TOPIC: **10.3 Apply Properties of Chords**	NAME: KEY DATE:

ESSENTIAL QUESTION: **How can you tell if two chords in a circle are congruent?**

QUESTIONS:

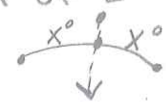
Vocabulary:

Congruent Chords

Chords of the same length

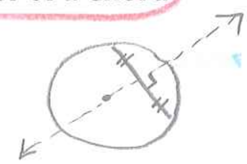
Bisecting Arcs

Any ray, line, or segment that contains common endpoint of ≅ adjacent arcs



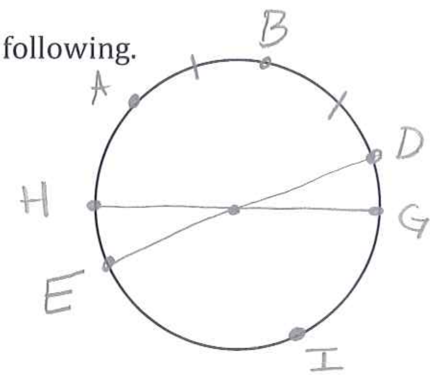
Perpendicular Bisector of a Chord

Form 90° ∠



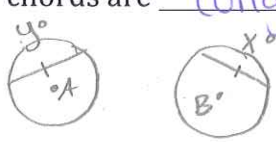
A1. Use the circle at the right to sketch the following.

a. $\widehat{AB} \cong \widehat{BD}$
b. Semicircle $\widehat{GIH}$
c. Diameter $\overline{HG}$
d. Chord $\overline{ED} \cong \overline{GH}$



Theorem 10.3

In the same circle, or in congruent circles, two minor arcs are Congruent if and only if their corresponding chords are congruent.



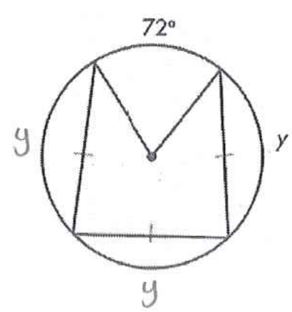
then $x=y$

A2. Find the value of y.

$3y+72=360$

$3y=288$

$\boxed{y=96°}$

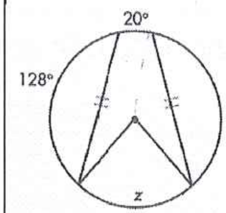


SUMMARY:

Chords are ≅ iff their (1) corresponding minor arcs are ≅ or (2) if they're equidistant from the center

QUESTIONS:

A3. Find the value of z.

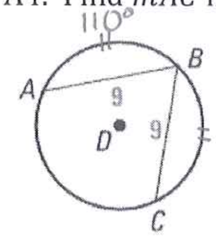


$20 + 2(128) + z = 360$

$276 + z = 360$

$\boxed{z = 84°}$

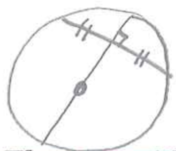
A4. Find $m\widehat{AC}$ if $m\widehat{BC} = 110°$.



$360 - 110$
$- 110$
140

$\boxed{m\widehat{AC} = 140°}$

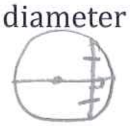
Theorem 10.4: If one chord is a perpendicular bisector of another chord, then the first chord is a diameter.



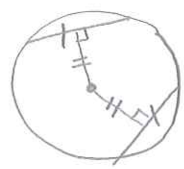
Theorem 10.5: If a diameter of a circle is perpendicular to a chord, then the diameter bisects the chord and its arc.

If

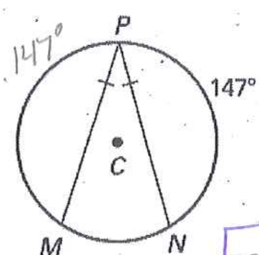
then



Theorem 10.6: In the same circle, or in congruent circles, two chords congruent if and only if they are equidistant from the center.



A5. Find the measure of arc MN.



$360 - 147$
$- 147$
66

$\boxed{m\widehat{MN} = 66°}$

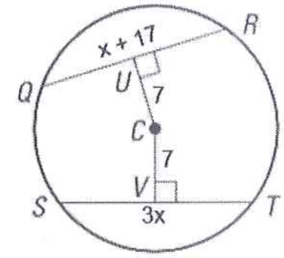
(Thm 10.3)

A6. Find the value of x.

$3x = x + 17$
$-x$

$2x = 17$
$\frac{2x}{2} = \frac{17}{2}$

$\boxed{x = 8.5}$



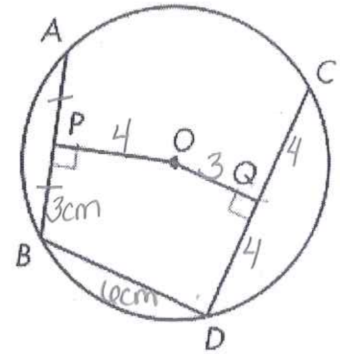
(Thm 10.6)

A7. Find the perimeter of OPBDQ if AB = BD = 6 cm, OP = 4 cm, CD = 8 cm, and OQ = 3 cm.

OP + PB + BD + DQ + QO

4 + 3 + 6 + 4 + 3

$= \boxed{20\text{cm}}$



(Thm 10.5)
(Thm 10.6)