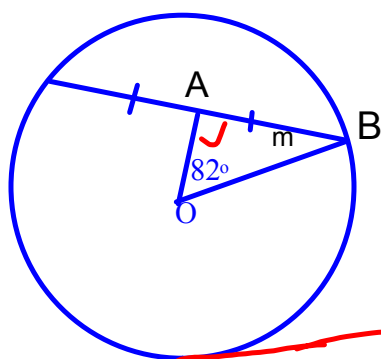


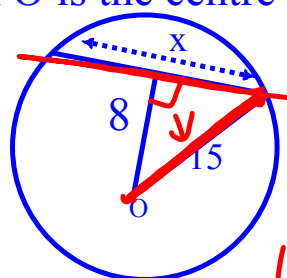
Warm-up

Determine the value of m ,
when O is the centre



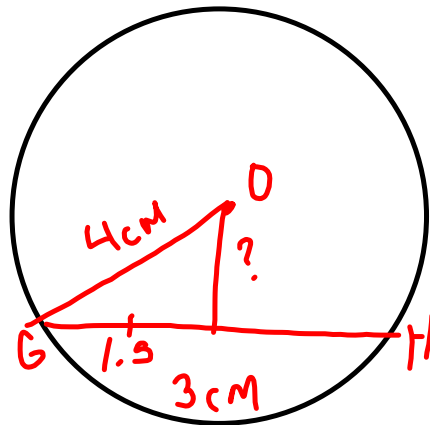
$$\begin{aligned} \angle ABO &= 8^\circ \\ \angle AOB &= 82^\circ \\ \angle BAO &= 90^\circ \\ \hline 180^\circ \end{aligned}$$

Determine the value of x ,
when O is the centre



$$\begin{aligned} c^2 &= a^2 + b^2 \\ 15^2 &= a^2 + 8^2 \\ 225 &= a^2 + 64 \\ a^2 &= 161 \\ a &= 12.1 \\ &\times 2 \\ \hline 25.4 \end{aligned}$$

A circle has a ~~diameter~~ ^{radius} [AB] of 8 cm and a chord [GH] length of 3 cm. Find the distance from the center of the circle to the cord [OR]



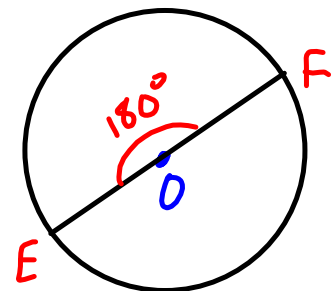
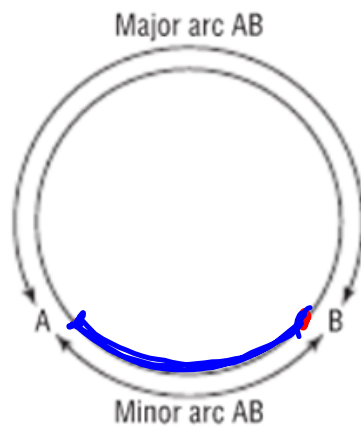
$$\begin{aligned}
 c^2 &= a^2 + b^2 \\
 4^2 &= a^2 + 1.5^2 \\
 16 &= a^2 + 2.25 \\
 \sqrt{a^2} &= \sqrt{13.75} \\
 a &= 3.7
 \end{aligned}$$

Terms/Properties to know:

Arc- a section of the circumference of a circle is an arc.

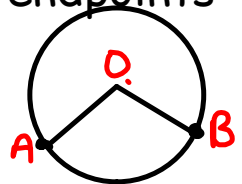
distance around the outside of a circle

arc
AB

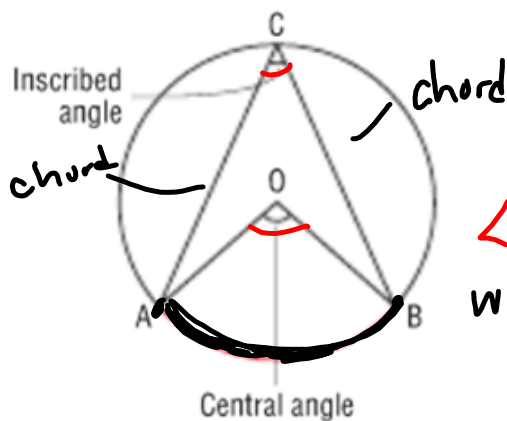


Central Angle -- the angle formed by joining the endpoints of an arc to the center of the circle

[Two radii form the central angle] $\angle AOB$



Inscribed Angle -- The angle formed by joining the endpoints of an arc to a point on the circle



Subtended---is one whose two rays pass through the endpoints of the arc

Comes from the smaller arc

$\angle ACB = \text{inscribed angle}$
which is made from two chords!

The inscribed and central angles are subtended by arc AB [coming from]

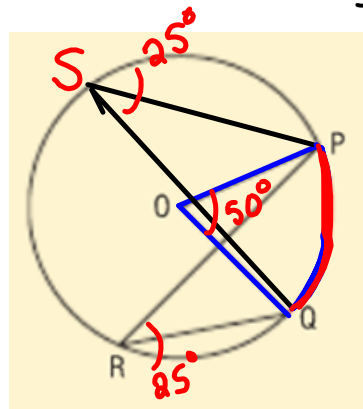
Name central angle $\angle AOB$

Name inscribed angle $\angle ACB$

1. Central Angle and Inscribed Angle Property

In a circle, the measure of a central angle subtended by an arc is twice the measure of the inscribed angle subtended by the same arc.

$$\angle POQ = 2 \text{ times } \angle PRQ$$



What is the arc? $\overset{\frown}{PQ}$

Name central angle?
 $\angle QOP$

Name inscribed angles?
 $\angle PSQ$ $\angle RPQ$

THIS IS TRUE FOR ANY INSCRIBED ANGLE

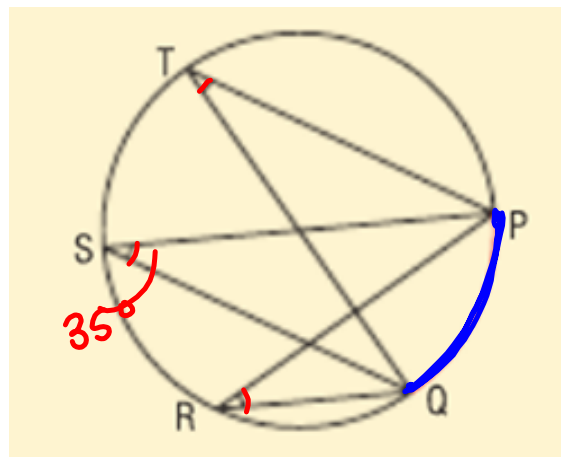
[The inscribed angle is half the size of the central angle]

2. Inscribed Angles Property

[coming from]

In a circle, all of the inscribed angles subtended by the same arc are congruent [equal]

$$\angle \underline{PTQ} = \angle \underline{PSQ} = \angle \underline{PRQ}$$

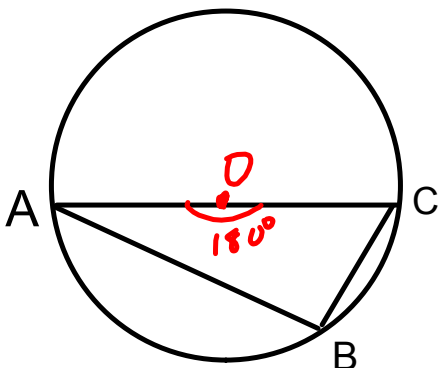


3. ANGLES IN A SEMI-CIRCLE PROPERTY

*The two arcs formed by the endpoints of a diameter are semicircles.

*The central angle is a straight angle which is 180°

*The inscribed angle subtended by semicircle is one-half 180



1) Name the
straight angle

$$\angle AOC = 180^\circ$$

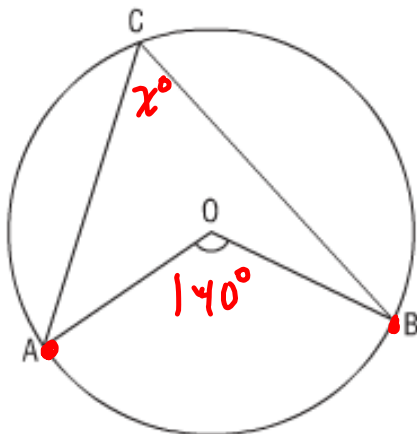
2) Identify the arc.

\widehat{AC}
coming from]

3) Name the angle subtended
by the arc.

$$\angle ABC = 90^\circ$$

Properties of Angles in a Circle



$$\angle AOB = 140$$

$$\angle ACB = ?$$

1) Name 2 chords

AC, BC

2) Name 2 angles

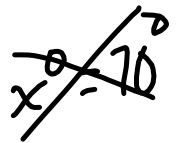
$$\angle AOB, \angle ACB = 70^\circ$$

3) Name 2 radii

AO, OB

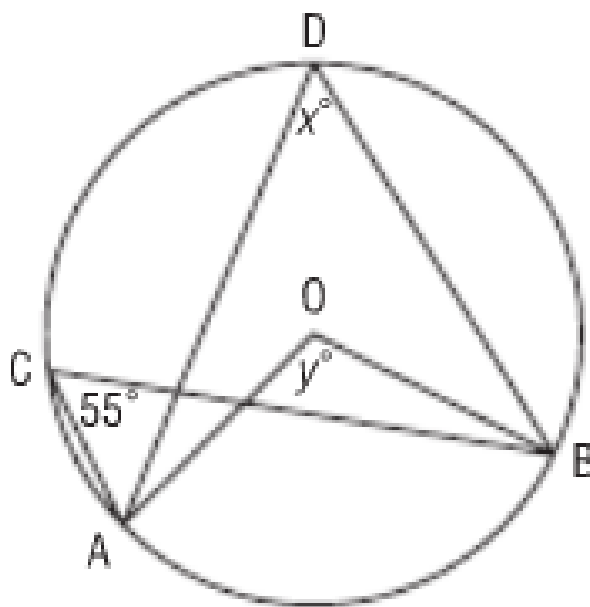
4) Name 2 arcs

AB, CA, BC



Point O is the centre of a circle.

Determine the values of x° and y° .



Angles
KNOW

$$\angle ACB = 55^\circ$$

Angles

Need *[unknown]*

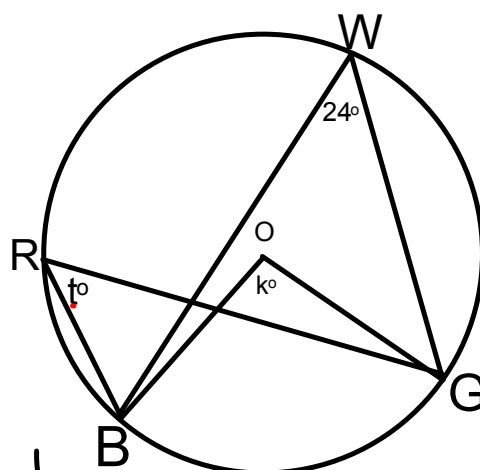
$$\angle AOB = 110^\circ$$

$$\angle ADB = 55^\circ$$

Arc $\Rightarrow \widehat{AB}$

Point O is the center of a circle.
Determine the values of k and t .

What circle properties were used.



Know

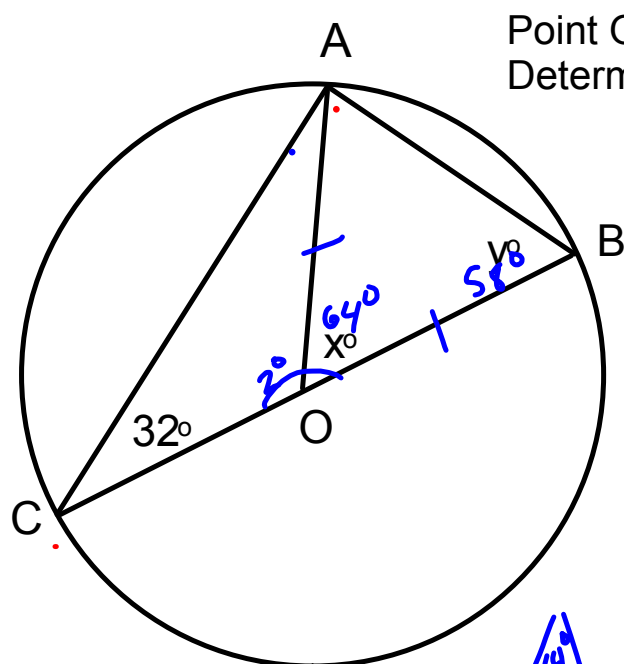
$$\angle \underline{B} \underline{W} \underline{G} = 24^\circ$$

Need

$$\angle \underline{B} \underline{O} \underline{G} = 48^\circ$$

$$\angle \underline{B} \underline{R} \underline{G} = 24^\circ$$

Arc $\rightarrow \widehat{BG}$



Point O is the center of the circle.
Determine the value of x° and y° .

KNOW

Need

$$\angle ACB = 32^\circ$$

$$\angle AOB = 64^\circ$$

$$\angle ABC = 58^\circ$$

$$58 + 58^\circ + 64 = 180^\circ$$

