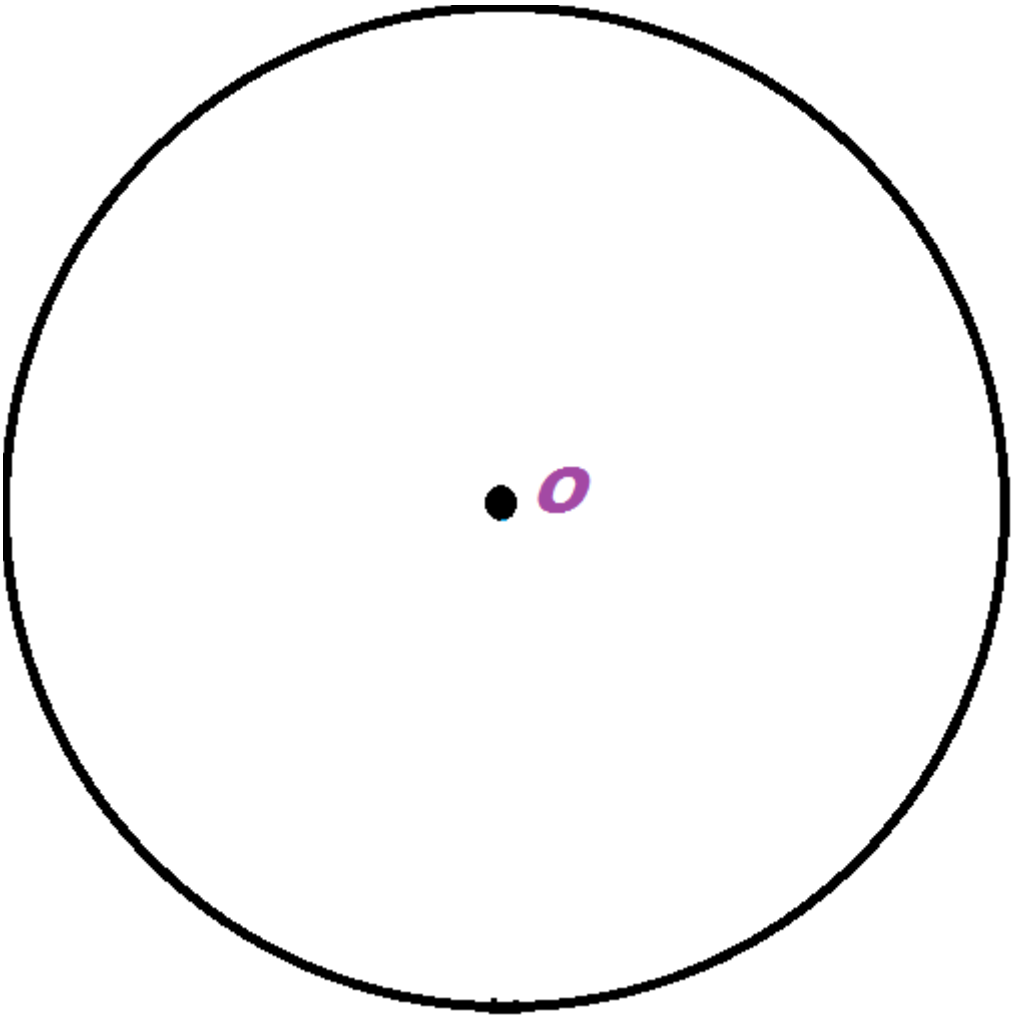


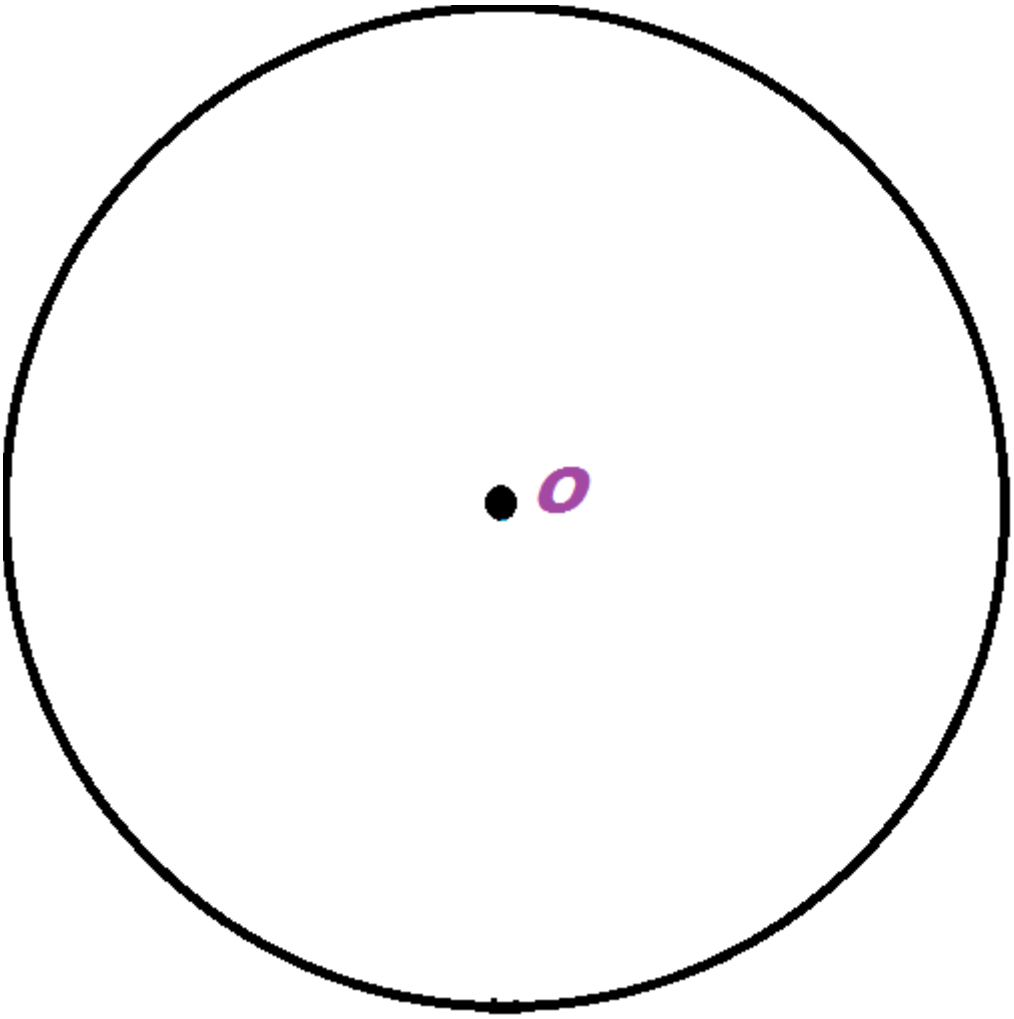
1) Draw two congruent chords. Label them $\overline{AB}$ and $\overline{CD}$. Measure them (doesn't matter if you use inches, cm, or mm).
AB = _____ CD = _____

2) Draw radius $\overline{OA}$ and radius $\overline{OB}$. You have created $\angle AOB$. Use a protractor to find $m\angle AOB$. Also determine m of arc AOB.
$m\angle AOB$ = _____ m of arc AOB _____

3) Draw radius $\overline{OC}$ and radius $\overline{OD}$. You have created $\angle COD$. Use a protractor to find $m\angle COD$. Also determine m of arc COD.
$m\angle COD$ = _____ m of arc COD _____

4) What do you notice about the measures of the arcs? _____

THEOREM: In the same circle (or in congruent circles),
Congruent _____ ⟷ Congruent _____



5) Draw a chord of any length. Label the endpoints as E and F (so your chord is $\overline{EF}$). Measure EF (doesn't matter if you use inches, cm, or mm).

EF = _____

6) Use a protractor and ruler (or your best guess with your eyes and a ruler) to draw a radius from the center O that is perpendicular (90° angle) to your new chord $\overline{EF}$. Label the point of intersection (of your radius and chord $\overline{EF}$) as M.

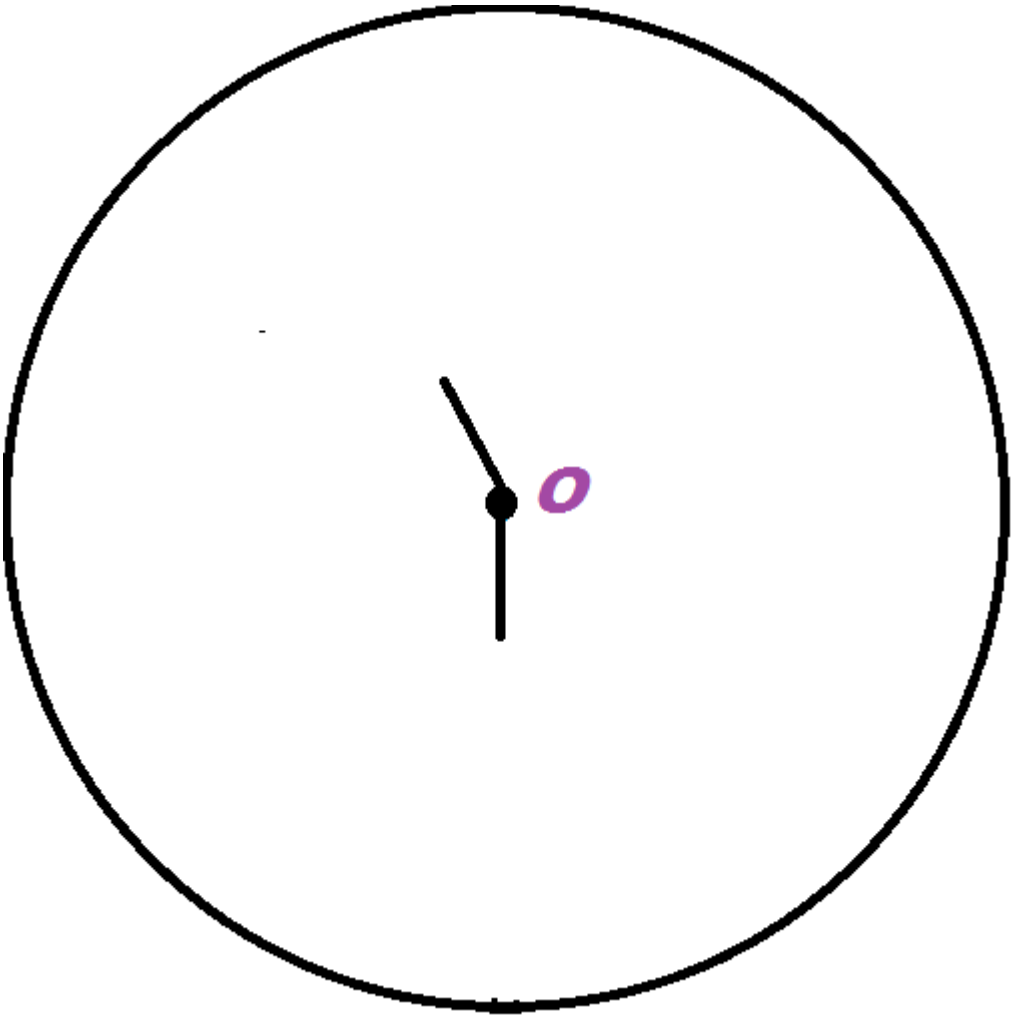
7) Measure EM and FM with a ruler.

EM = _____ FM = _____

8) What do you notice about EM & FM compared to EF? What happened to your chord?

9) What do you think the radius did to arc EF?

THEOREM: If a radius is perpendicular to a chord, then the radius will
1) _____ the chord and 2) _____the arc



10) Two segments extending from the center O have been started for you. Make them as long as you wish as long as you

a. make them both the same length, and
b. stop them inside the circle (can't touch the circle)

Label the endpoint of one of your segments Y and call the endpoint of the other segment Z. As a result of your work, $OY = OZ$.

11) Draw a chord that is perpendicular (right angle) to $\overline{OY}$ (one of the segments you just made) at the point Y.

12) Measure the chord you made in #11 – how long is it? _____

13) Draw a chord that is perpendicular (right angle) to $\overline{OZ}$ (one of the segments you just made) at the point Z.

14) Measure the chord you made in #11 – how long is it? _____

15) What do you notice about the lengths of the two chords? _____

THEOREM: In the same circle (or in congruent circles),

Congruent _____ ⟷ _____ from center