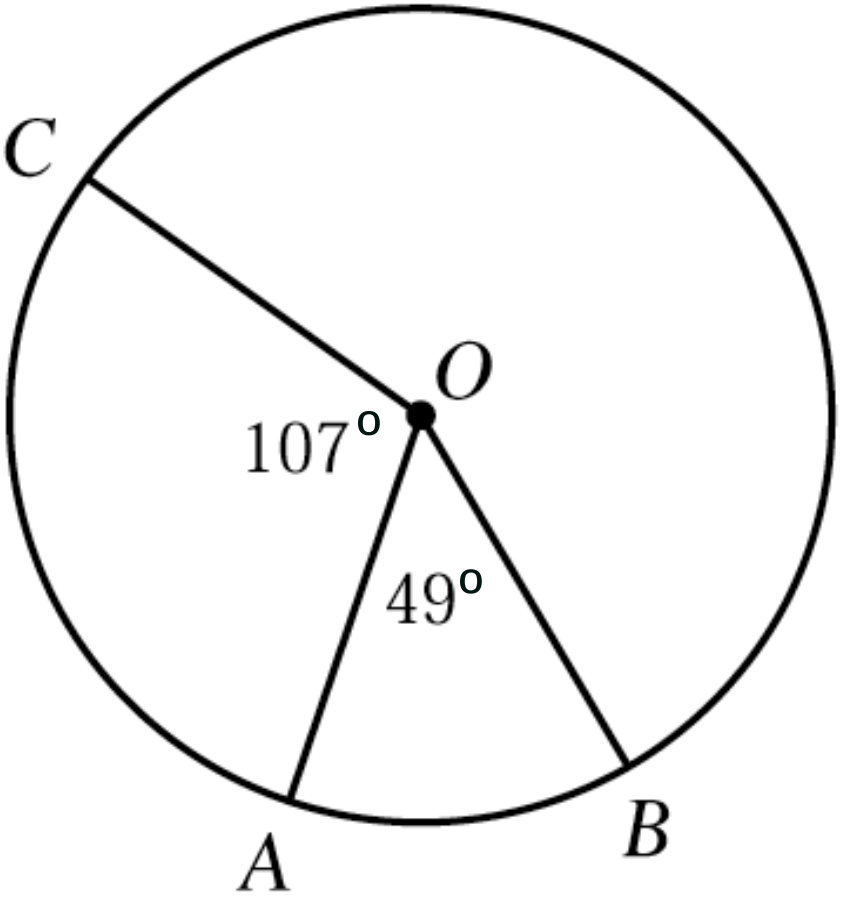
Circles that have the _____.

Arcs



Minor arcs are the _____ arc between two points.
Major arc is the _____ arc between two points.

Arc Measures



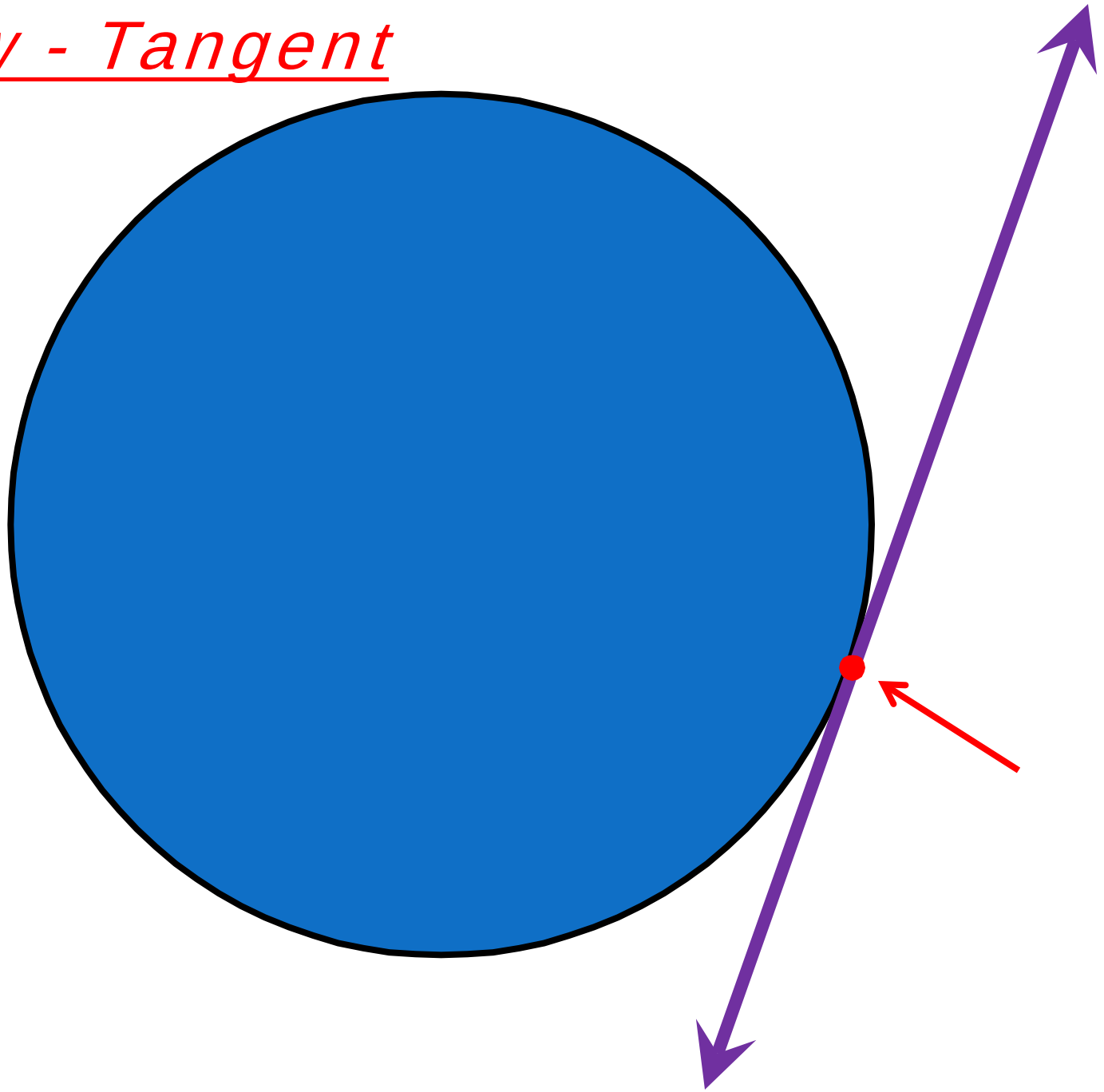
$m\overset{\frown}{AB} =$

$m\overset{\frown}{ABC} =$

$m\overset{\frown}{BAC} =$

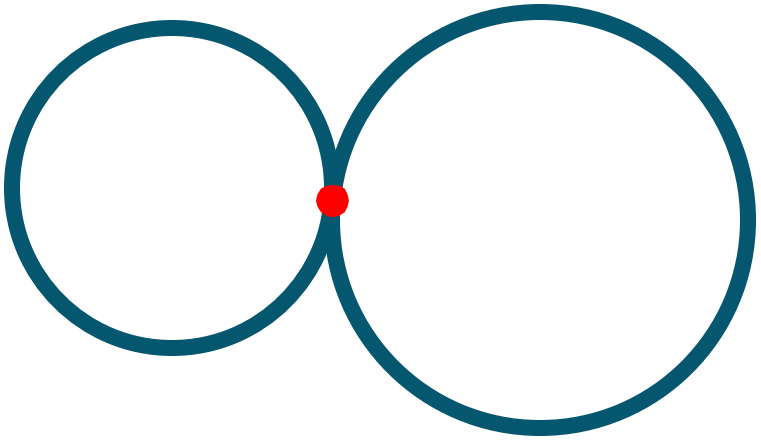
$m\overset{\frown}{ACB} =$

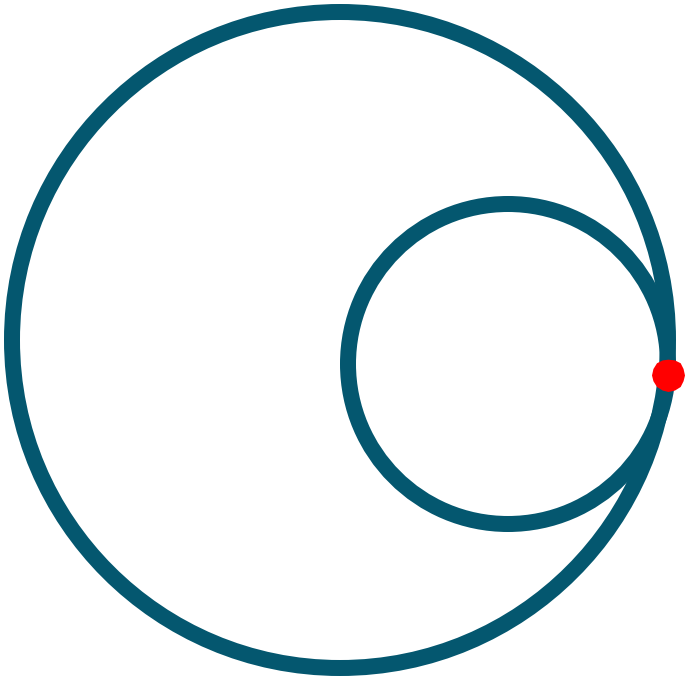
Review - Tangent



Tangent Circles

These are circles that touch each other at only one point.





Observations…

Investigation 1

1) **Move point C close and close to point B.**

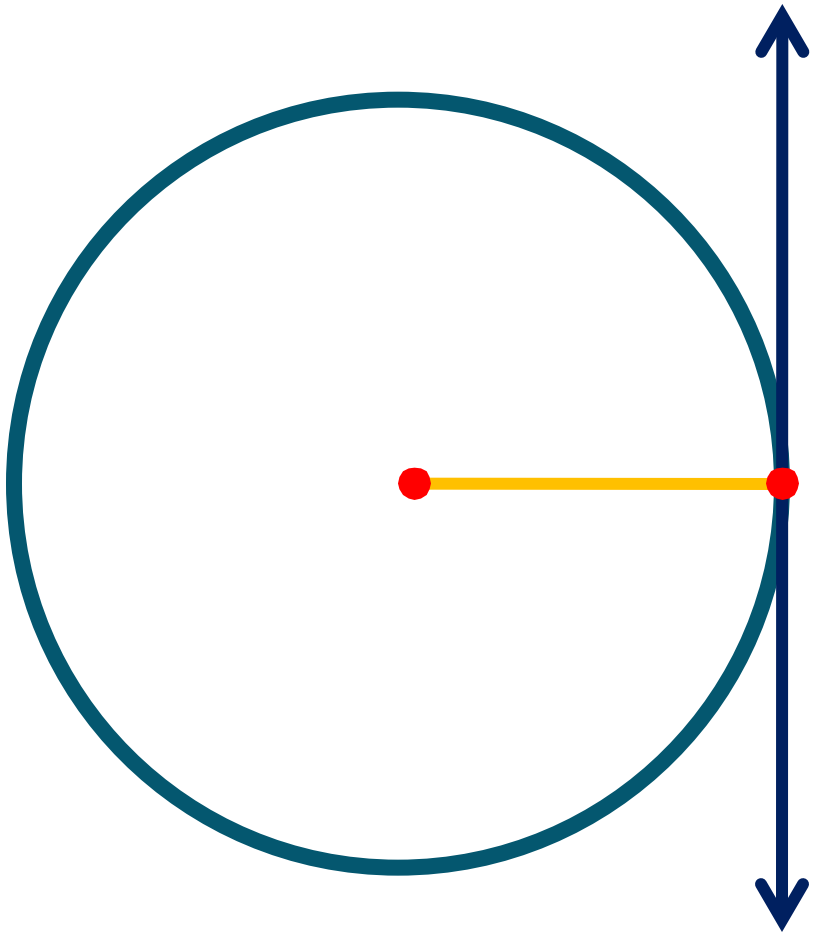
2) **What would you call that line if point C coincides with point B? Why?**

3) **What kind of angle do you believe is formed from radius AB and that line?**

Investigation 2

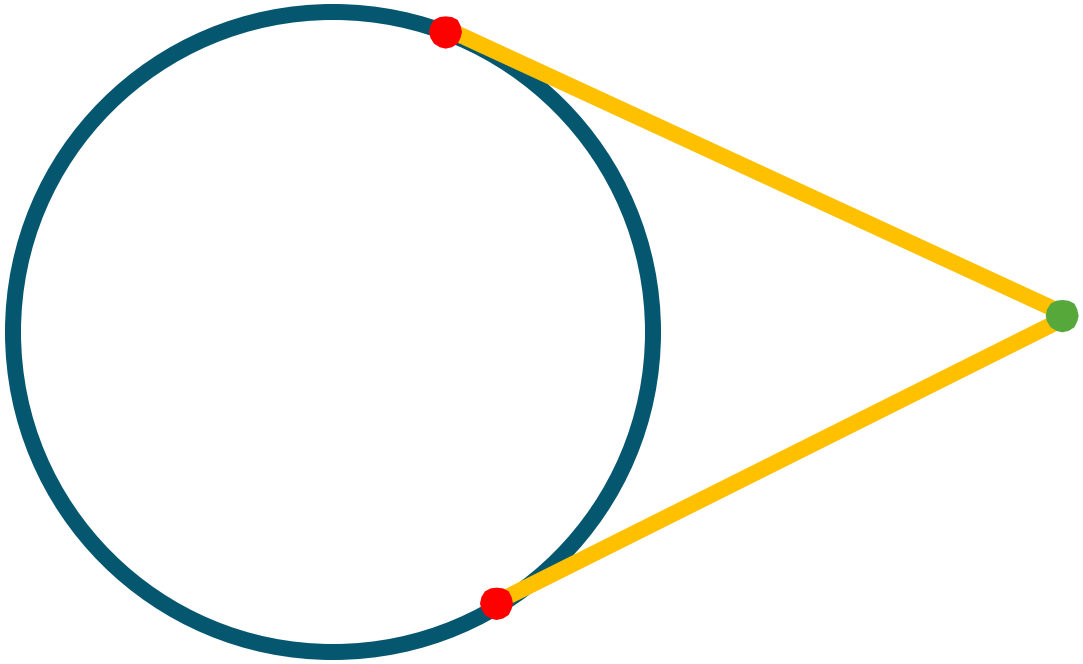
Tangent segments are segments that are tangent to a circle and intersect at one point outside the circle.

4) **What do you think is the relationship between the two tangent segments illustrated?**



© Tangent Conjecture

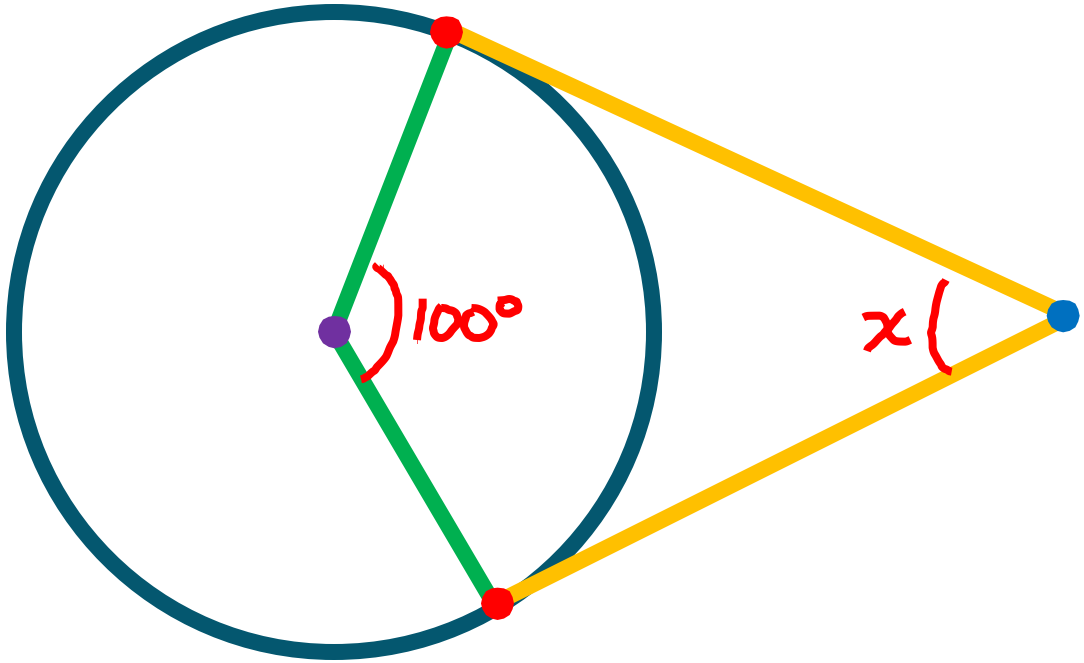
A tangent to a circle is _____ to the radius drawn to the _____.



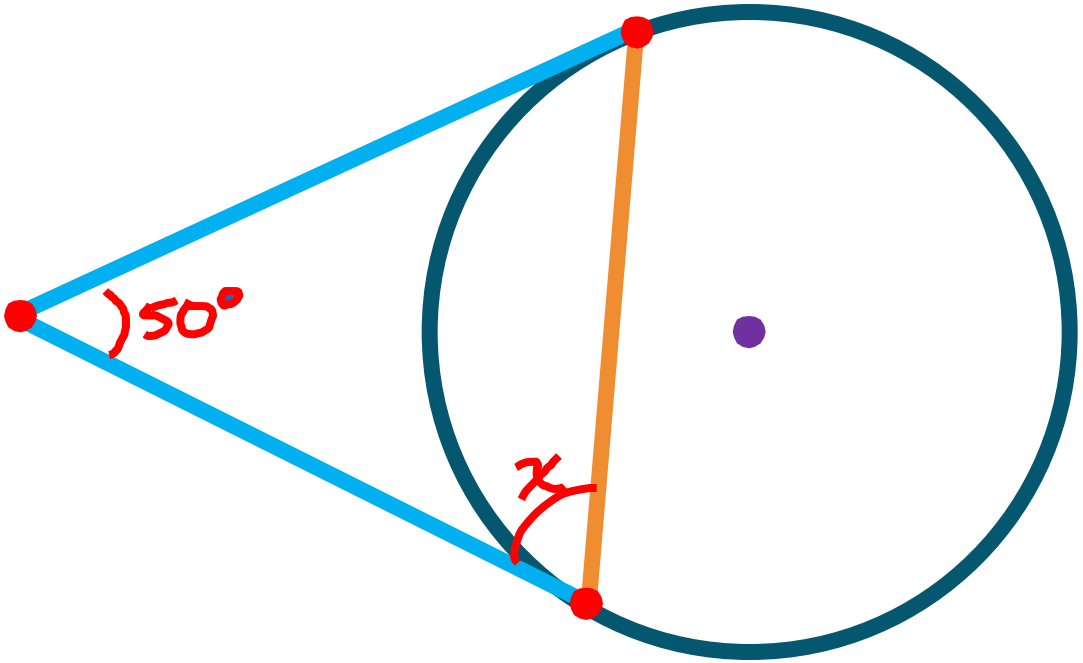
© Tangent Segments Conjecture

Tangent segments to a circle from a point outside the circle are _____ .

Practice #1



Practice #2



Practice #3