



Geometry Workbook

Circles

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MATH

EQUATION OF A CIRCLE

- 1. A circle has a radius of 4 and center at $(-2,5)$. Write the equation for this circle.

- 2. Find the center and diameter of the circle given by
$$(x - 3)^2 + (y + 2)^2 = 9.$$

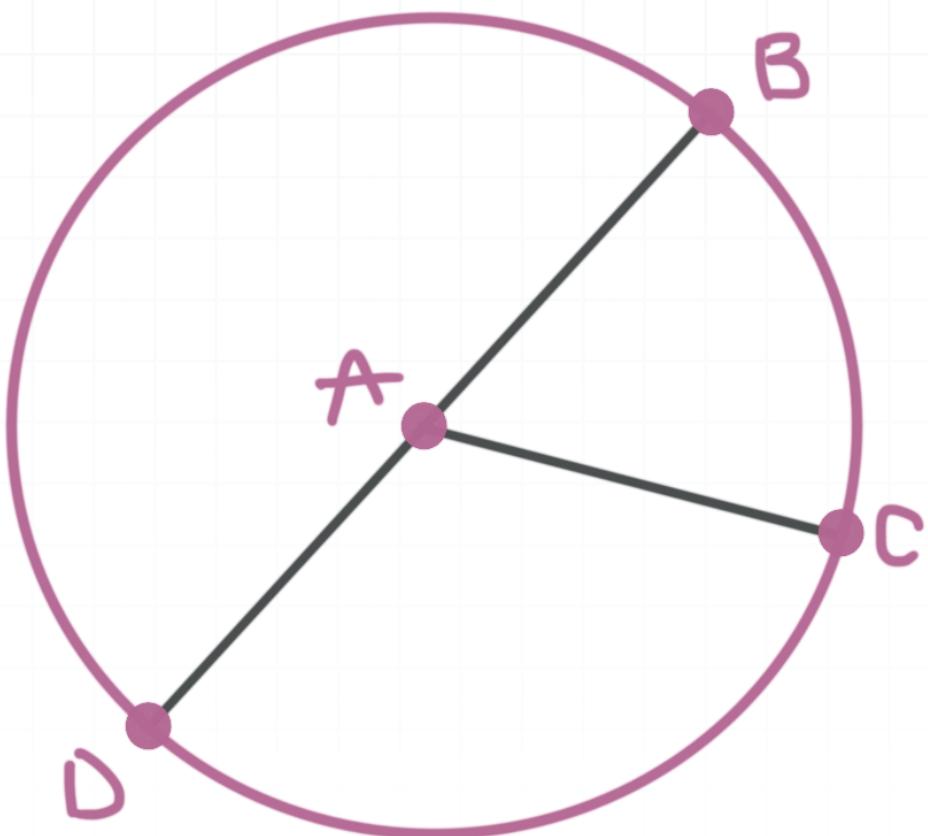
- 3. A circle has a diameter with endpoints at $(-3, -1)$ and $(3,7)$. Find the equation of the circle.

- 4. A cellphone tower services a 17 mile radius. A rest stop on the highway is 6 miles east and 8 miles north of the tower. If you continue to travel due east from the rest stop, for how many more miles will you be in range of the tower?

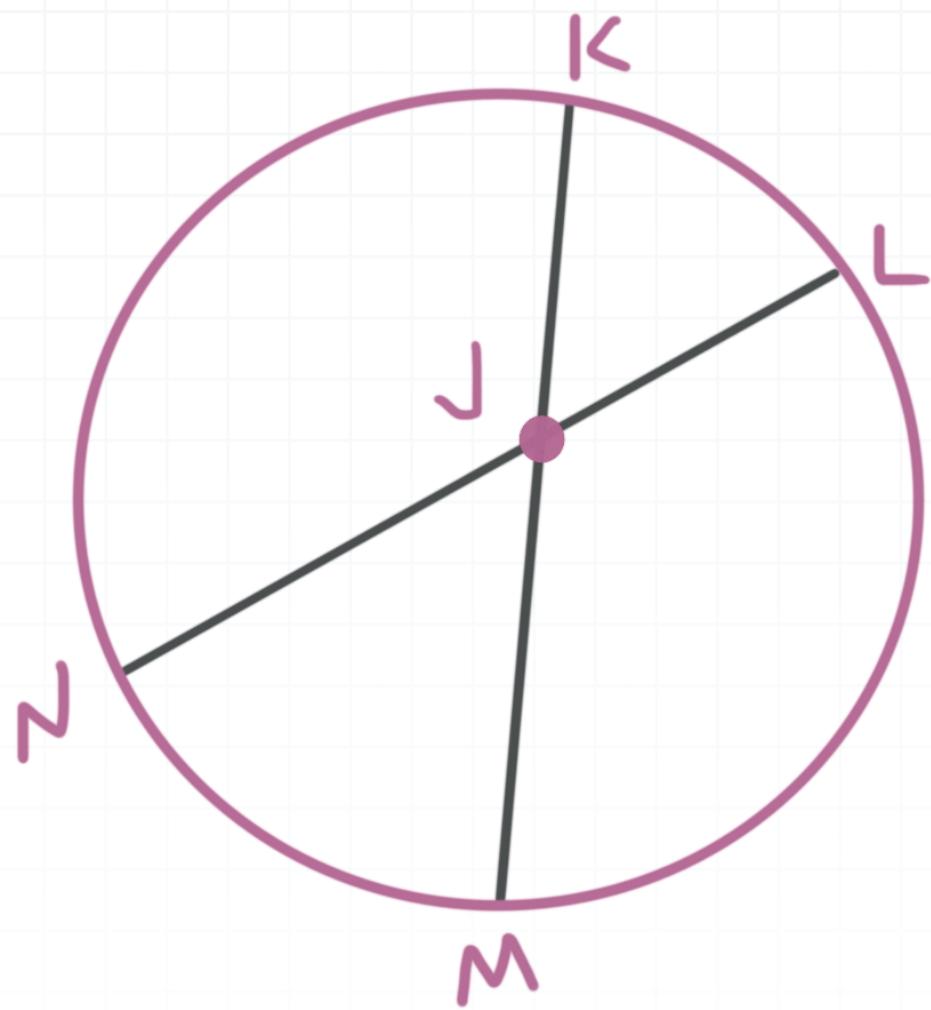


DEGREE MEASURE OF AN ARC

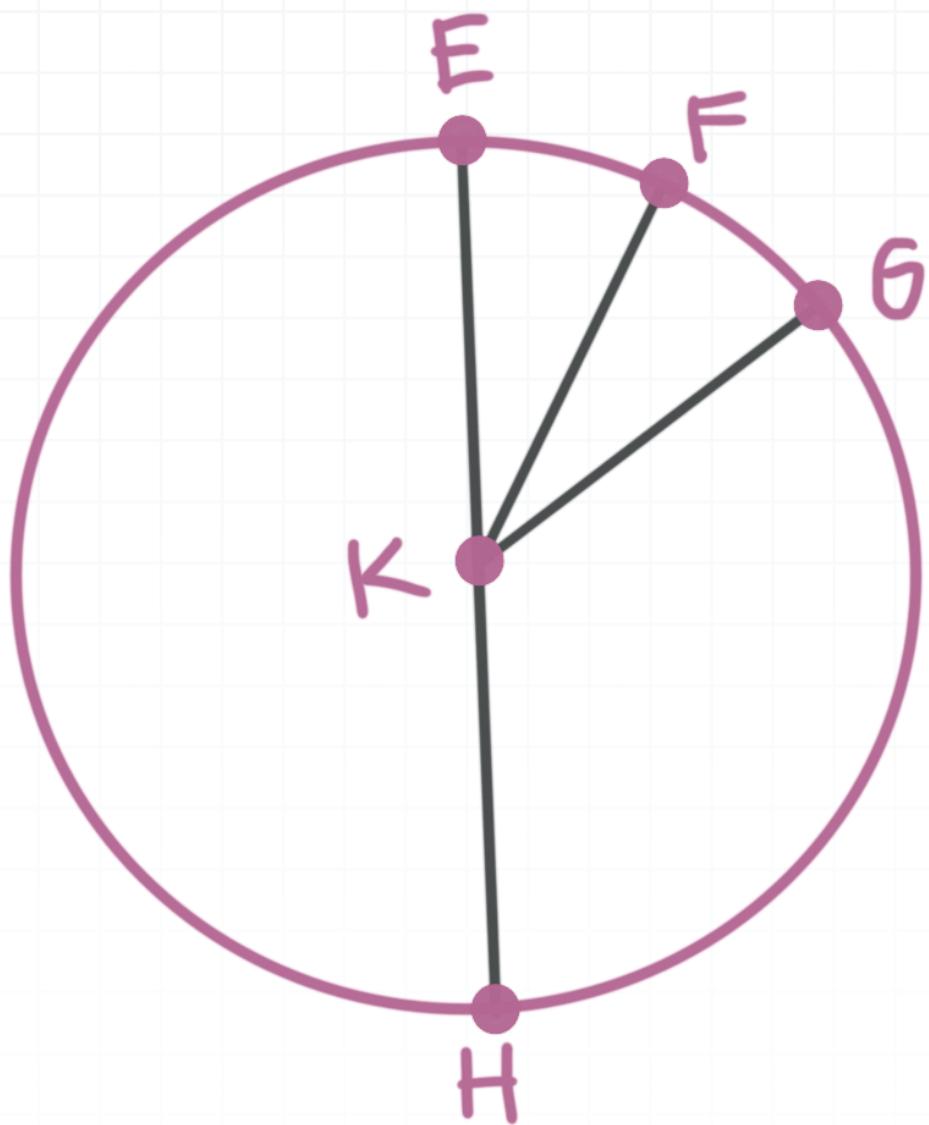
- 1. In $\odot A$, $m\angle BAC = 65^\circ$ and \overline{BD} is a diameter. Find the measure of arc DC .



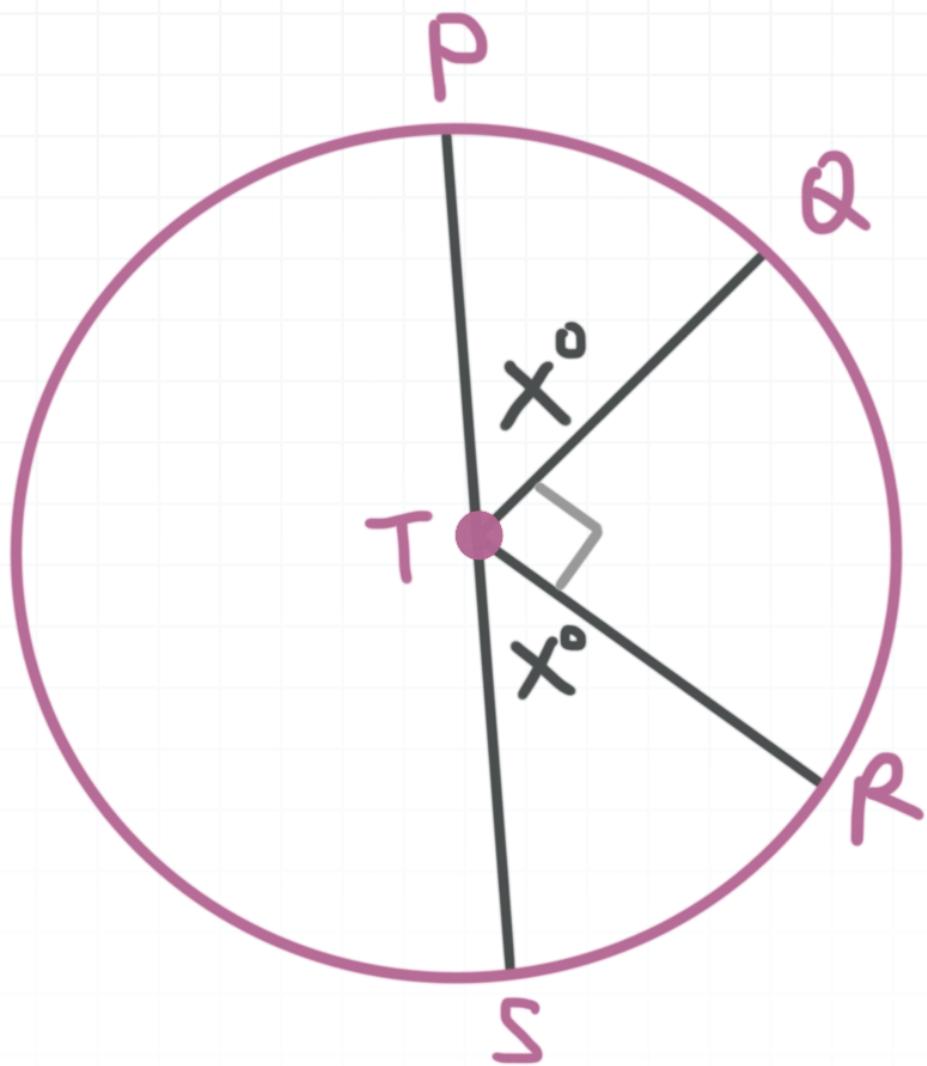
- 2. In $\odot J$, $m\angle KJL = 54^\circ$ and \overline{KM} and \overline{LN} are diameters. Find the measure of arc MN .



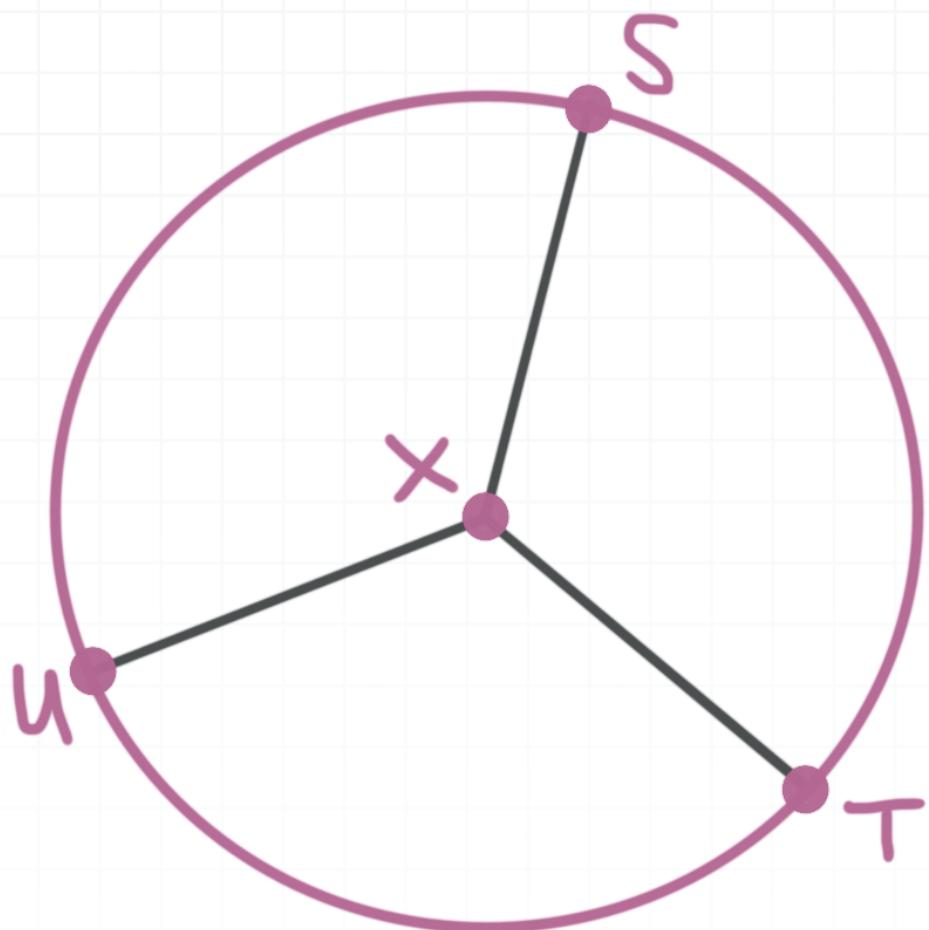
- 3. In $\odot K$, $m\angle EKG = 70^\circ$, \overline{EH} is a diameter, and \overline{KF} bisects $\angle EKG$. Find the measure of arc FEH .



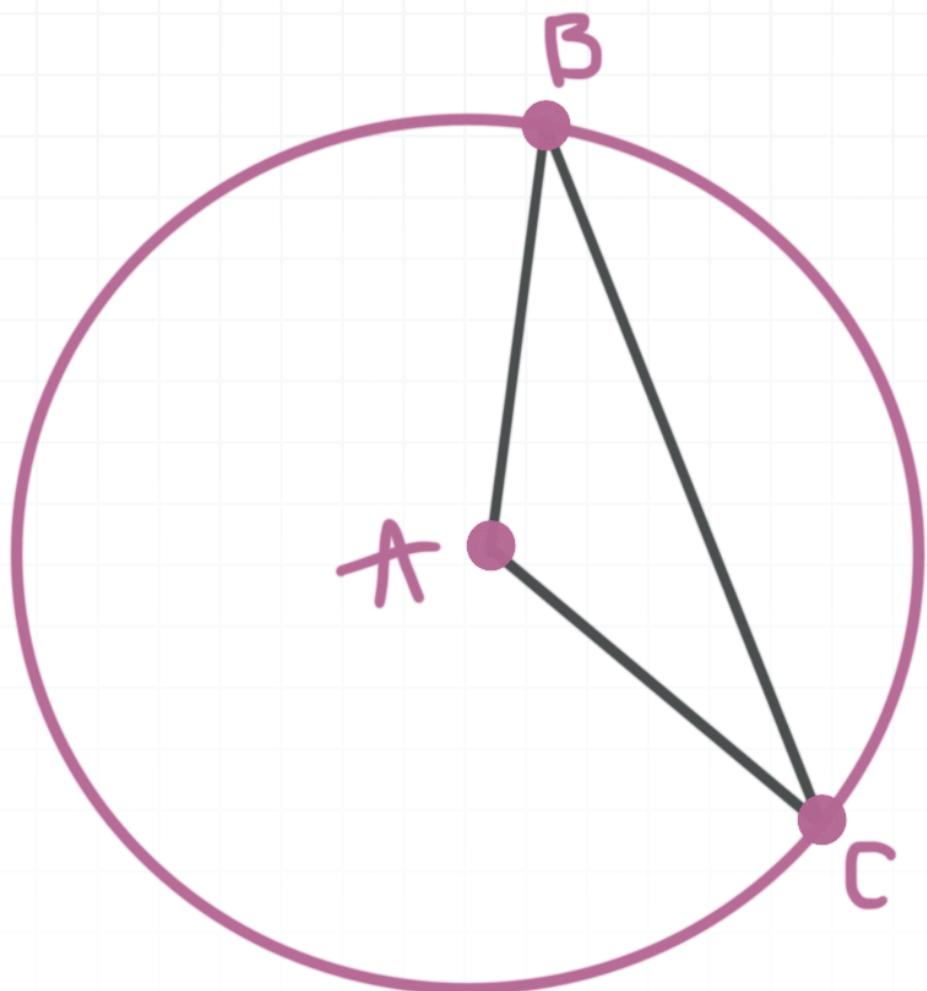
- 4. Find the measure of arc PR , if \overline{PS} is the diameter of $\odot T$.



- 5. In $\odot X$, $\angle UXS \cong \angle SXT \cong \angle UXT$. Find the measure of arc STU .

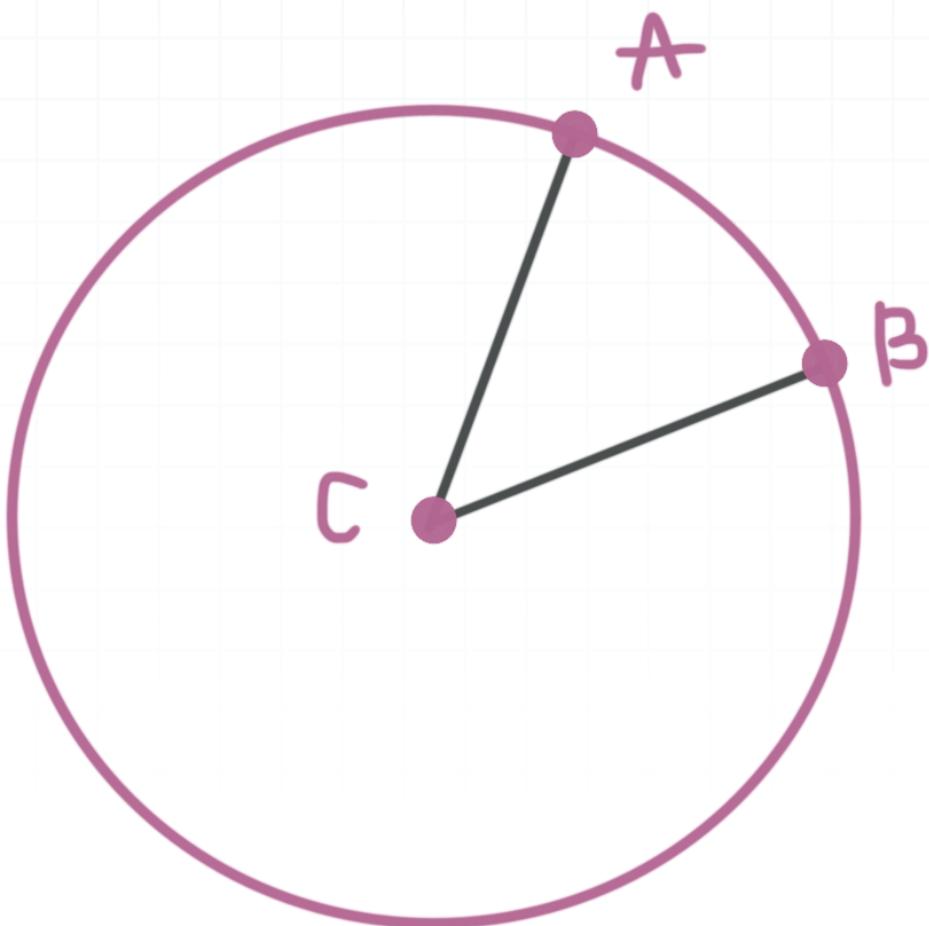


- 6. In $\odot A$, $m\angle ABC = 15^\circ$. Find the measure of arc BC .

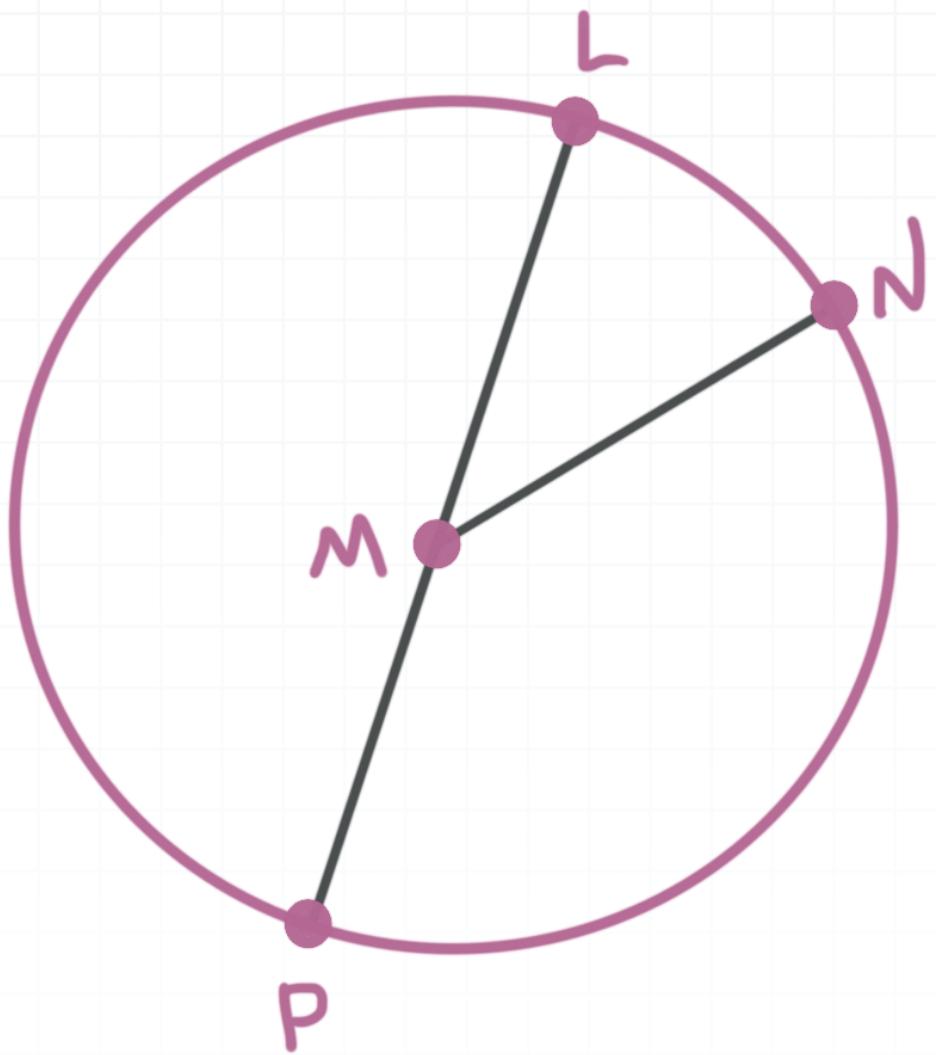


ARC LENGTH

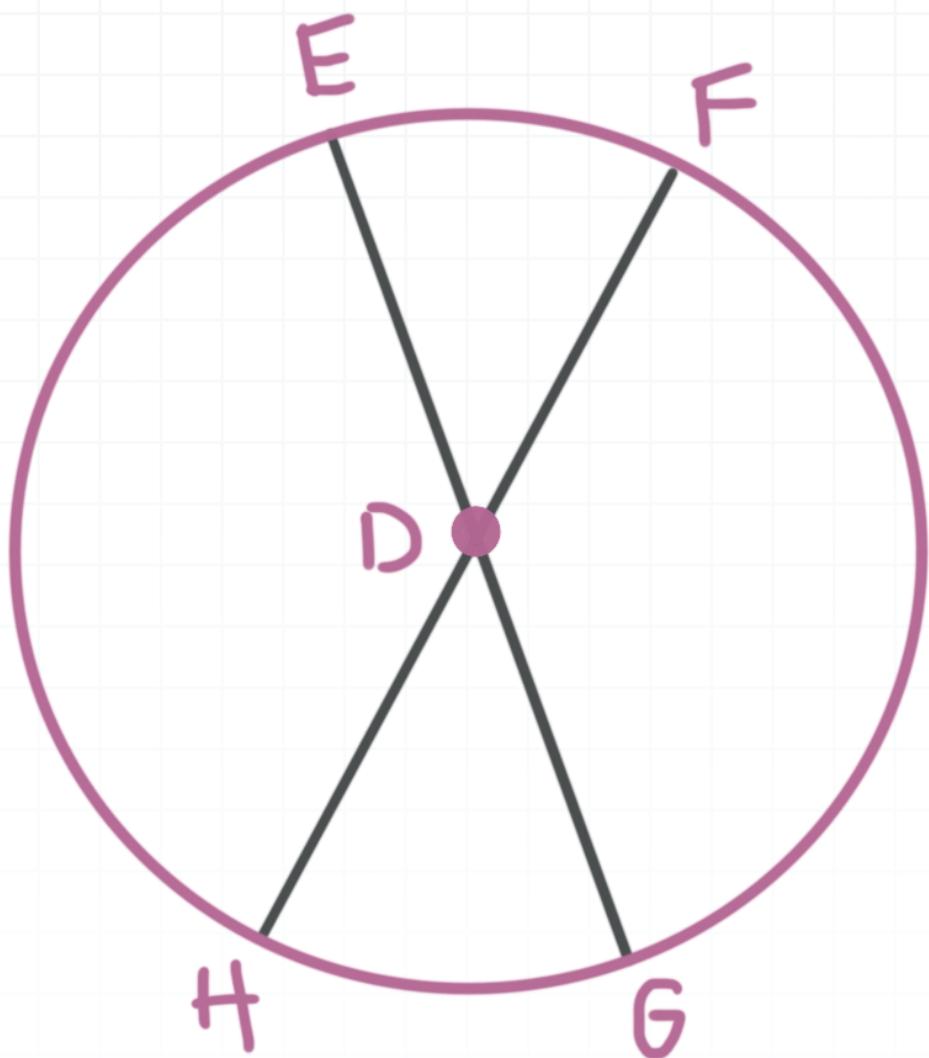
- 1. In $\odot C$, $m\angle ACB = 50^\circ$. Find the length of arc AB if $CA = 14$. Round your answer to the nearest hundredth.



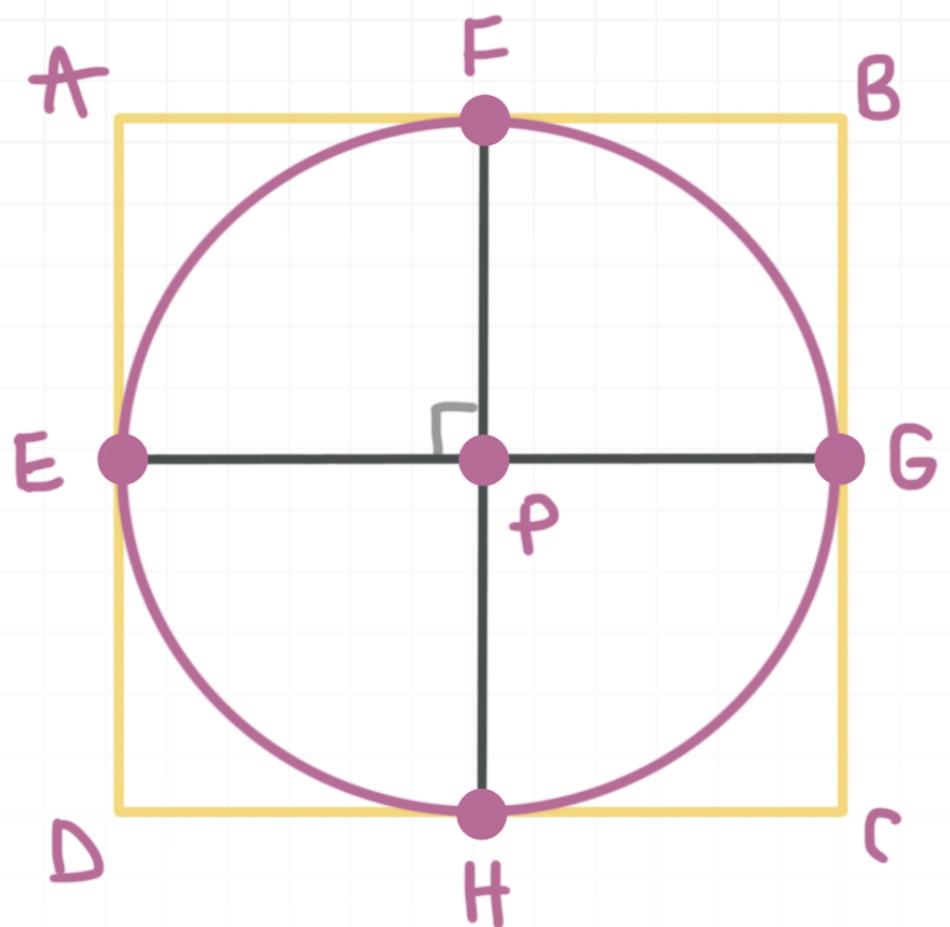
- 2. In $\odot M$, $m\angle LMN = 60^\circ$ and \overline{LP} is a diameter. Find the length of arc LPN if $LP = 24$. Round your answer to the nearest hundredth.



- 3. \overline{EG} and \overline{FH} are diameters of $\odot D$. Find the length of arc HG if $m\angle EDF = 45^\circ$ and $ED = 16$. Write the exact value.

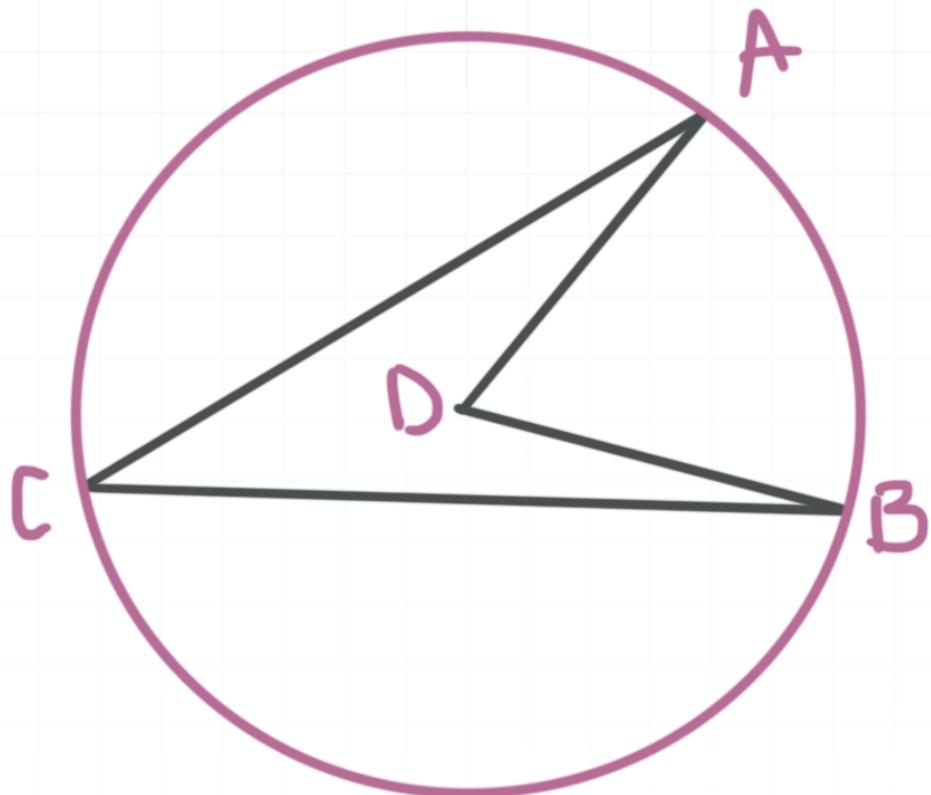


- 4. The area of square $ABCD$ is 144 cm^2 and circle P is inscribed in the square. \overline{EG} and \overline{FH} are perpendicular to one another, and both are diameters of $\odot P$. E, F, G , and H are midpoints of each side of the square. Find the length of arc EF , rounded to the nearest hundredth.

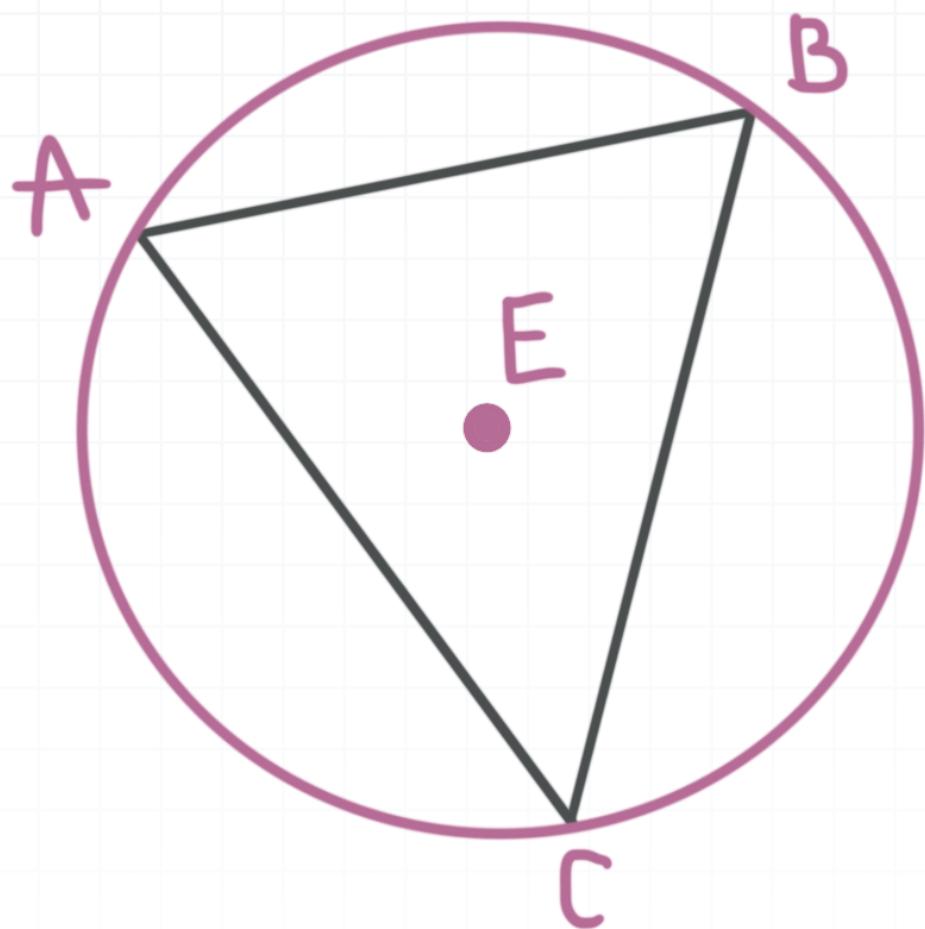


INSCRIBED ANGLES OF CIRCLES

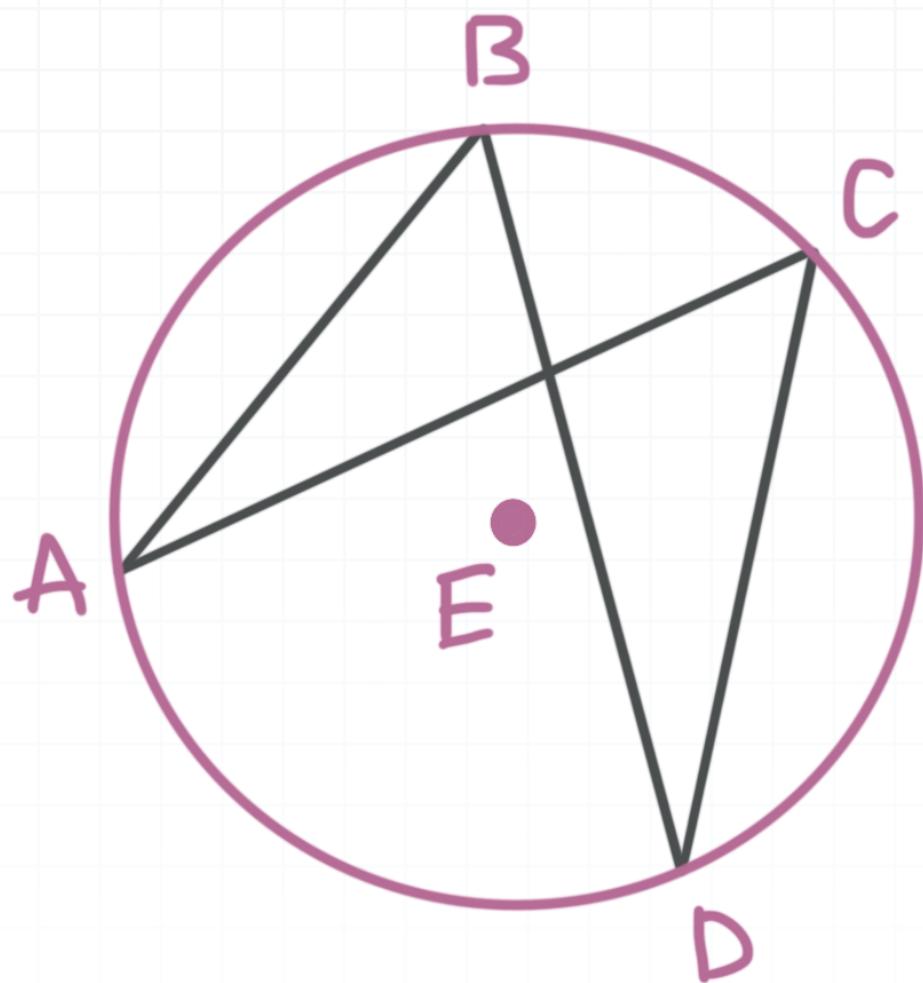
- 1. In $\odot D$, $m\angle ADB = 88^\circ$. Find $m\angle ACB$.



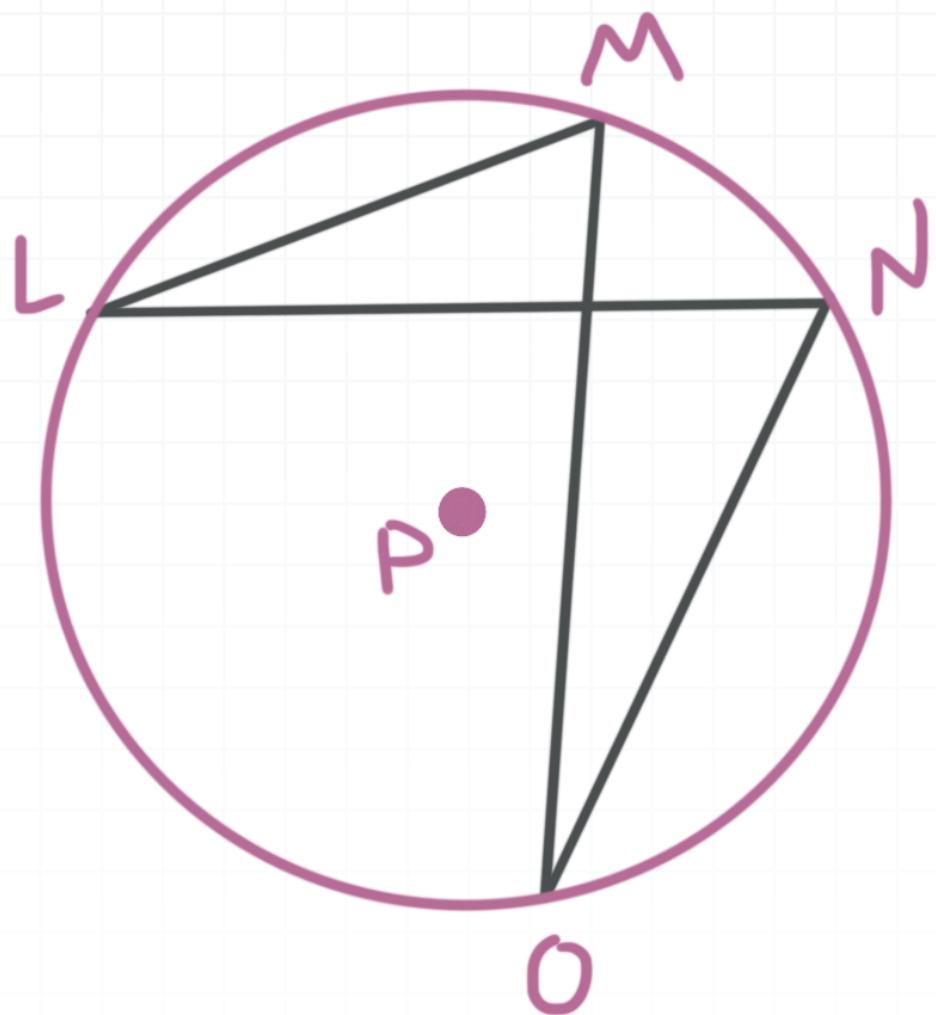
- 2. In $\odot E$, $\overline{AC} \cong \overline{CB}$ and $m\angle ABC = 55^\circ$. Find the measure of arc AB .



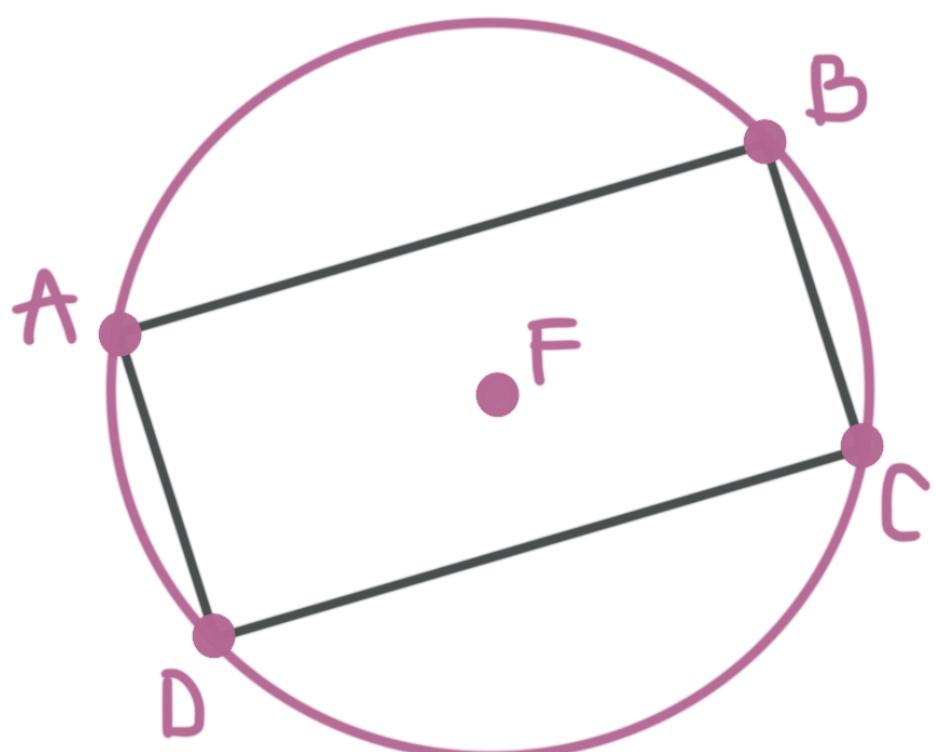
- 3. In $\odot E$ the measure of arc AB is 100° , the measure of arc BC is 40° , and the measure of CD is 110° . Find $m\angle ABD$.



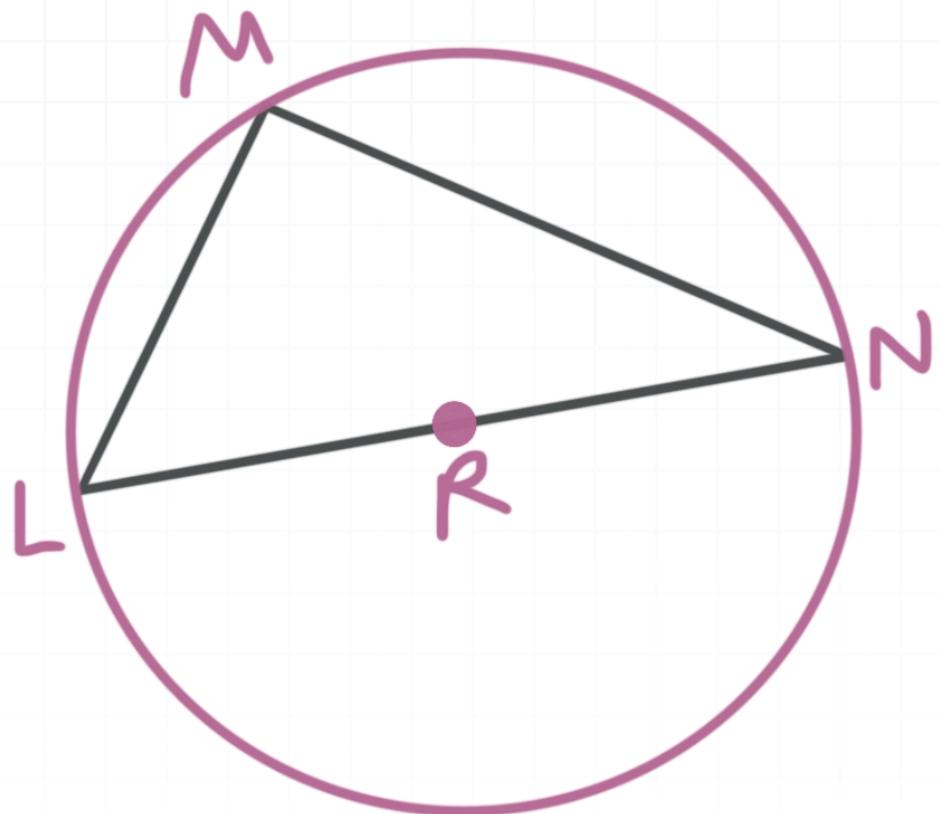
- 4. In $\odot P$, $m\angle LMO = 2x - 18$ and the measure of arc $LO = 88^\circ$. Find x .



- 5. Rectangle $ABCD$ is inscribed in $\odot F$ and the measure of arc DAC is 230° . Find the measure of arc AB .

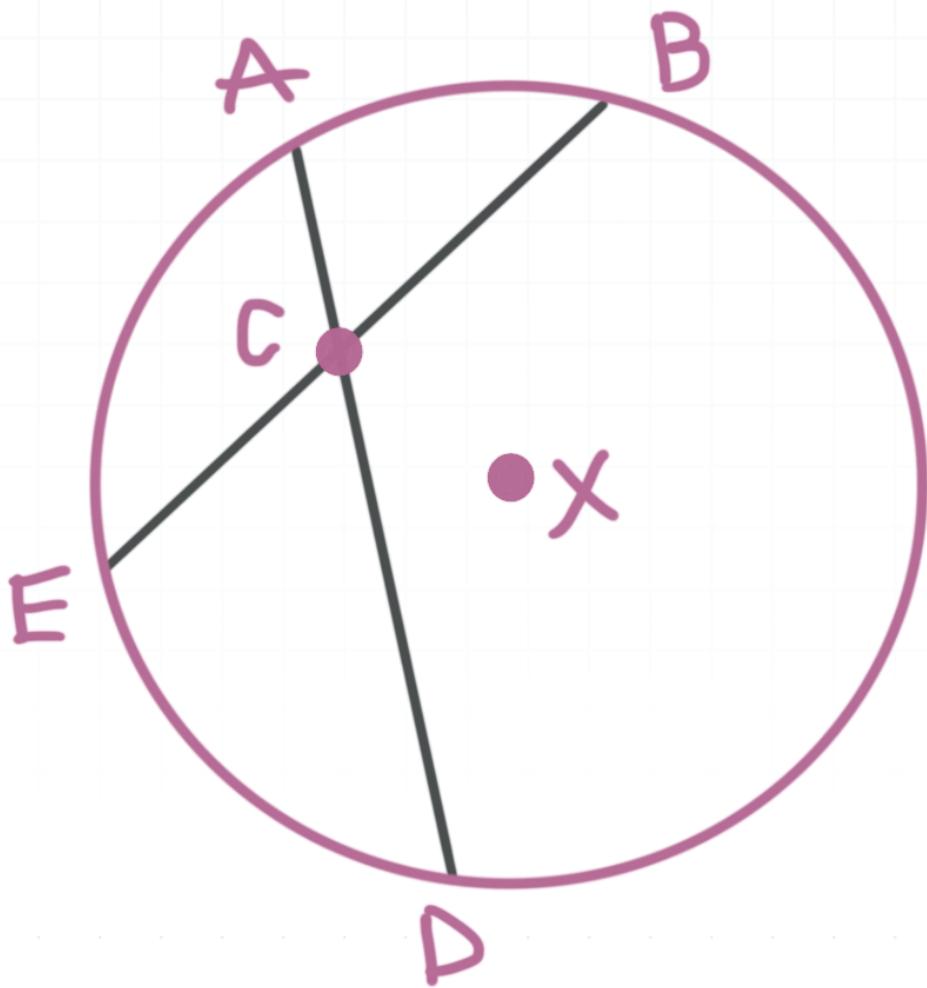


- 6. In $\odot R$, \overline{LN} is a diameter, $m\angle MLN = 4x + 20$, and $m\angle LNM = 5x - 38$. Find the measure of arc LM .

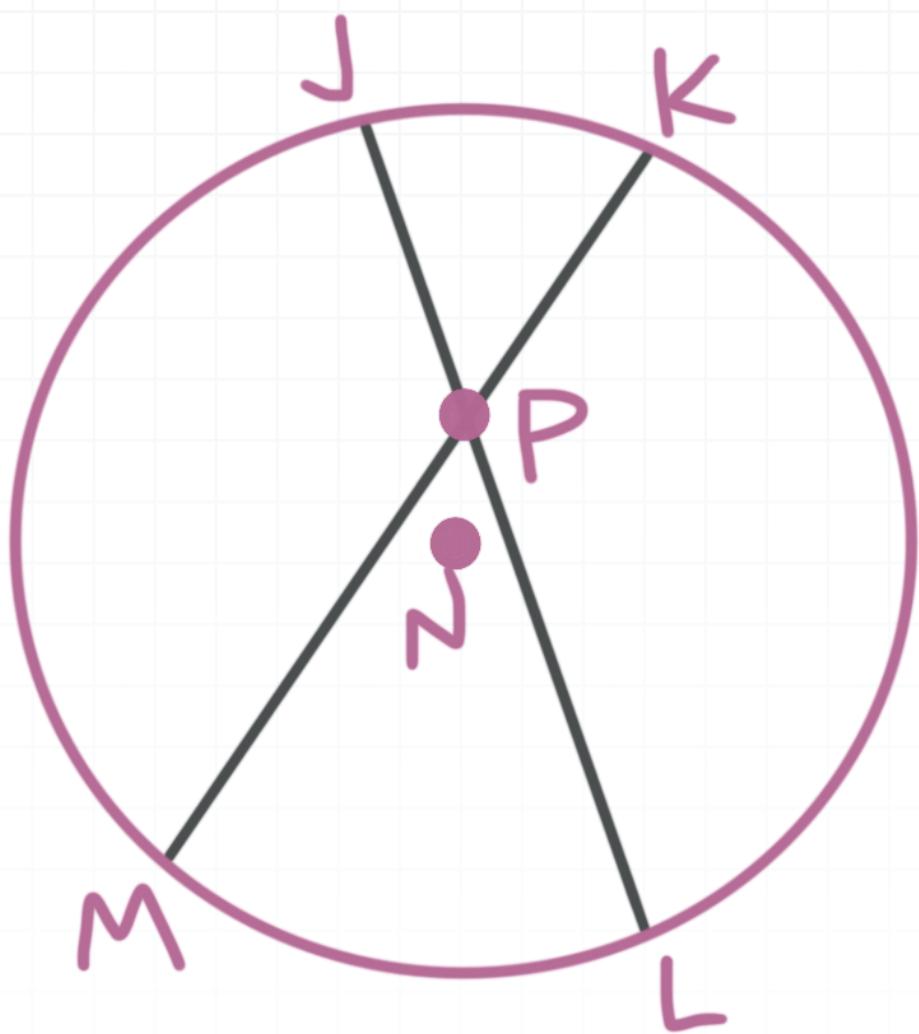


VERTEX ON, INSIDE AND OUTSIDE THE CIRCLE

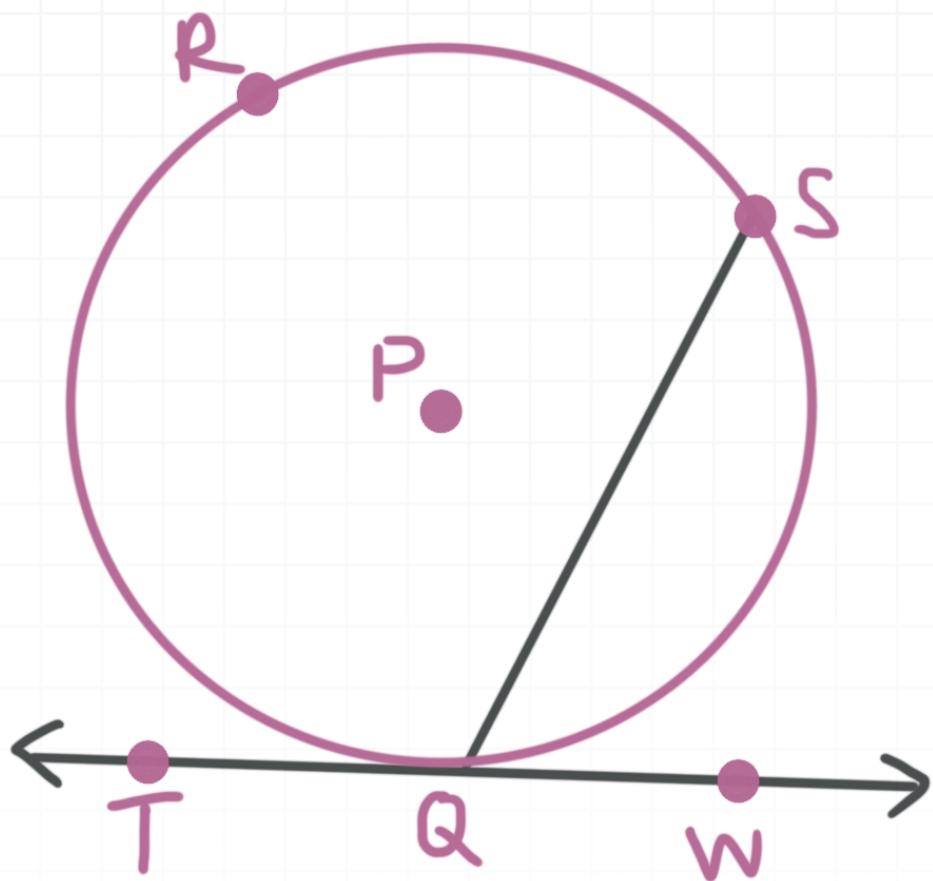
- 1. \overline{AD} and \overline{EB} are chords of $\odot X$. The measure of arc AB is 35° and the measure of arc ED is 85° . Find $m\angle ECD$.



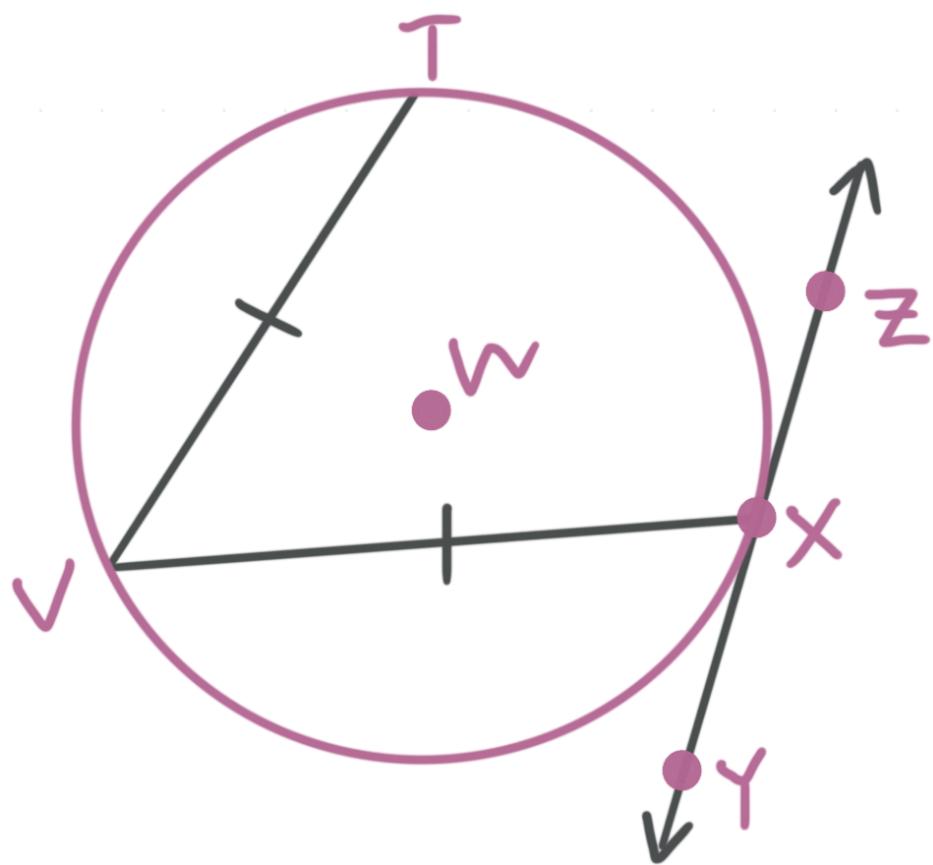
- 2. \overline{JL} and \overline{KM} are chords of $\odot N$. The measure of arc JK is 25° and $m\angle JPK = 40^\circ$. Find the measure of arc ML .



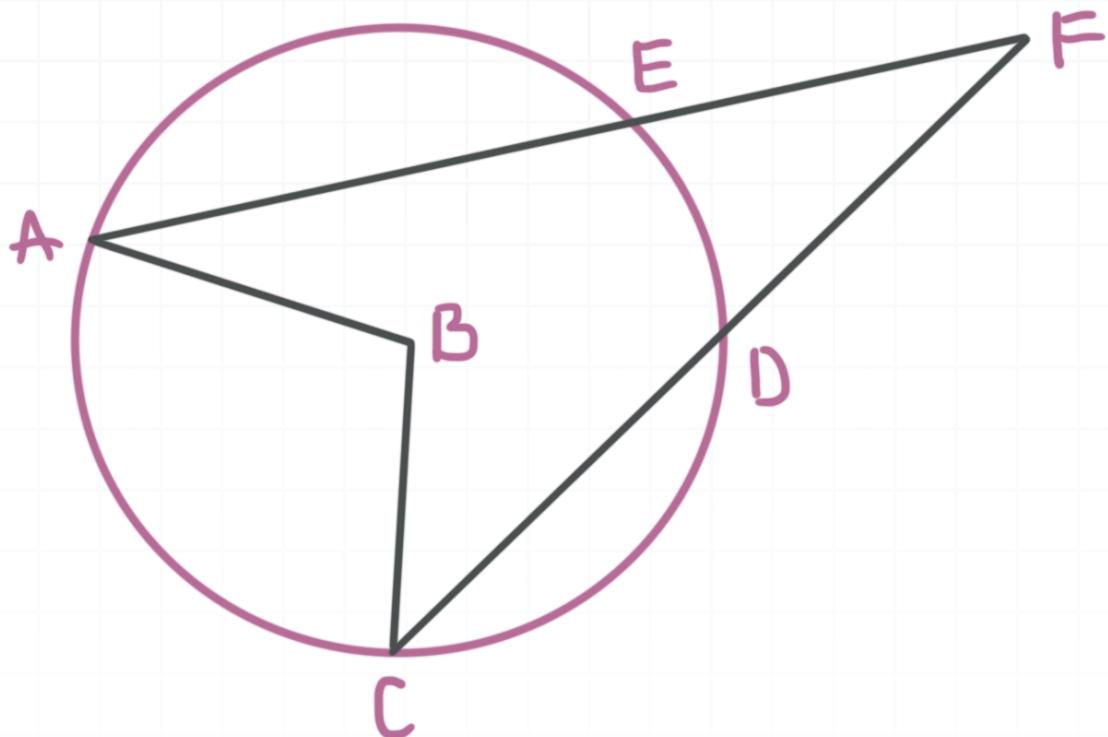
- 3. \overline{SQ} is a chord and \overline{TW} is a tangent line of $\odot P$. The measure of arc SRQ is 194° . Find $m\angle SQW$.



- 4. \overline{TV} and \overline{VX} are congruent chords, and \overline{ZY} is a tangent line of $\odot W$. If $m\angle TVX = 48^\circ$, find $m\angle VXY$.

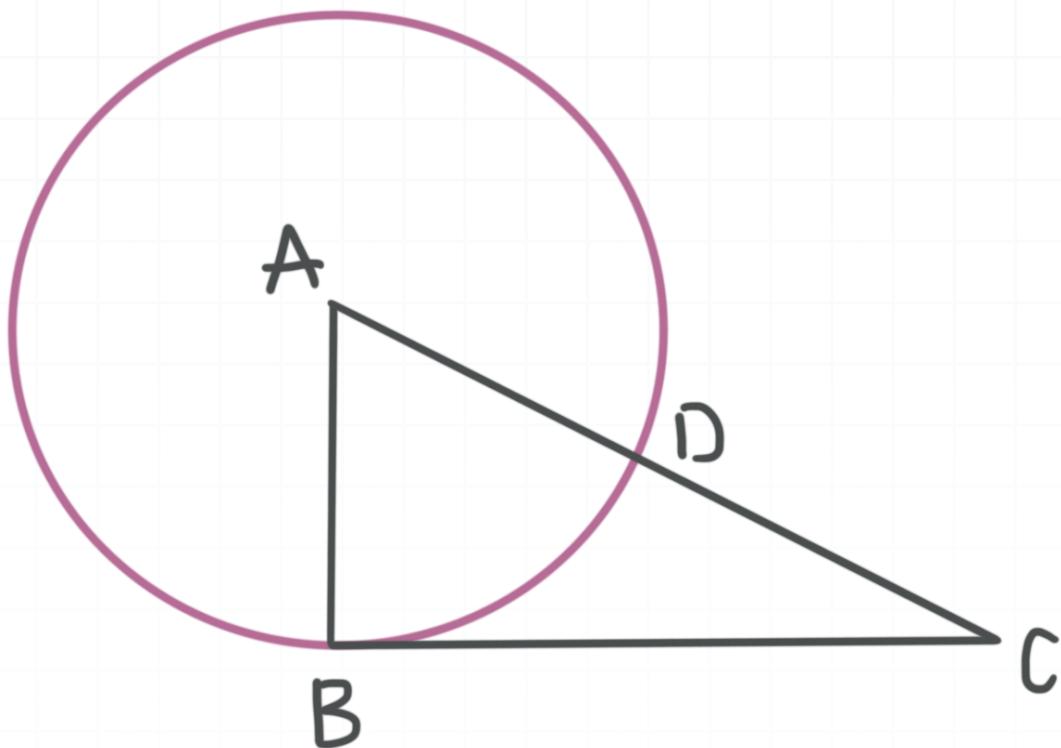


- 5. $\text{arc } AC = 98^\circ$ and $\text{arc } ED = 54^\circ$ in $\odot B$. Find $m\angle AFC$.

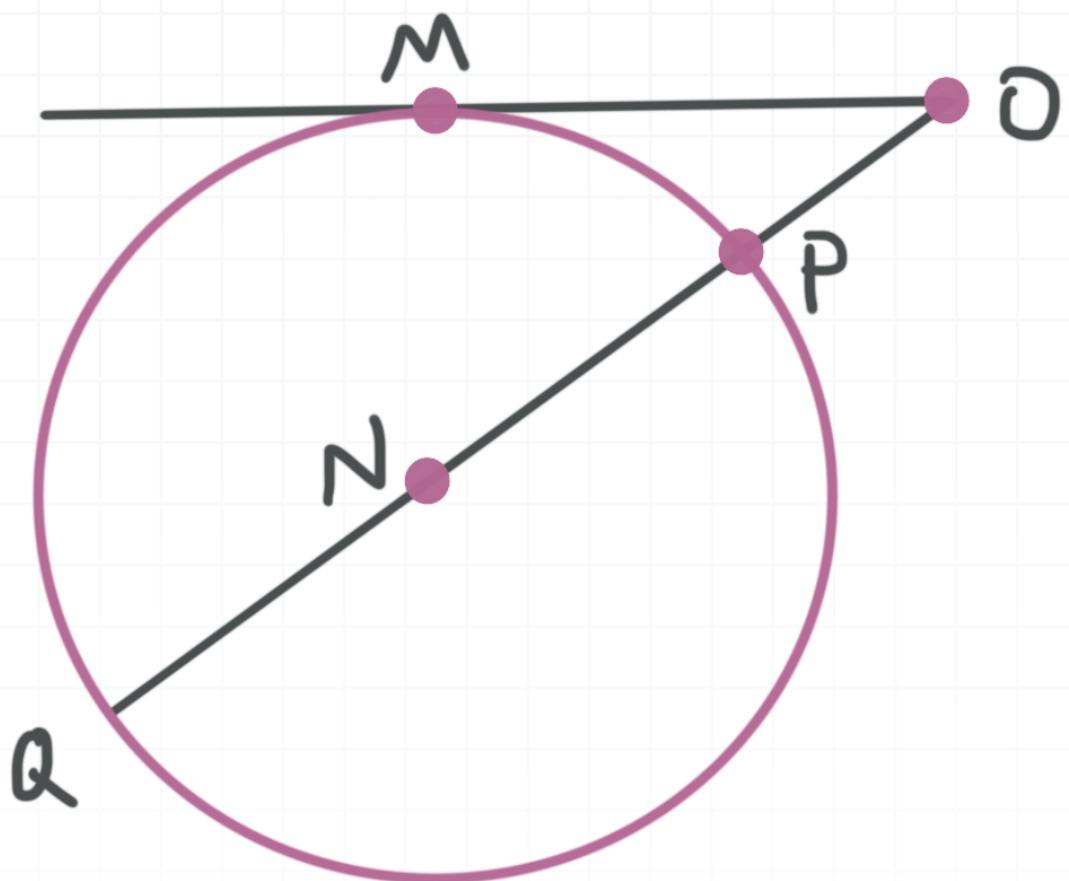


TANGENT LINES OF CIRCLES

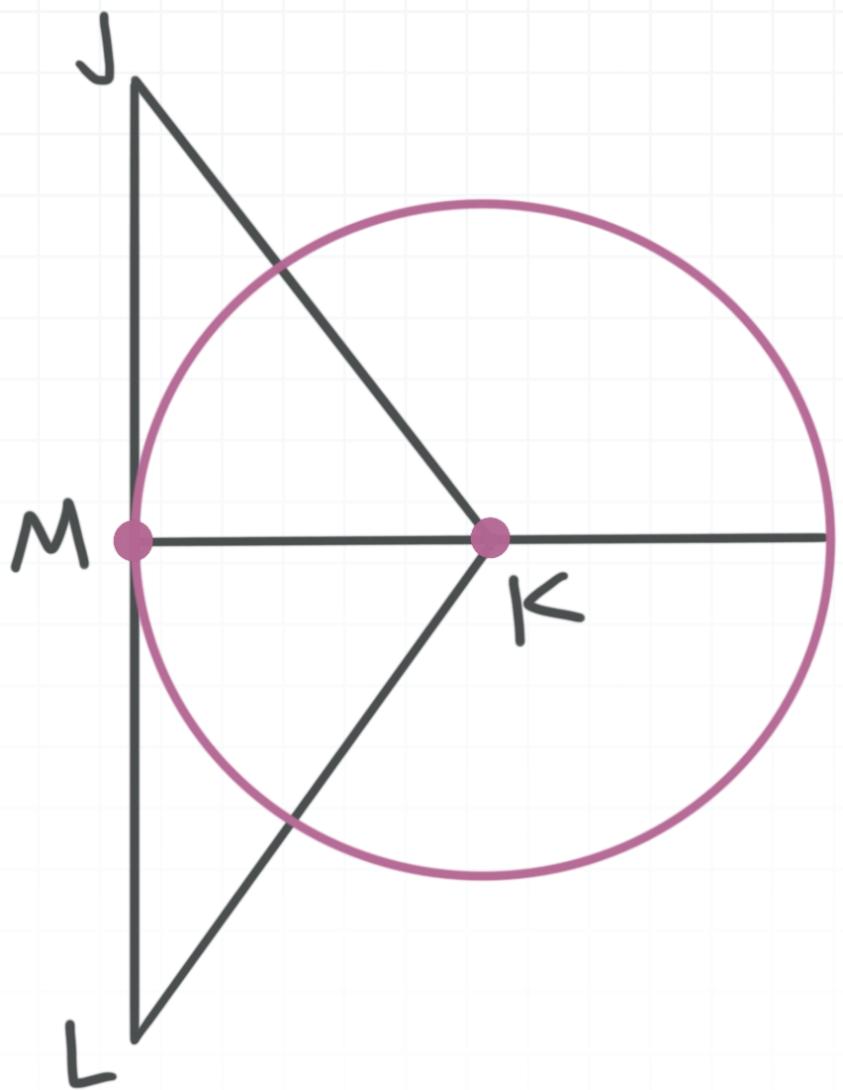
- 1. $\odot A$ has radius AB and tangent line \overline{BC} . If $AB = 6$ and $BC = 8$, find DC .



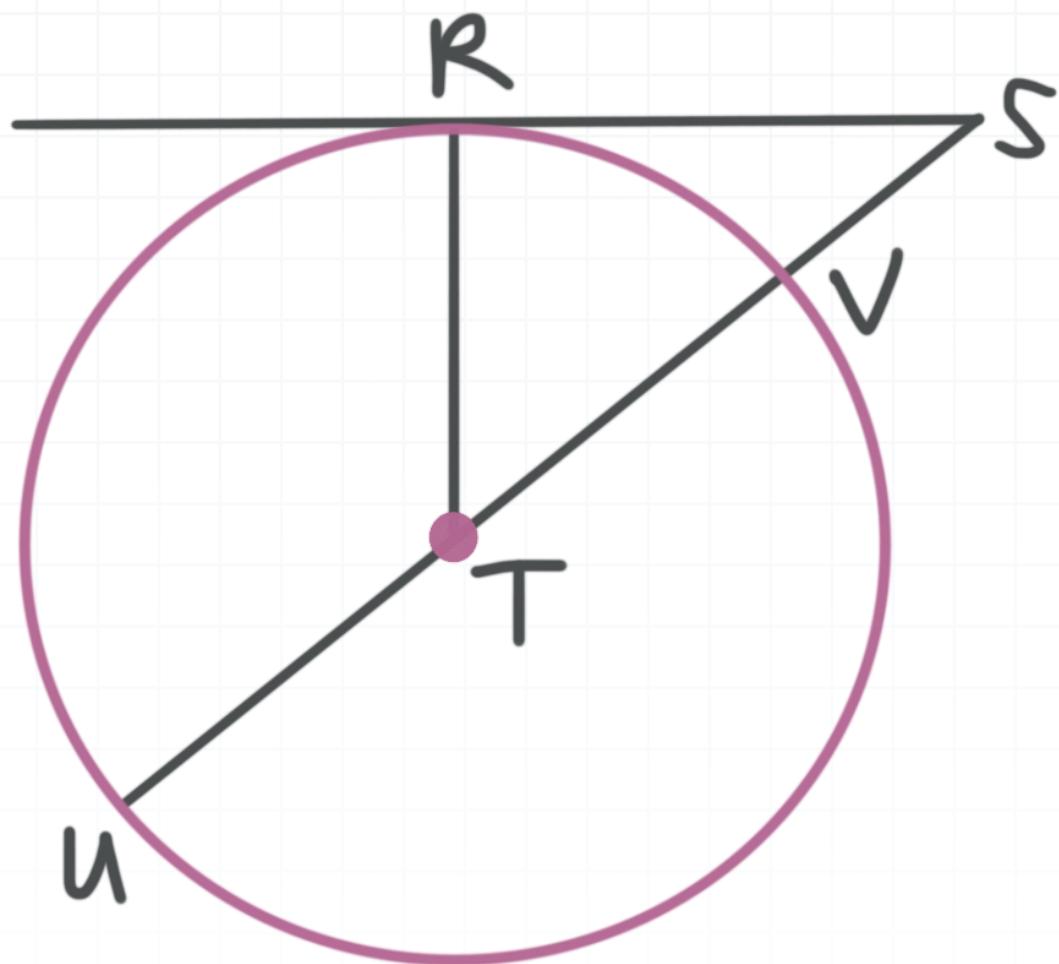
- 2. \overline{MO} is a tangent line of $\odot N$. If $MO = 12$ and $PO = 8$, find the length of the radius.



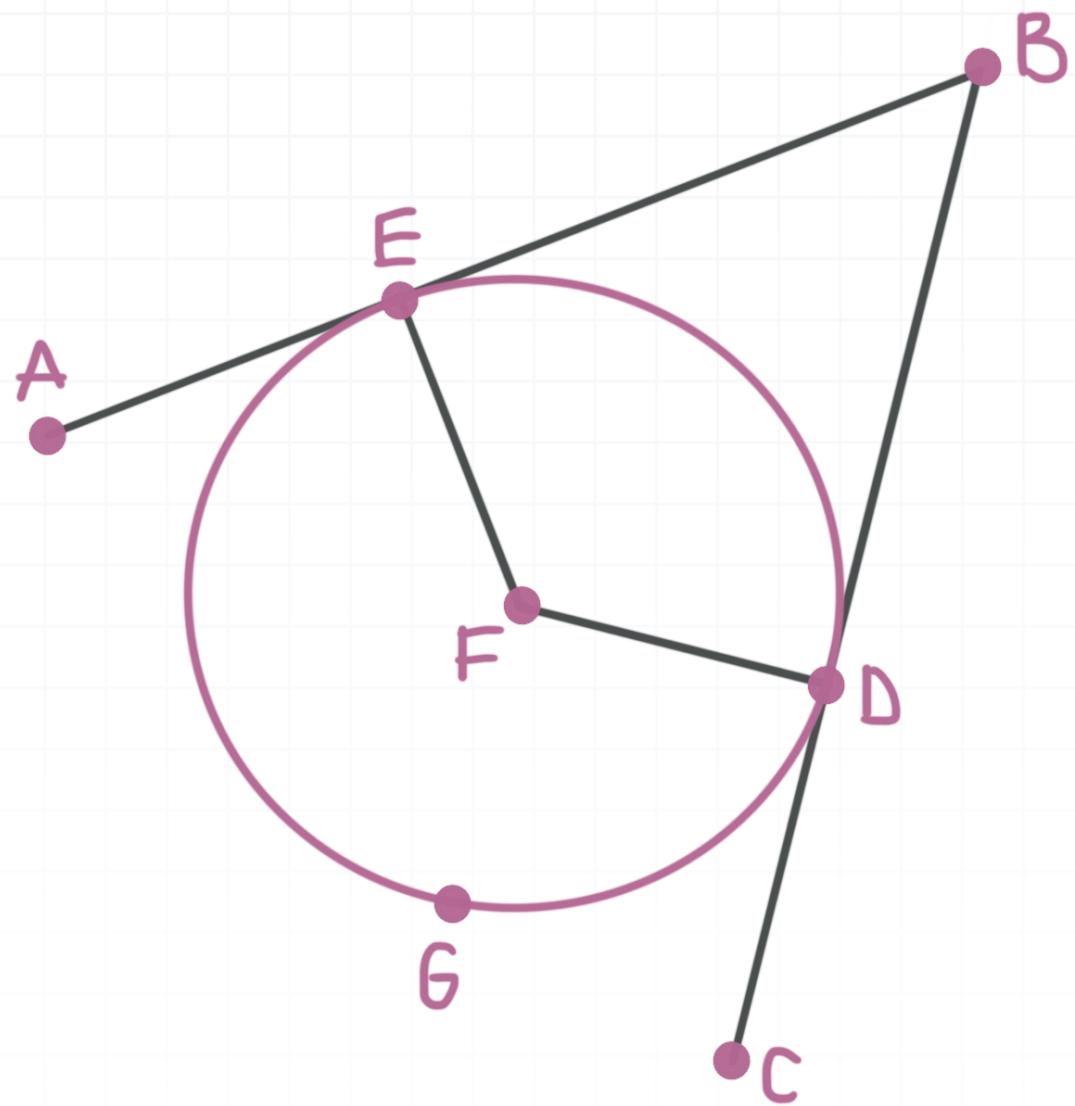
- 3. $\triangle JKL$ is isosceles, \overline{JL} is a tangent line, $JM = LM$ and $m\angle JKL = 120^\circ$. If $MK = 8$, find JL .



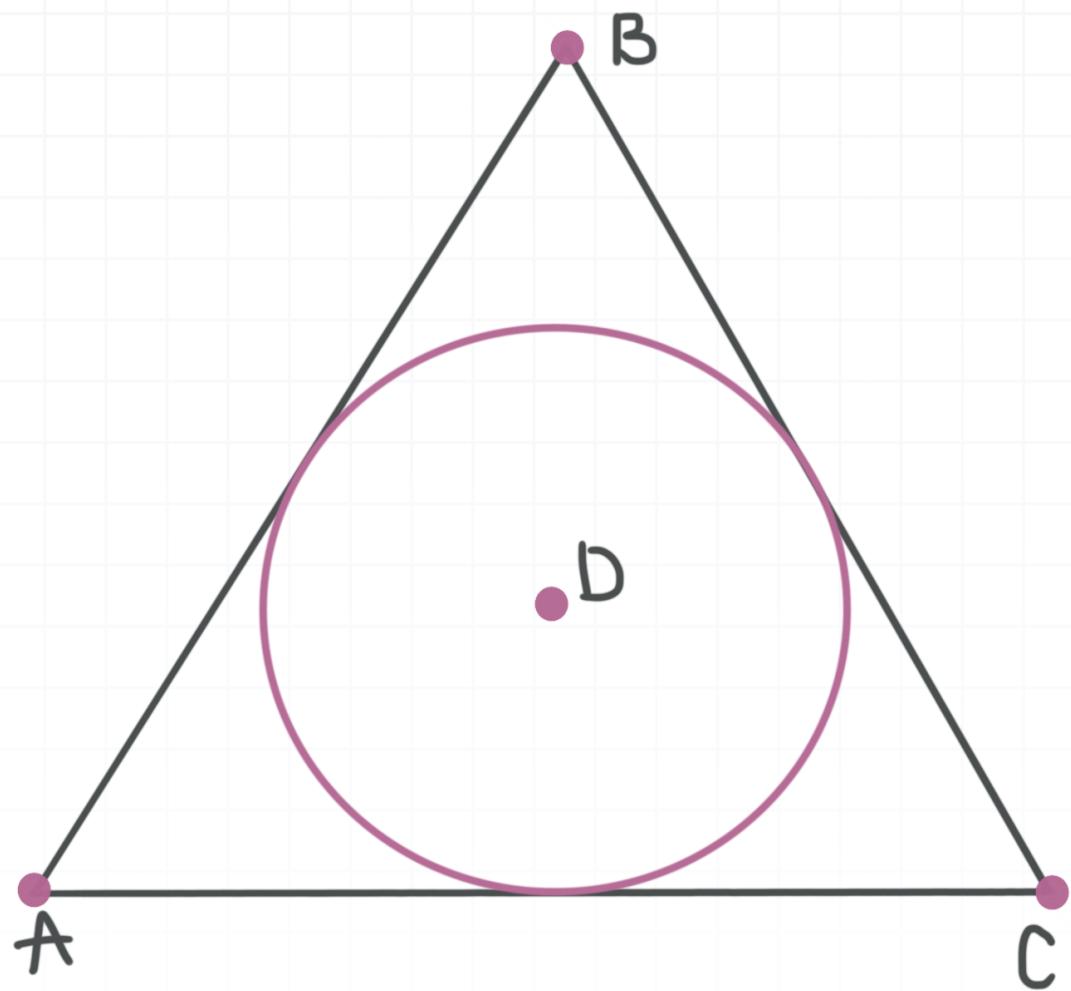
- 4. In $\odot T$, \overline{RS} is a tangent line and the diameter \overline{UV} has length of 6. Find VS if $RS = 4$.



- 5. $\text{arc } EGD = 240^\circ$ and \overline{BF} bisects $\angle EFD$. Find the length of the radius of $\odot F$ if $FB = 14$.

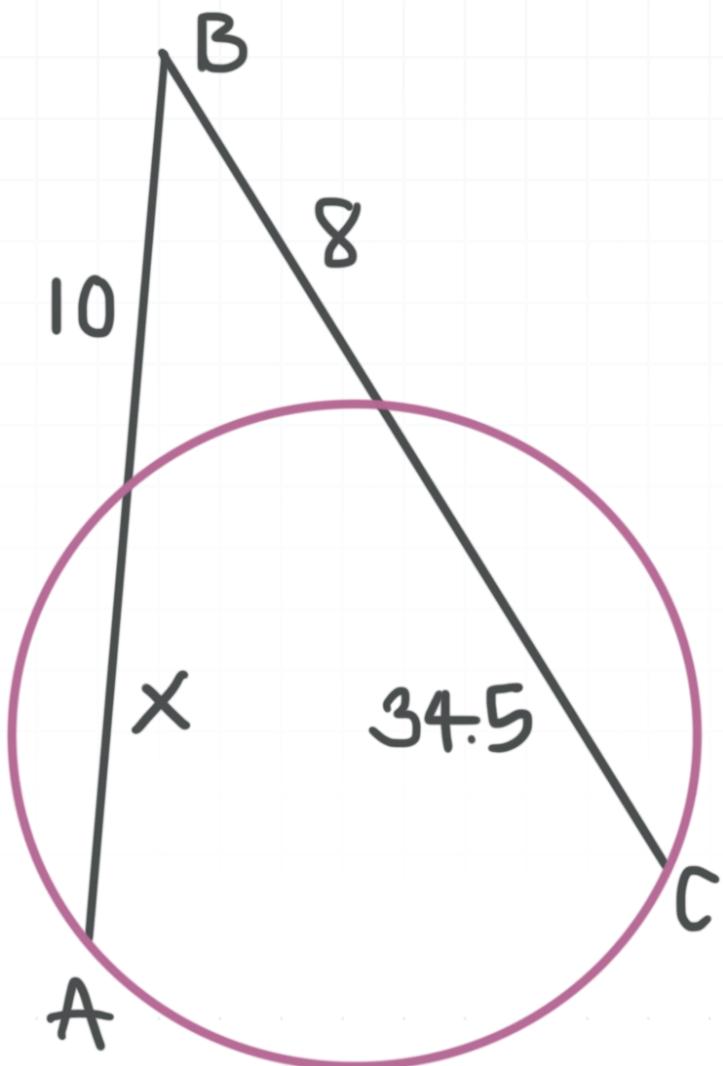


- 6. Find the perimeter of $\triangle ABC$ if the radius of $\odot D$ is 10 feet and $\triangle ABC$ is equilateral.

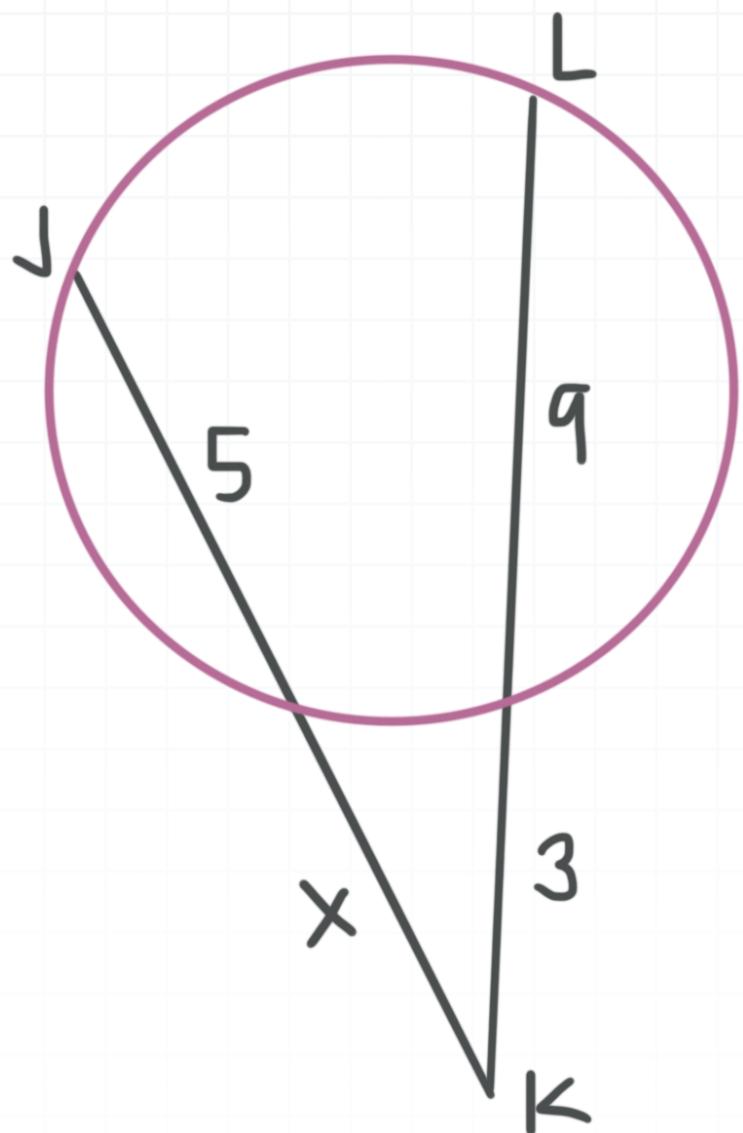


INTERSECTING TANGENTS AND SECANTS

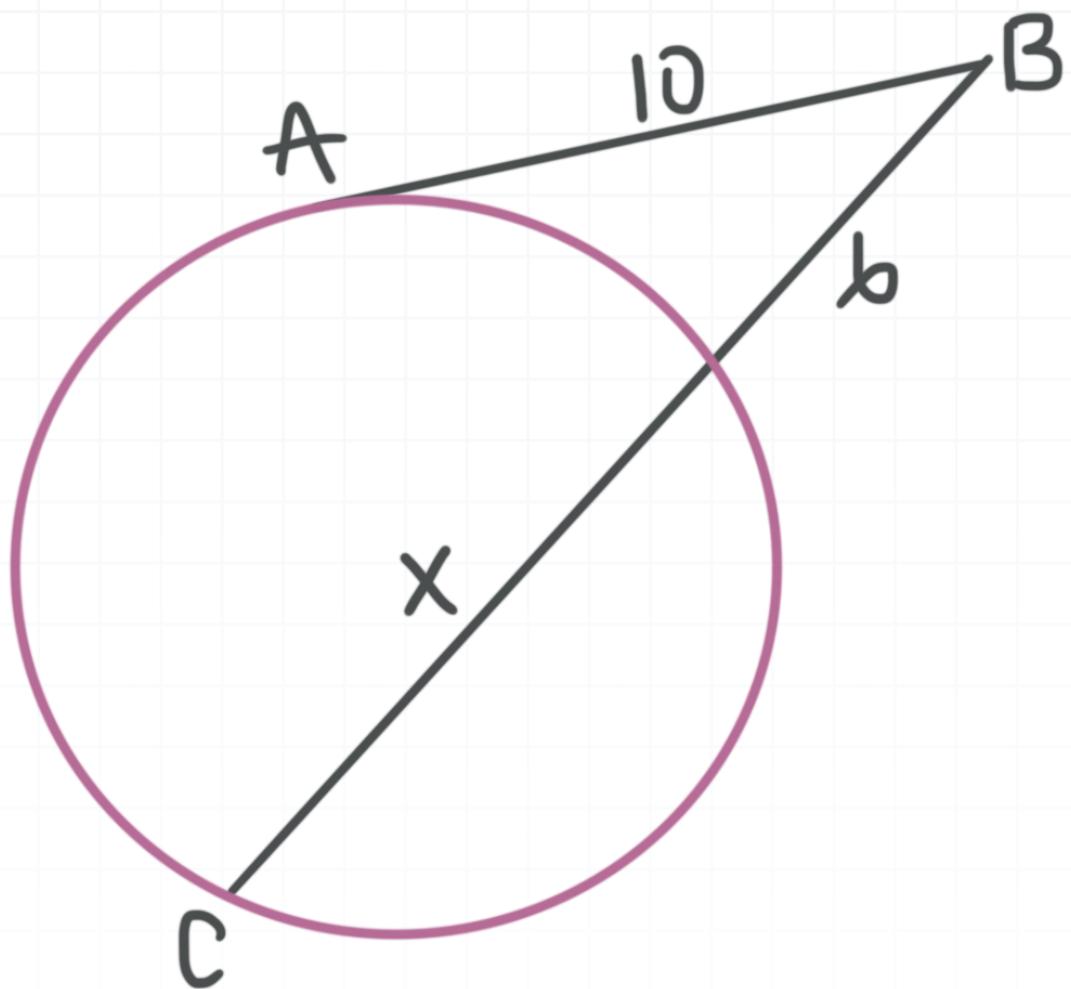
- 1. \overline{AB} and \overline{CB} are secants and intersect at B . Find the value of x .



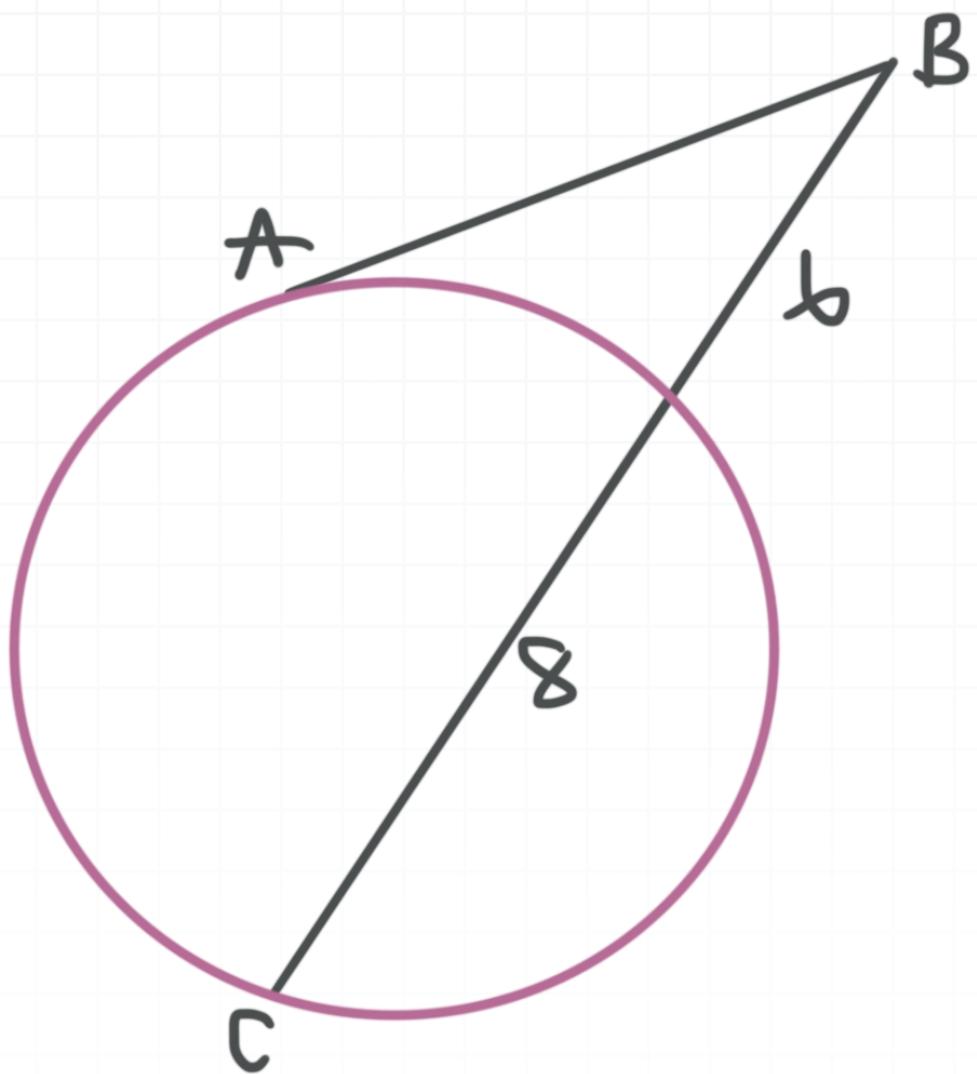
- 2. \overline{JK} and \overline{LK} are secants and intersect at K . Find the value of x .



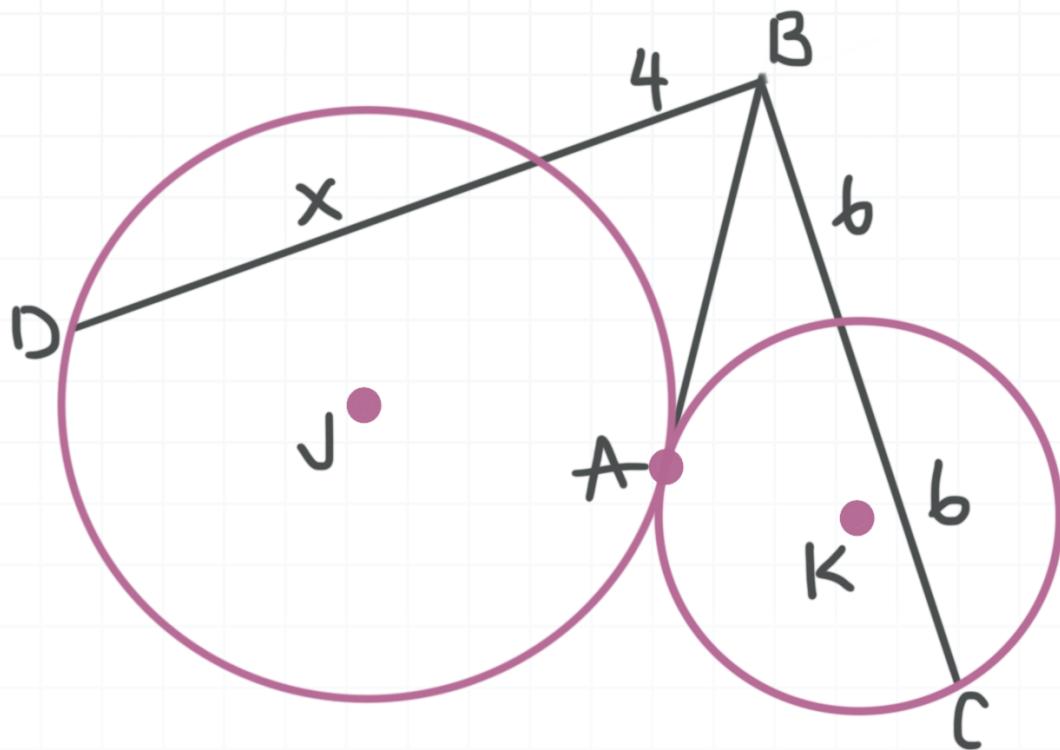
- 3. \overline{AB} is a tangent line and \overline{BC} is a secant of the circle. Find the value of x .



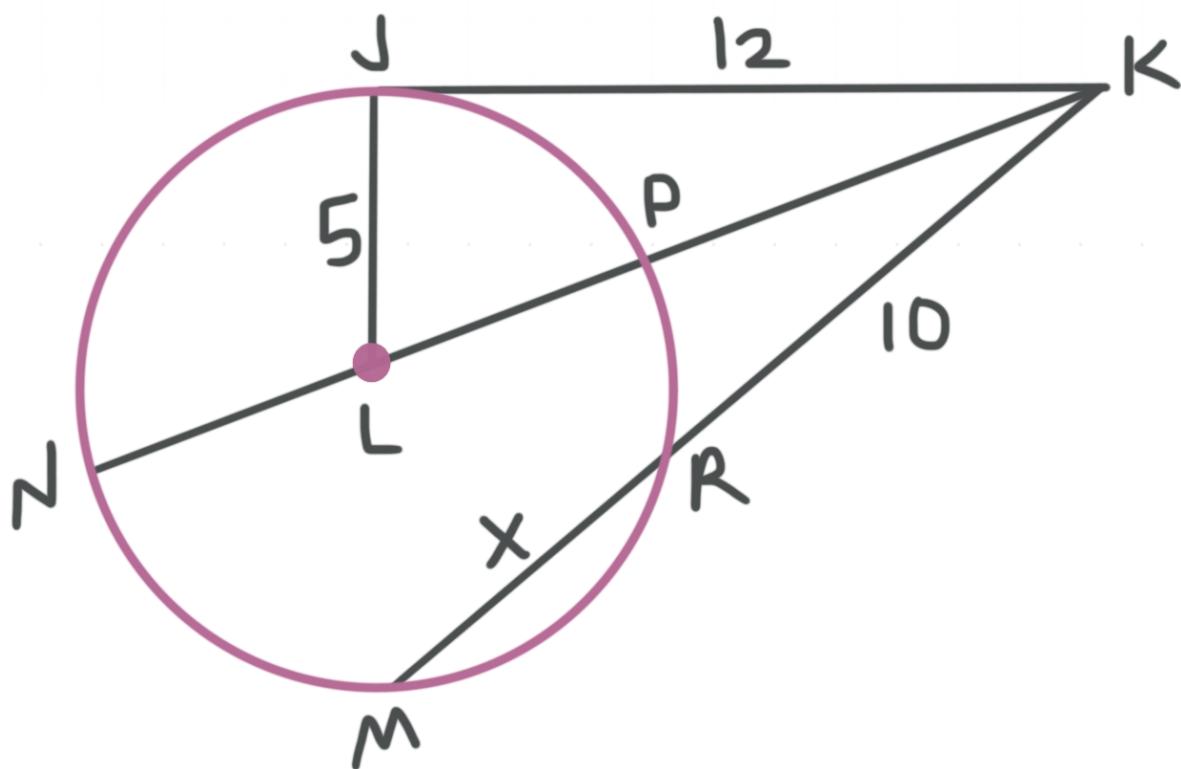
- 4. \overline{AB} is a tangent line and \overline{CB} is a secant of the circle. Find the length of AB .



- 5. \overline{DB} is a secant of $\odot J$ and \overline{CB} is a secant of $\odot K$. \overline{AB} is a tangent for both circles. Find x .

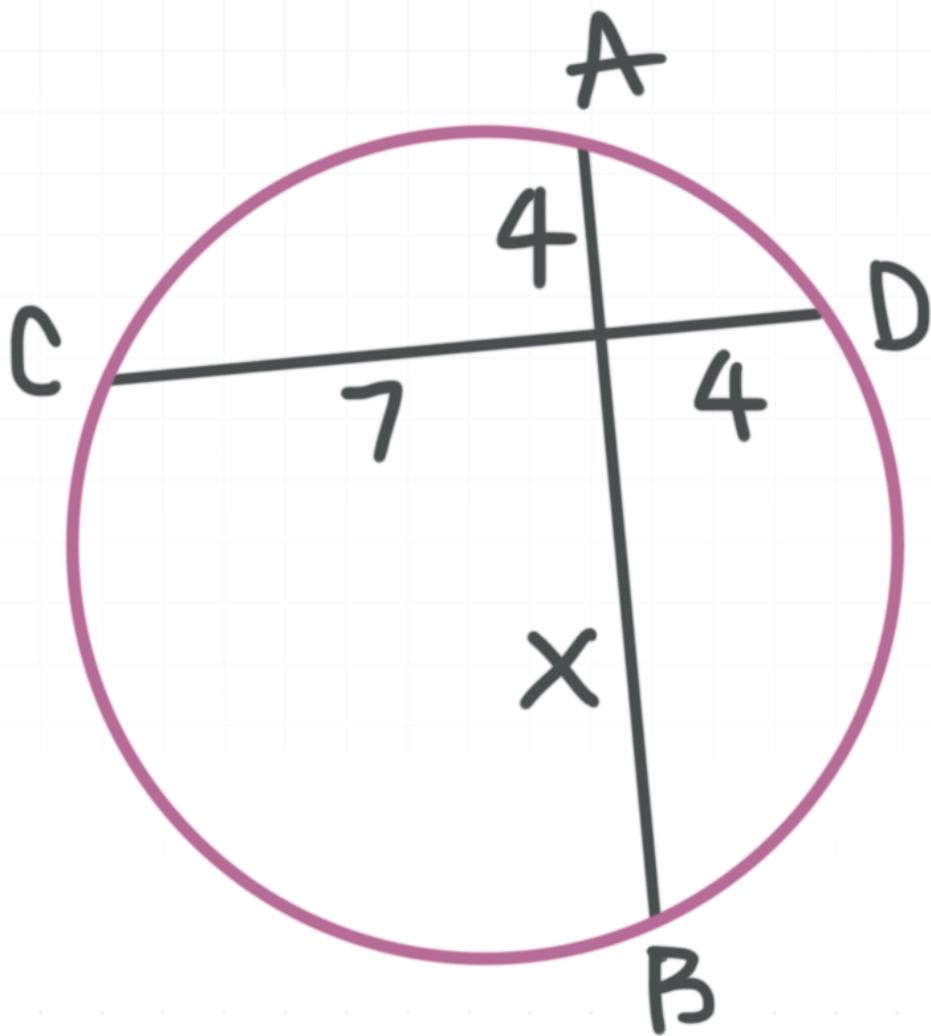


- 6. \overline{JK} is a tangent line, \overline{KN} and \overline{KM} are secants, and \overline{LJ} and \overline{LP} are radii of $\odot L$. Find x .

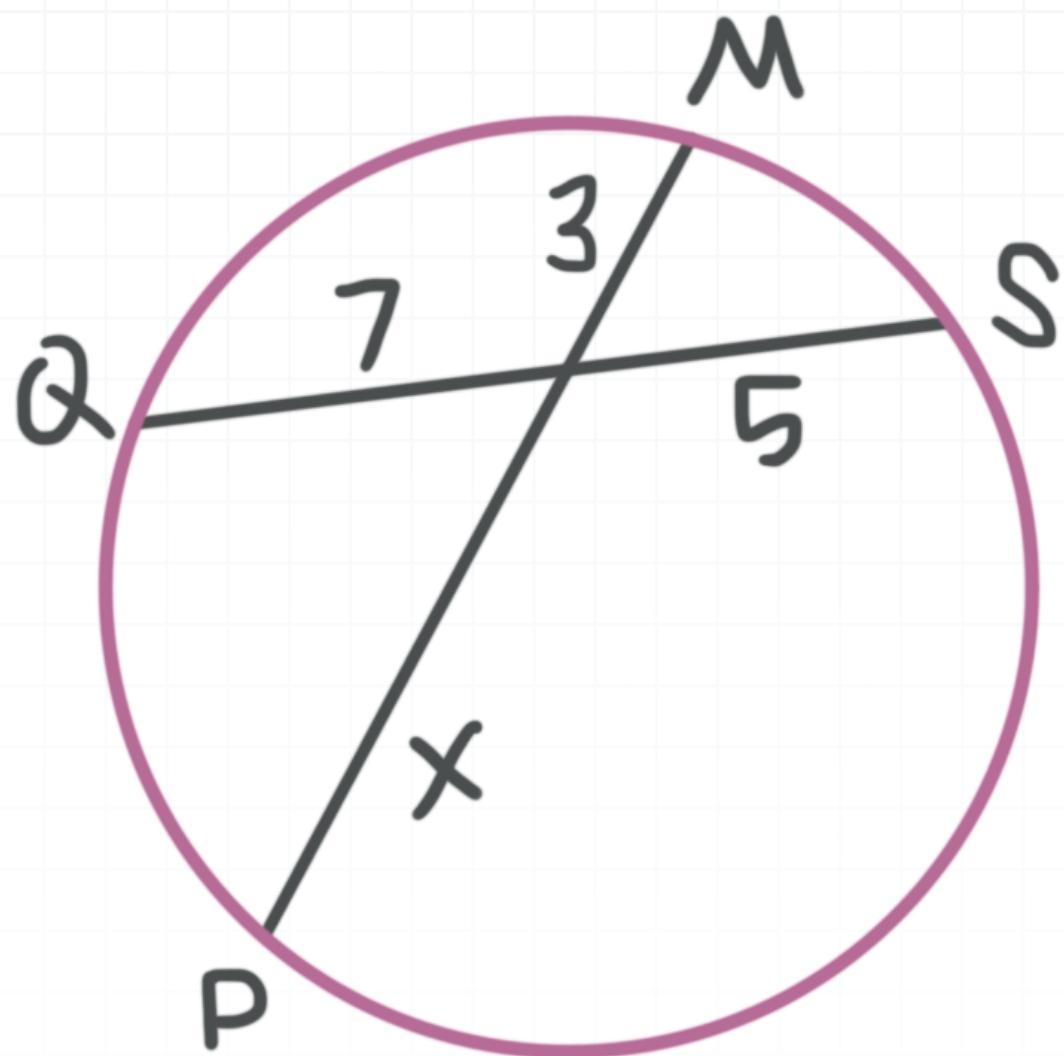


INTERSECTING CHORDS

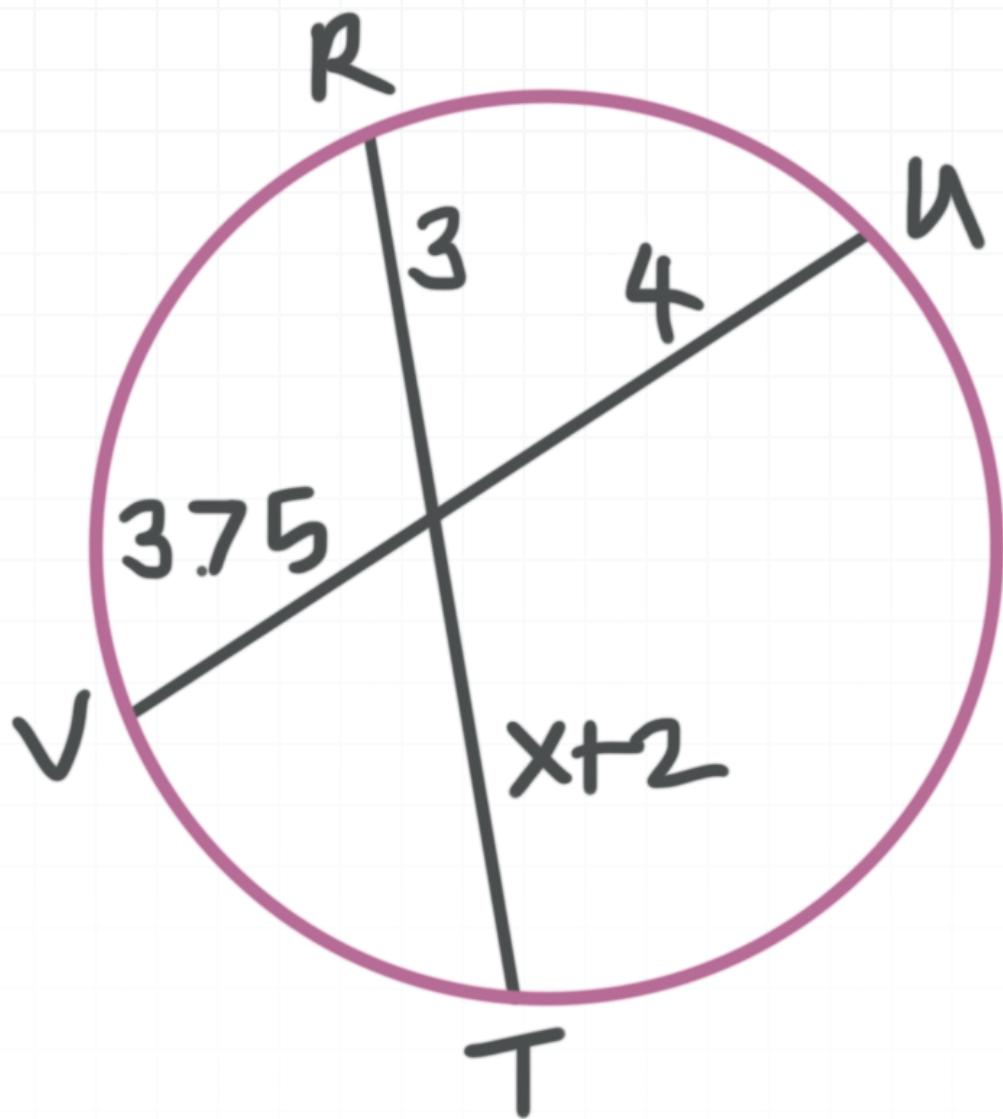
- 1. \overline{AB} and \overline{CD} are intersecting chords of the circle. Find x .



- 2. \overline{MP} and \overline{QS} are intersecting chords of the circle. Find x .



- 3. \overline{RT} and \overline{UV} are intersecting chords of the circle. Find x .



- 4. \overline{EF} and \overline{HG} are intersecting chords of the circle. Find x .

