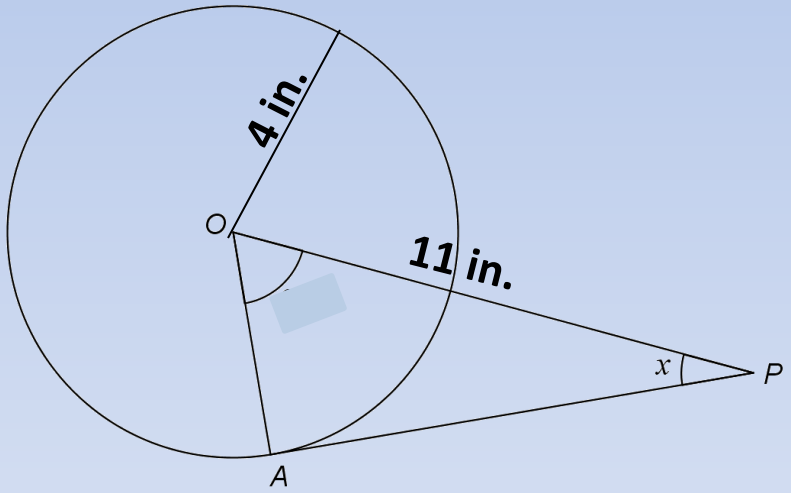
WELCOME

Warm-Up

1. **Factor by grouping:** $2x^3 + 5x^2 + 10x + 25$

2. $\overline{AP}$ **is tangent to circle O and point A.** **Find the length of side** $\overline{AP}$.



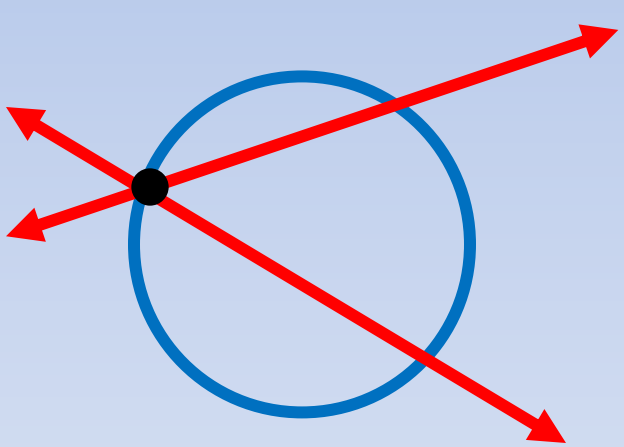
Learning Target

I can calculate the measure of an arc or vertical angle if *two chords intersect in the interior of a circle*.

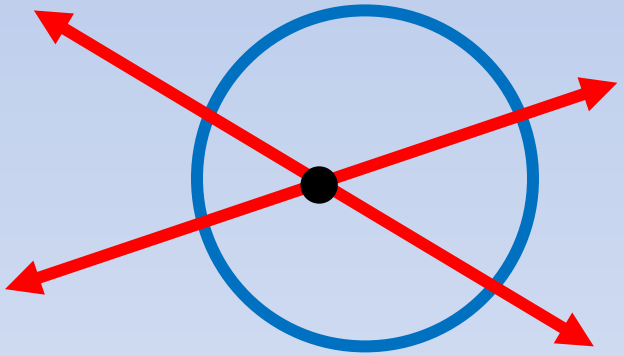
I can calculate the measure of an arc or exterior angle when *two lines intersect on the exterior of a circle*.

Types of Intersecting Lines

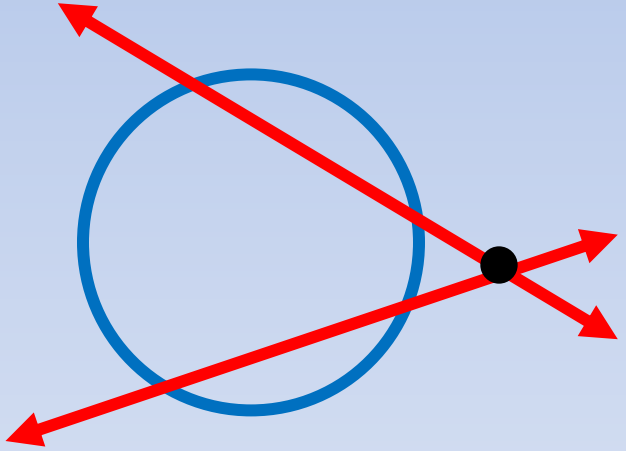
If two lines intersect a circle, there are three places where the lines can intersect



on the circle



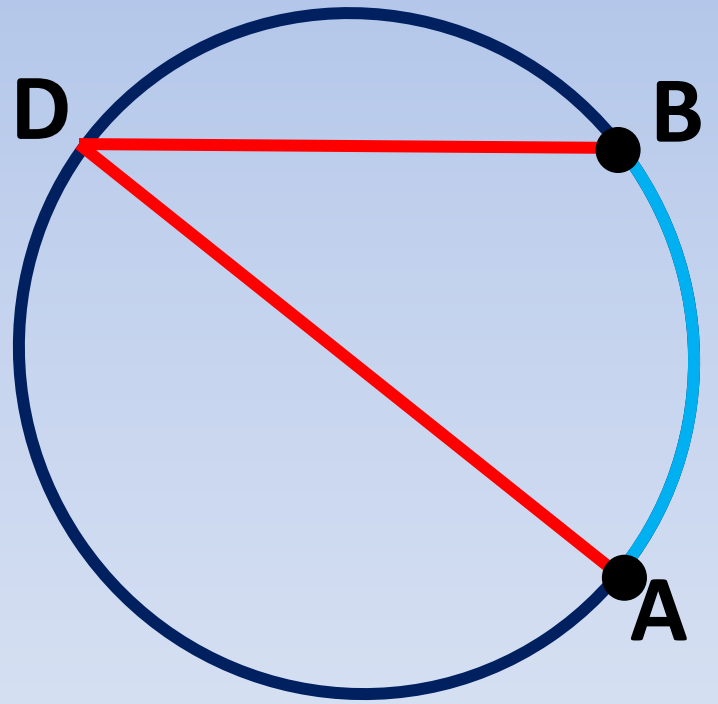
inside the circle



outside the circle

Inscribed Angle on Circle

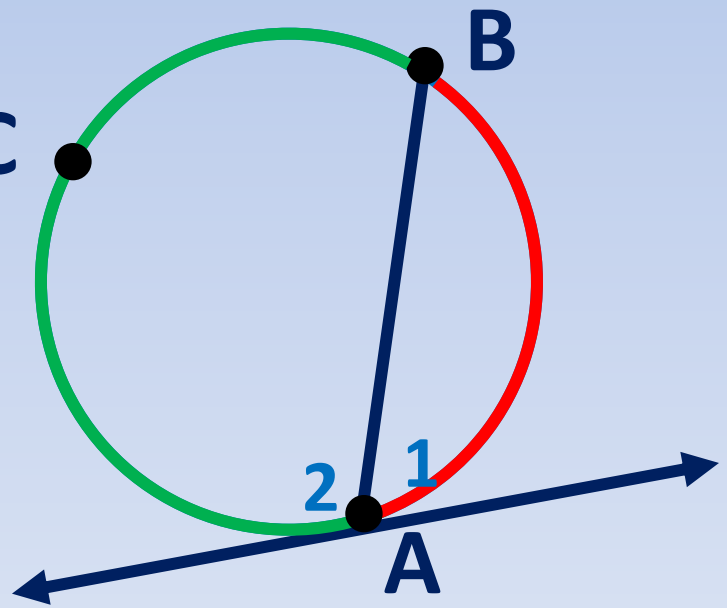
If an angle is inscribed in a circle, then its measure is half the measure of its intercepted arc.



$$m\angle ADB = \frac{1}{2} m\overset{\frown}{AB}$$

Tangent & Chord ∠ on Circle

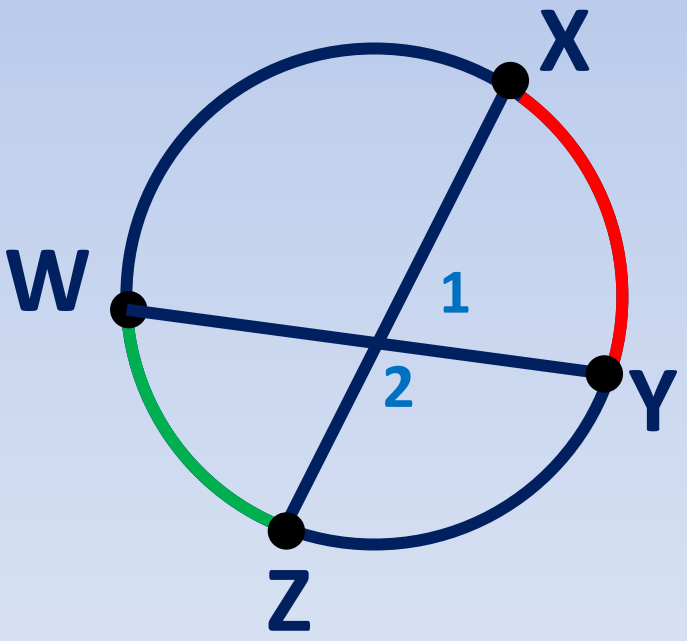
If a tangent and a chord intersect, then the measure of each ∠ formed is $\frac{1}{2}$ the measure of its intercepted arc.



$$m\angle 1 = \frac{1}{2} m\overset{\frown}{AB} \quad \& \quad m\angle 2 = \frac{1}{2} m\overset{\frown}{ACB}$$

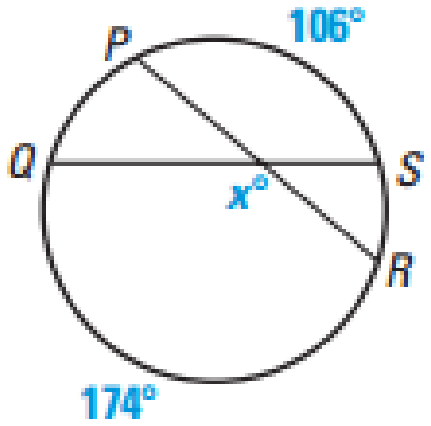
Chord Angles on the Interior

If chords intersect inside a circle, then the measure of each ∠ is $\frac{1}{2}$ the sum of the arcs intercepted by the angle and its vertical ∠.



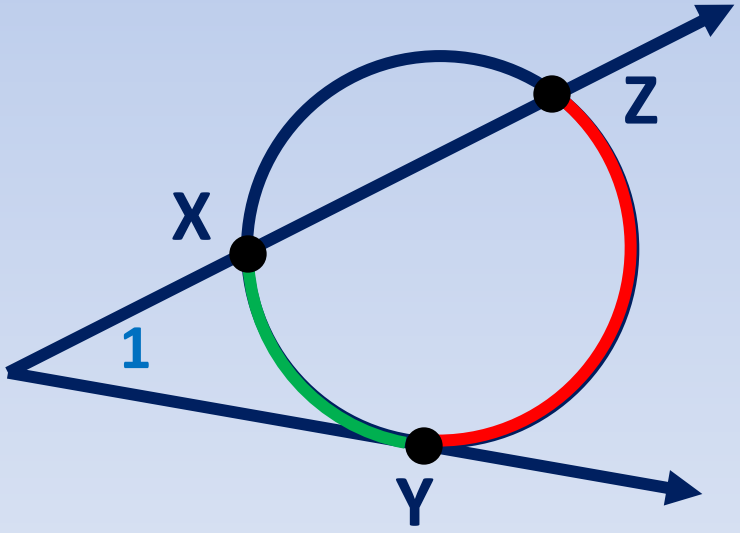
$$m\angle 1 = \frac{1}{2}(m\overset{\frown}{XY} + m\overset{\frown}{WZ}) \quad \& \quad m\angle 2 = \frac{1}{2}(m\overset{\frown}{WX} + m\overset{\frown}{ZY})$$

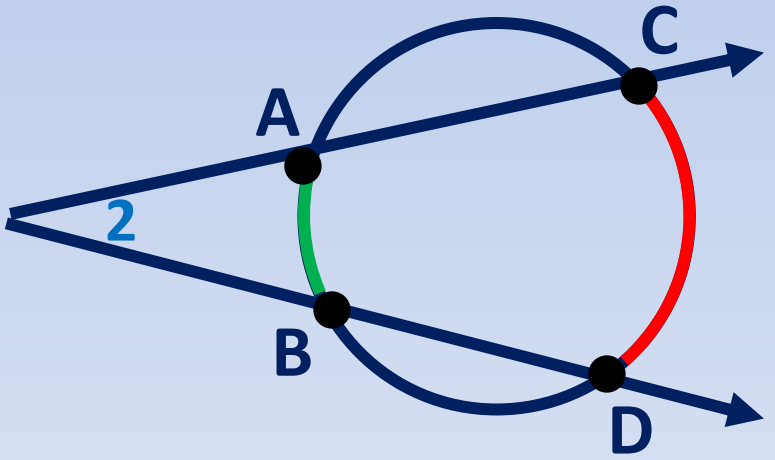
Find the value of x.



Exterior Intersection Angle

If there is an intersection in the exterior of a ⊙, then the measure of ∠ formed is $\frac{1}{2}$ the difference of the intercepted arcs.



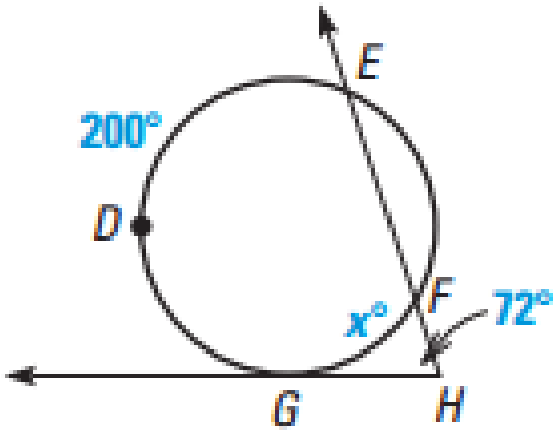


$$m\angle 1 = \frac{1}{2}(m\overset{\frown}{ZY} - m\overset{\frown}{YX})$$

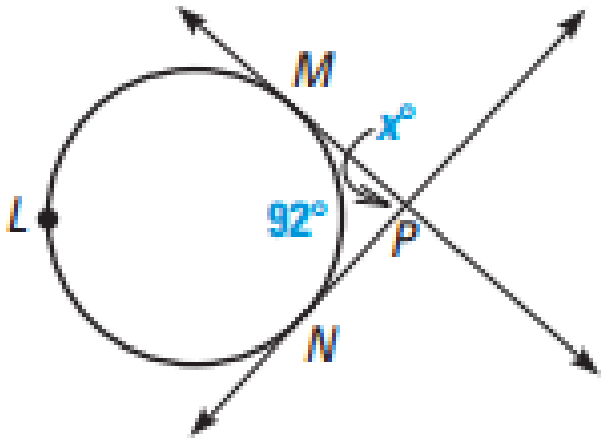
$$m\angle 2 = \frac{1}{2}(m\overset{\frown}{CD} - m\overset{\frown}{AB})$$

Find the value of x.

a.

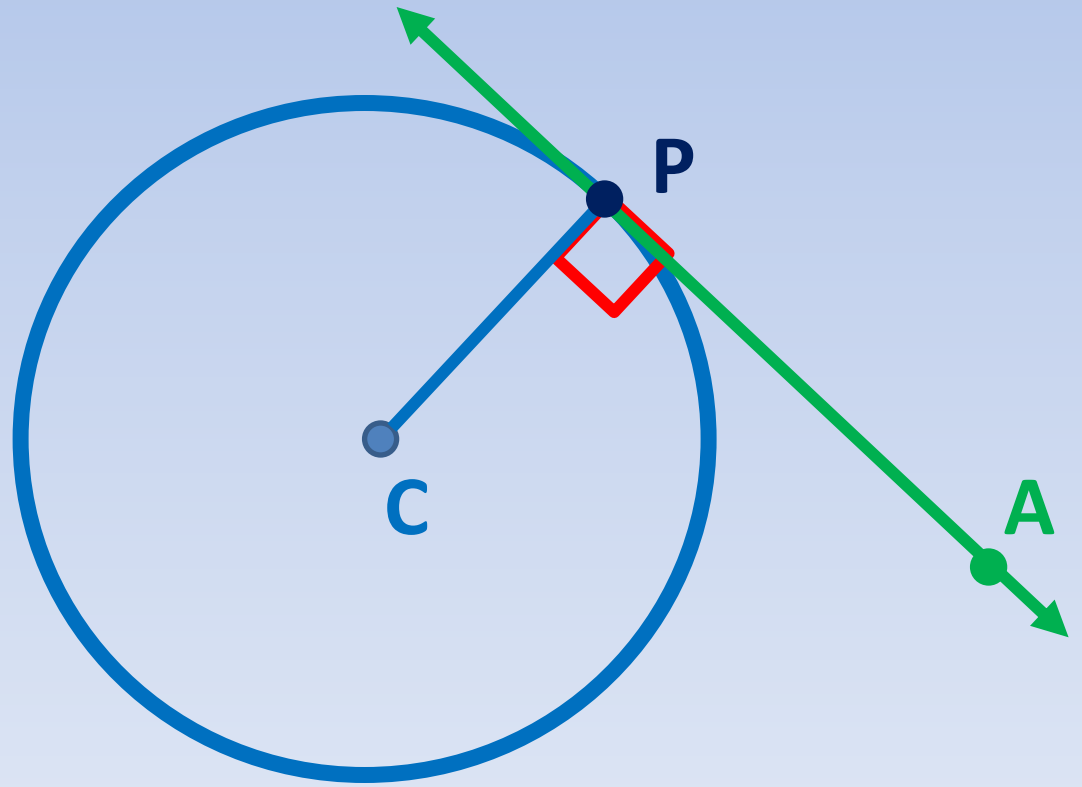


b.

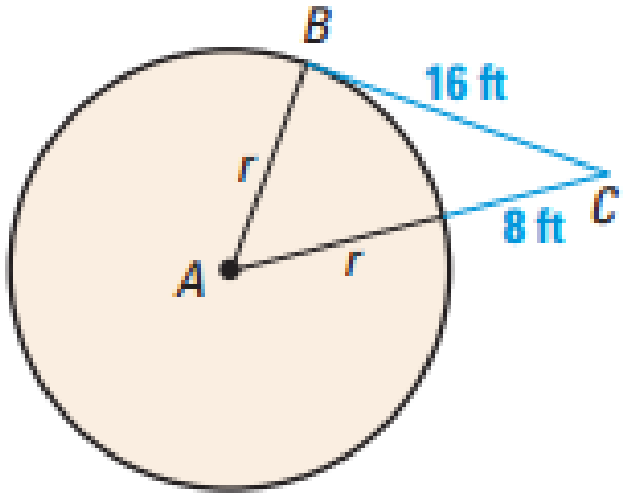


Perpendicular Tangent

A line is tangent to a circle IFF it is perpendicular to the line that connects the center and point of tangency

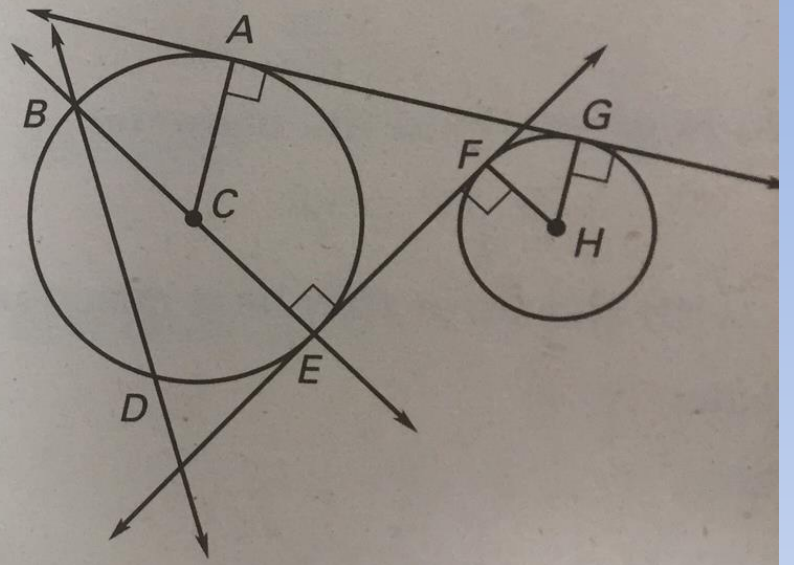


You are standing at C, 8 feet from a grain silo. The distance from you to a point of tangency on the tank is 16 feet. What is the radius of the silo?



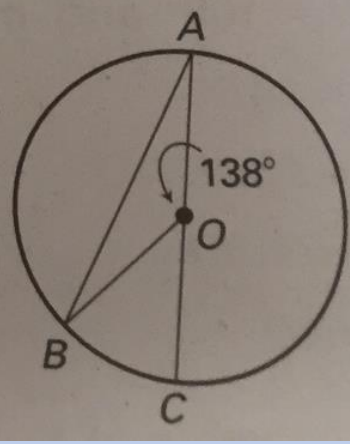
Name the term that best describes the notation.

1. F
2. $\overleftrightarrow{FE}$
3. $\overline{HG}$
4. $\overline{DB}$
5. C
6. $\overline{BE}$
7. $\overleftrightarrow{DB}$
8. $\overleftrightarrow{AG}$



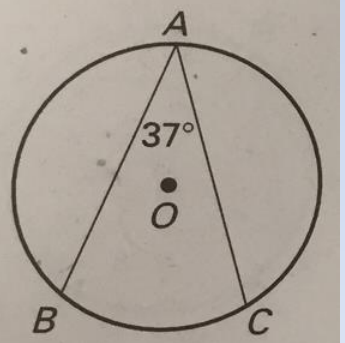
Bonus

6. $m\angle BAC =$?

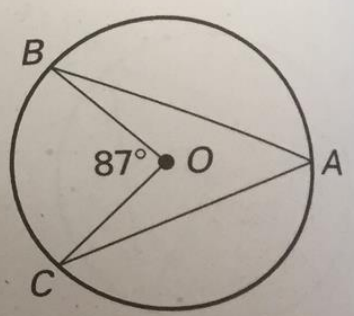


Find the measure of the indicated arc or angle in $\odot O$.

1. $m\overset{\frown}{BC} =$?

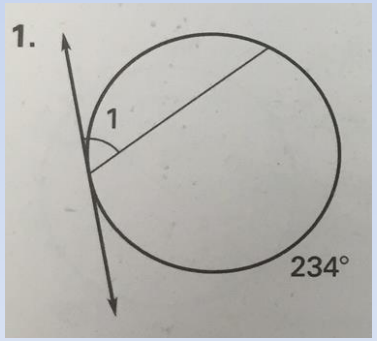


3. $m\angle BAC =$?

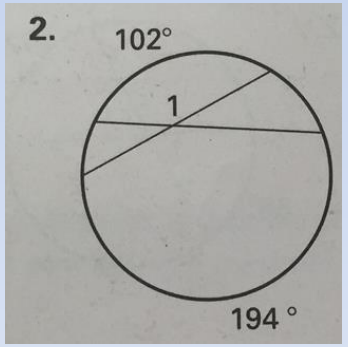


Find the measure of $\angle 1$.

1.



2.



3.