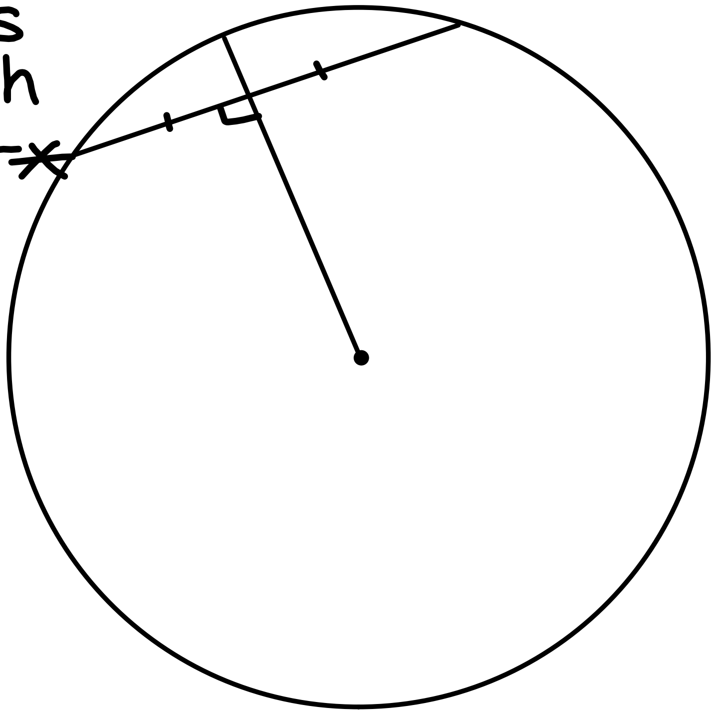
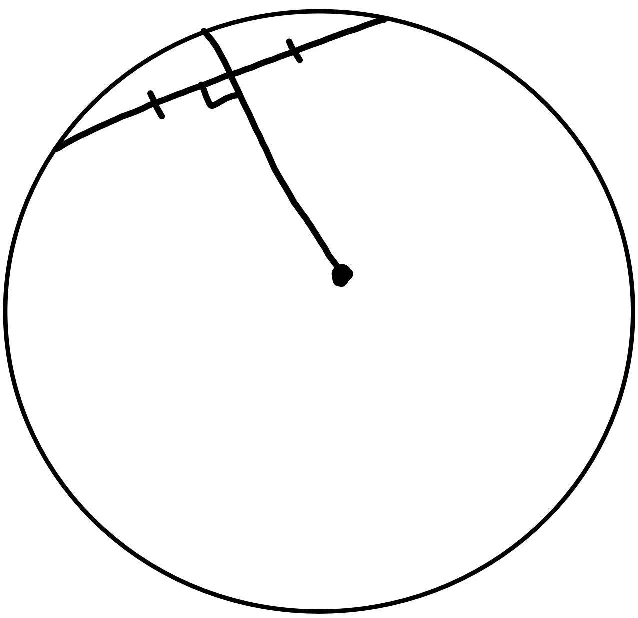
In the circle provided, draw a chord and then construct its perpendicular bisector:

* Goes through center *

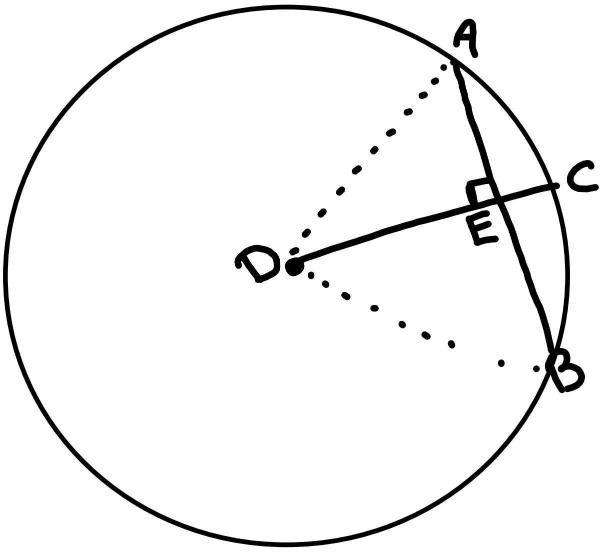


Theorem:

In any circle, the perpendicular bisector of a chord is the radius of that circle.



Theorem:
If a radius is perpendicular to a chord, then it bisects the chord (and its arc)



If $\overline{CD} \perp \overline{AB}$, then $\overline{AE} \cong \overline{EB}$ and $\widehat{AC} \cong \widehat{CB}$.

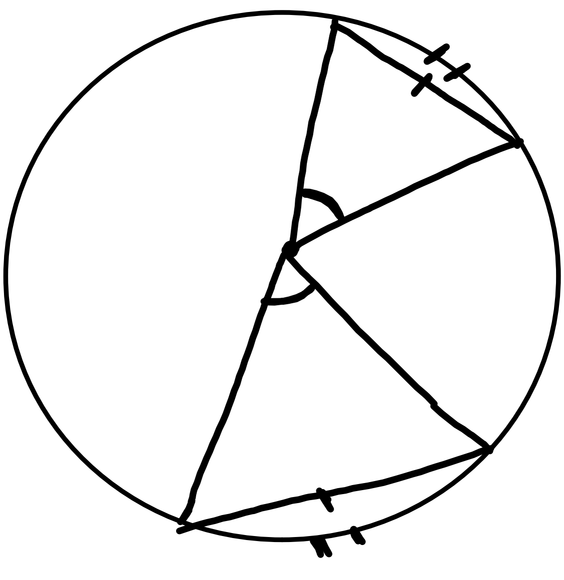
<u>Theorem</u>

In the same circle (or in congruent circles):

1 - Congruent central angles have congruent chords

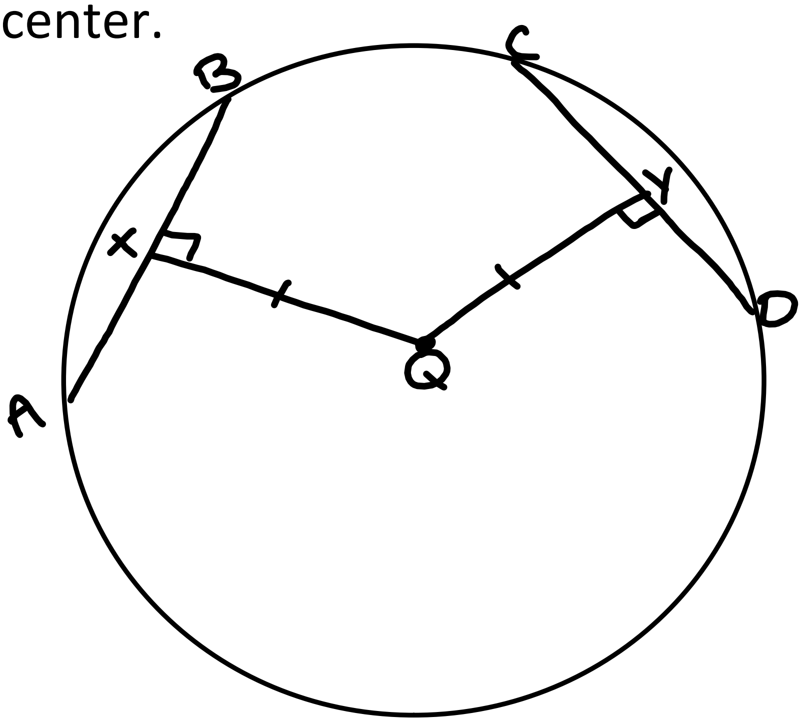
2 - Congruent chords have congruent arcs

3 - Congruent arcs have congruent central angles



Theorem

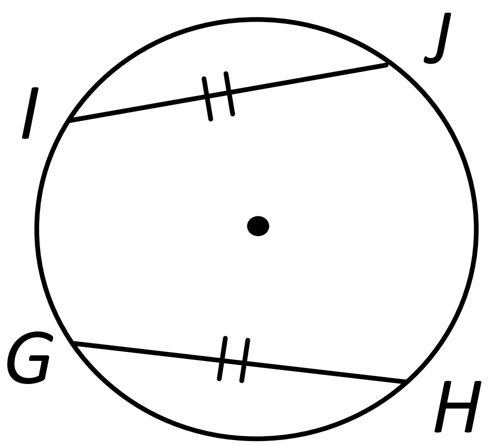
In the same circle, or in congruent circles, two chords are congruent if and only if they are equidistant from the center.



$\overline{AB} \cong \overline{CD}$
iff
$\overline{XQ} \cong \overline{QY}$

$m\widehat{GH} = 100^\circ$

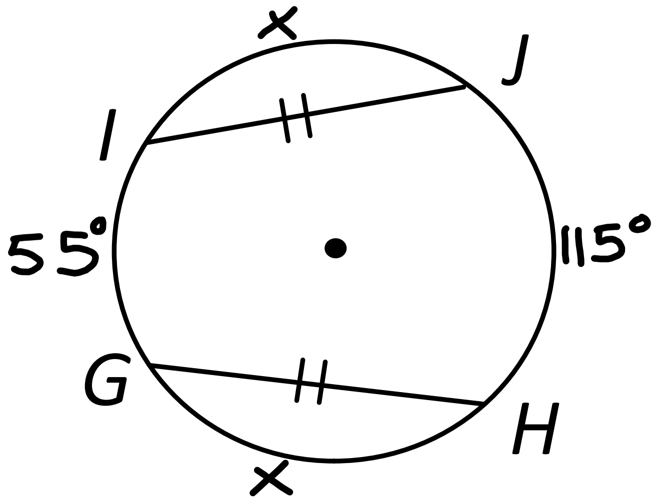
$m\widehat{IJ} = 100^\circ$



m$\overset{\frown}{GI} = 55^\circ$

m$\overset{\frown}{HJ} = 115^\circ$

m$\overset{\frown}{GH} = 95^\circ$



$x + x + 55 + 115 = 360$

$2x + 170 = 360$

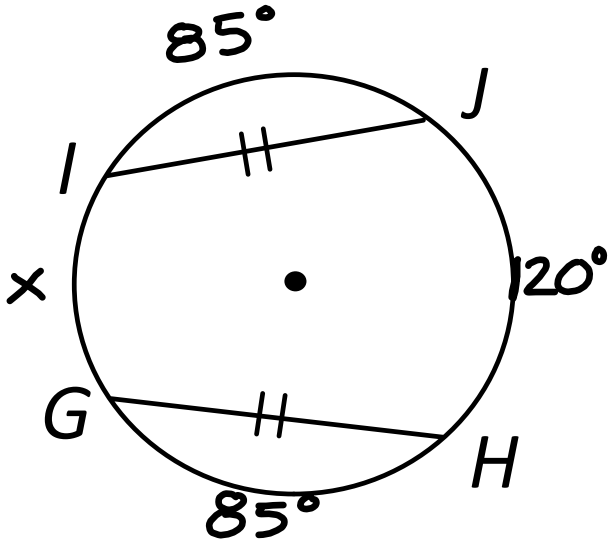
$2x = 190$

$\boxed{x = 95^\circ}$

m$\overset{\frown}{IJ} = 85^\circ$

m$\overset{\frown}{HJ} = 120^\circ$

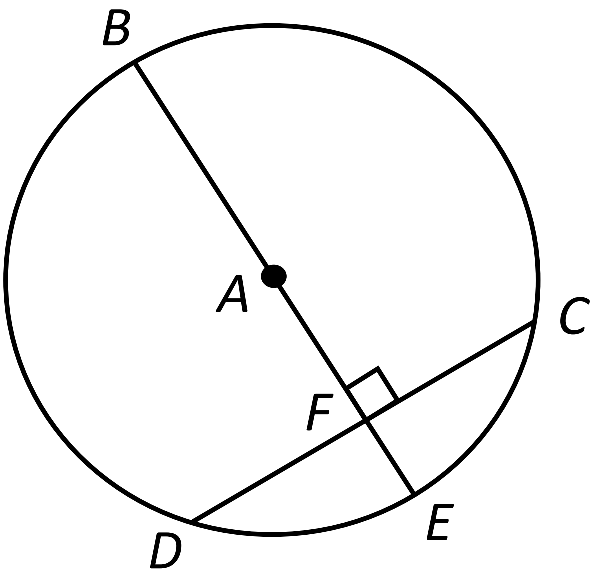
m$\overset{\frown}{GI} = 70^\circ$



$x + 85^\circ + 85^\circ + 120^\circ = 360^\circ$

$x = 70^\circ$

Find x



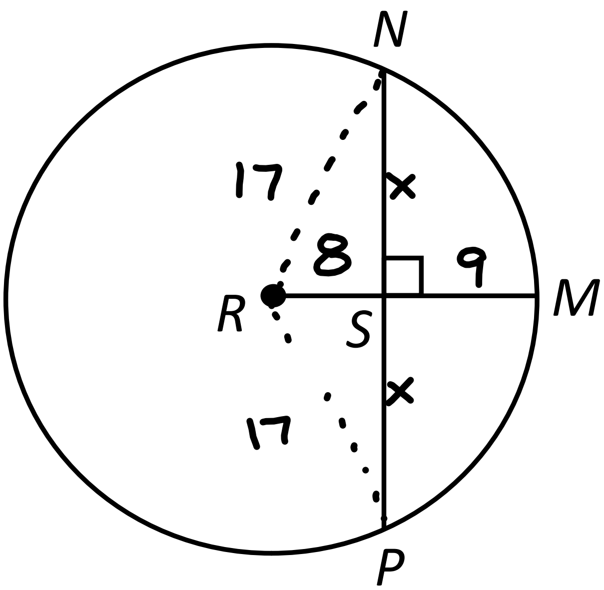
$CF = 3x + 7$

$DF = 5x - 9$

$3x+7=5x-9$

$16=2x$

$x=8$



$RS = 8$

$MS = 9$

$NP =$

$8^2+x^2=17^2$

$64+x^2=289$

$x^2=225$

$\boxed{x=15}$

$NP=2x=30$