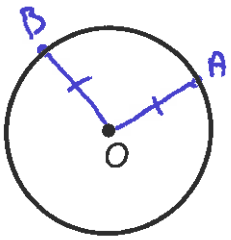
Geometry R – Mr. Bo
Unit 10 – Day 1 Notes

Name: Notes
Date: _____

Circles

Radii – A segment drawn from the center of a circle to a point on the circle.

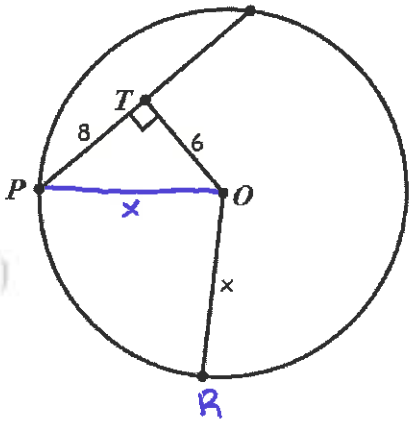


Theorem: In a circle or ≅ circles, all radii are ≅.

$\overline{AO} \cong \overline{BO}$

1. Apply the radii theorem to complete each example.

a. Solve for x.



$PO = RO$

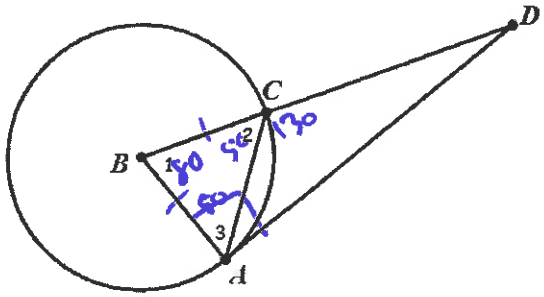
$6^2 + 8^2 = x^2$

$36 + 64 = x^2$

$100 = x^2$

$x = 10$

b. $m\angle 1 = 80°$, $m\angle BAD = 90°$. Find $m\angle ACD$.



$AB = CB$, so $\angle 2 \cong \angle 3$.

$180 - 80 = 100$

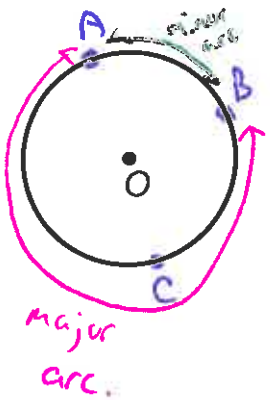
$\frac{100}{2} = 50$

$m\angle 2 = m\angle 3 = 50°$

$m\angle ACD + m\angle 2 = 180°$

$m\angle ACD = 130°$

Arcs – A portion of a circle.



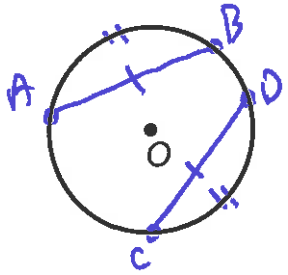
Minor Arc – An arc measuring less than 180°.

$\overset{\frown}{AB}$ uses 2 or more letters

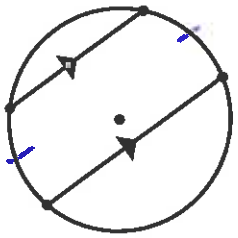
Major Arc – An arc measuring more than 180°.

$\overset{\frown}{ACB}$ use 3 or more letters.

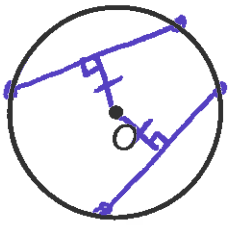
Chord – A segment connecting two points on a circle.



Theorem:
In a circle or ≅ circles,
≅ chords cut ≅ arcs.



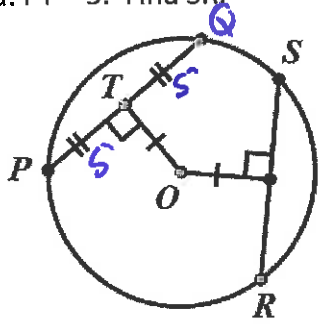
Theorem:
In a circle,
// chords cut ≅ arcs.



Theorem:
In a circle,
≅ chords are equidistant to the center of the circle.

2. Apply the chord theorems to complete each problem.

a. PT = 5. Find SR.

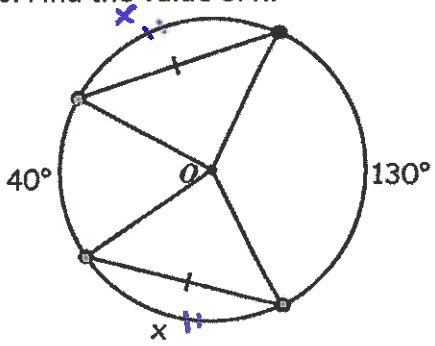


PQ = SR

PQ = 10

SR = 10

b. Find the value of x.



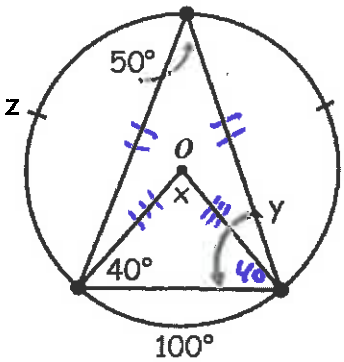
2x + 40 + 130 = 360

2x + 170 = 360

2x = 190

x = 95°

c. Find x, y, and z.



x = 180 − 80 (100°)

2y + 50 = 180

2y = 130

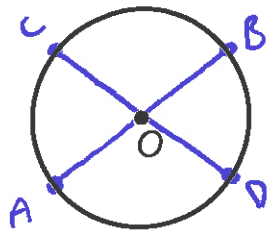
y = 65°

2z + 100 = 360

2z = 260

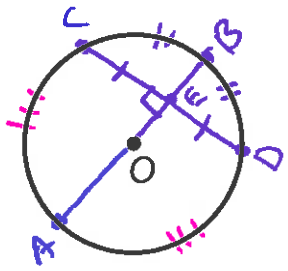
z = 130°

Diameters – A chord that passes through the center of a circle.



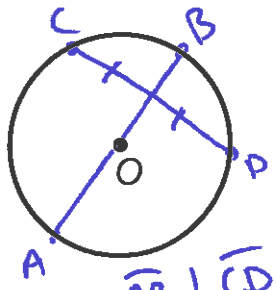
Theorem: $\overline{AB} \cong \overline{CD}$

In a circle or ≅ circles, All diameters are ≅.



Theorem:

In a circle, a diameter ⊥ to a chord also bisects the chord (and the arcs).



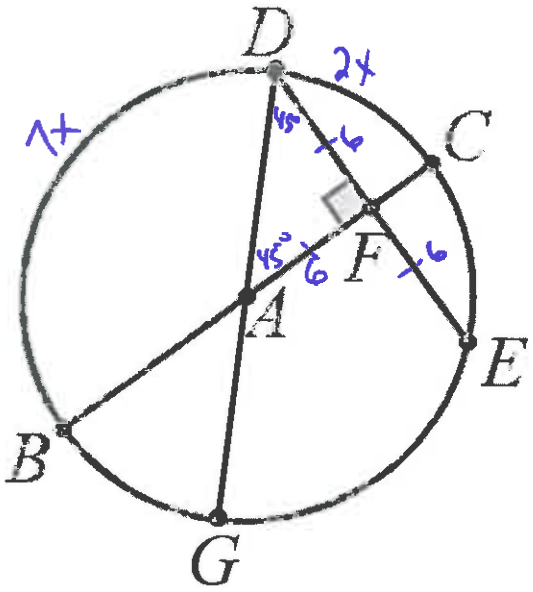
$\overline{AB} \perp \overline{CD}$

Theorem:

In a circle, a diameter bisecting a chord is also ⊥ to the chord.

3. Apply the Diameter Theorems to complete the problem.

Given: $\odot A$ with DE = 12, AF = 6 and $\overset{\frown}{BD} : \overset{\frown}{DC} = 7:2$. **Find:**



a. $\overset{\frown}{BD}$ and $\overset{\frown}{DC}$

$2x + 7x = 180$

$9x = 180$

$x = 20$

$m\overset{\frown}{BD} = 140°$

$m\overset{\frown}{DC} = 40°$

b. $\overset{\frown}{CE}$

$m\overset{\frown}{CE} = m\overset{\frown}{DC}$

$= 40°$

c. DF

$= \frac{12}{2}$

$= 6$

d. AB

$6\sqrt{2}$

45-45-90 Δ.

e. DG

$= 2(AB)$

$= 2(6\sqrt{2})$

$= 12\sqrt{2}$