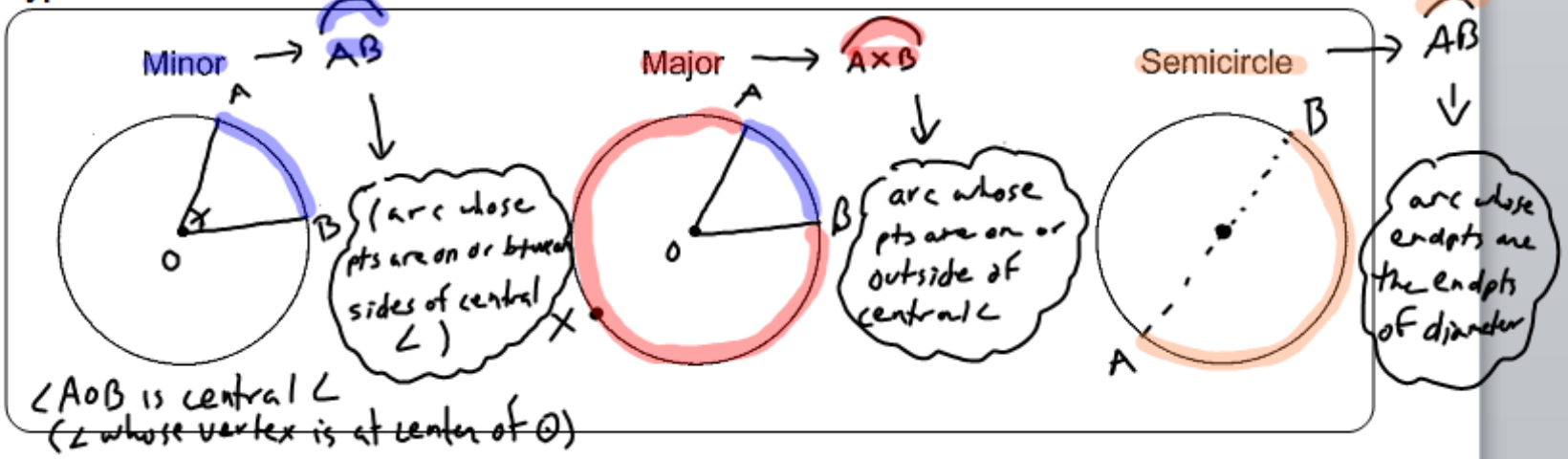
10.3. Honors Geometry

DATE: 5/6

Target 9A. *Know and apply the properties of tangents, secants, chords, and arcs*
Target 9B. *Identify the relationships between the angles and their intercepted arcs*

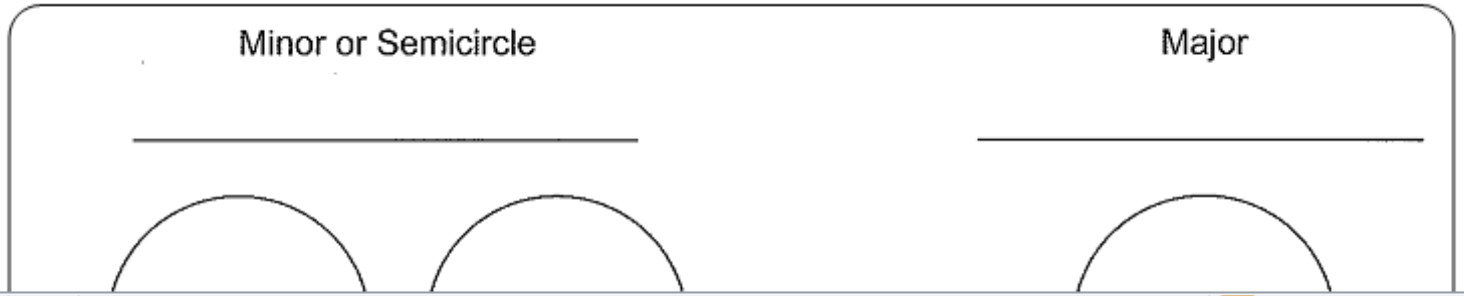
Types of Arcs

↗ symbol for arc ↗ use 3 pts to avoid confusion



∠AOB is central ∠
(∠ whose vertex is at center of ⊙)

Measure of an Arc

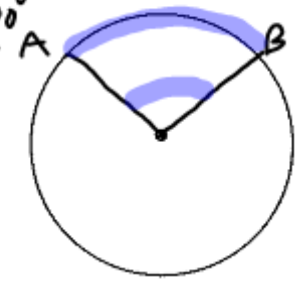


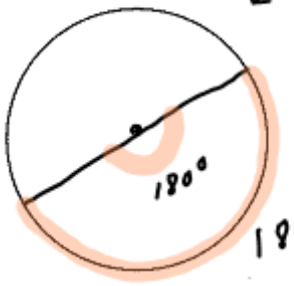
Measure of an Arc

Minor or Semicircle

Same as the central & that intercepts the arc

$0° < m\overset{\frown}{AB} < 180°$

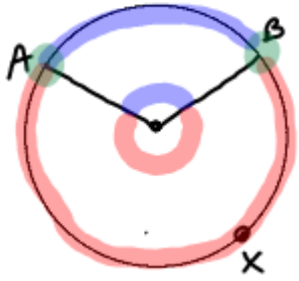




Major =

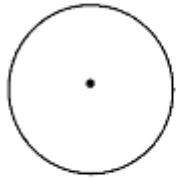
360 minus minor arc with same endpts

$180° < m\overset{\frown}{AXB} < 360°$

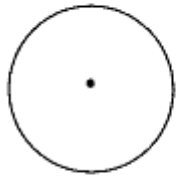


Relating Congruent Arcs, Chords, and Central Angles

- Two ≅ central angles of a circle (or ≅ circles) implies _____.
- Two ≅ arcs of a circle (or ≅ circles) implies _____.



- Two ≅ central angles of a circle (or ≅ circles) implies _____.
- Two ≅ chords of a circle (or ≅ circles) implies _____.



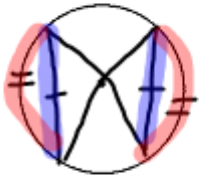
- Two ≅ arcs of a circle (or ≅ circles) implies

Relating Congruent Arcs, Chords, and Central Angles

- Two ≅ central angles of a circle (or ≅ circles) implies two ≅ arcs.
- Two ≅ arcs of a circle (or ≅ circles) implies two ≅ central ∠s.

- Two ≅ central angles of a circle (or ≅ circles) implies two ≅ chords.
- Two ≅ chords of a circle (or ≅ circles) implies two central ∠s.

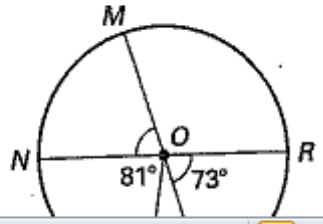
- Two ≅ arcs of a circle (or ≅ circles) implies two ≅ chords.
- Two ≅ chords of a circle (or ≅ circles) implies two ≅ arcs.



In the same circle (or ≅ circles), ≅ chords ⟺ ≅ arcs ⟺ ≅ central angles.

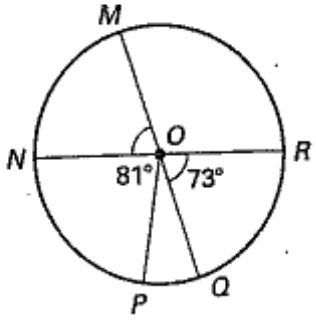
$\overline{MQ}$ and $\overline{NR}$ are diameters. Find the indicated measures.

1. $m\widehat{MN}$
2. $m\widehat{NQ}$
3. $m\widehat{NQR}$
4. $m\widehat{MRP}$
5. $m\widehat{PN}$
6. $m\widehat{MNQ}$



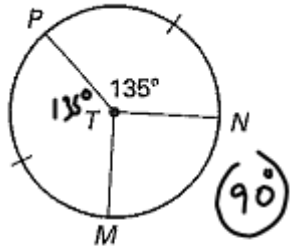
$\overline{MQ}$ and $\overline{NR}$ are diameters. Find the indicated measures.

1. $m\overset{\frown}{MN} = 73$
2. $m\overset{\frown}{NQ} = 107$ (180 − 73)
3. $m\overset{\frown}{NQR} = 180$
4. $m\overset{\frown}{MRP} = 206$
5. $m\overset{\frown}{PN} = 81$
6. $m\overset{\frown}{MNQ} = 180$
7. $m\overset{\frown}{QR} = 73$
8. $m\overset{\frown}{MR} = 107$
9. $m\overset{\frown}{QMR} = 360 - 73 = 287$
10. $m\overset{\frown}{PQ} = 26$
11. $m\overset{\frown}{PRN} = 360 - 81 = 279$
12. $m\overset{\frown}{MQN} = 287$

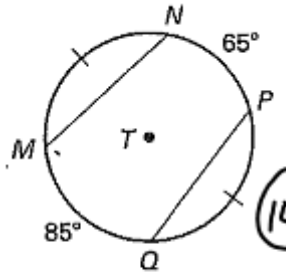


Answers are given work it out... seek help as needed...

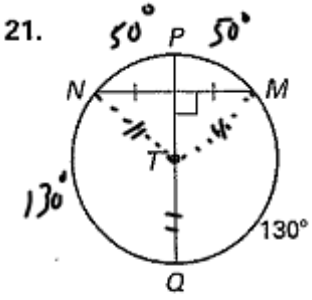
Find the measure of $\overline{MN}$.

19.


90°

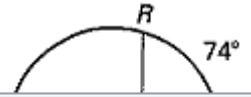
20.


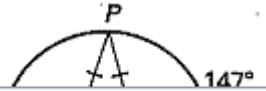
105°

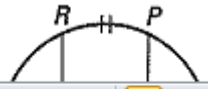
21.


100°

Find the measure of $\overline{MN}$.

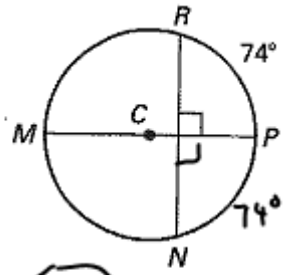
13.


14.


15.


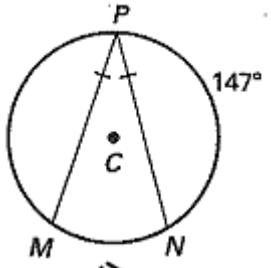
Find the measure of $\overset{\frown}{MN}$.

13.



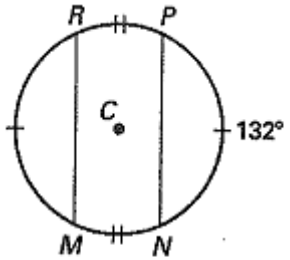
106°

14.



66°

15.

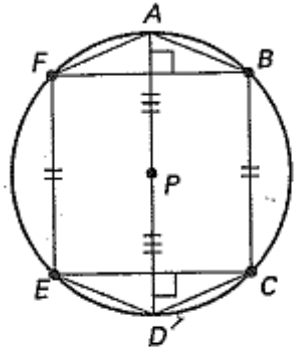


48°

Use the figures to match the chord or arc with a congruent chord or arc.

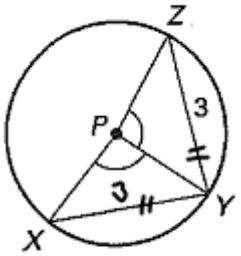
22. $\overset{\frown}{FB}$
23. $\overline{AF}$
24. $\overset{\frown}{BC}$
25. $\overline{EC}$
26. $\overset{\frown}{DC}$
27. $\overline{PD}$

A. $\overset{\frown}{FE}$
B. $\overline{ED}$
C. $\overline{EC}$
D. $\overline{AB}$
E. $\overline{BF}$
F. $\overline{PA}$



P is the center of the circle. Use the given information to find XY. Explain your reasoning.

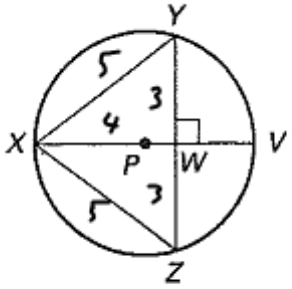
16. $ZY = 3$



$\cong \angle s \Rightarrow \cong$ chords

$XY = 3$

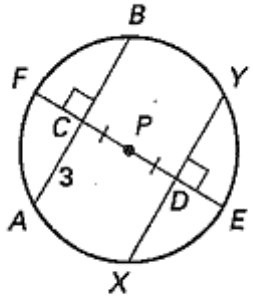
17. $ZY = 6, XW = 4$



$\perp$ bis. of chord

$XY = 5$

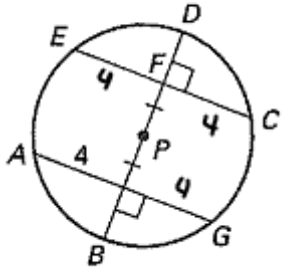
18. $CA = 3$



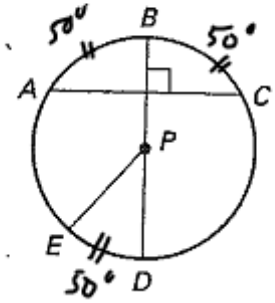
$XY = 6$

Find the indicated measure for $\odot P$.

28. $FC =$? 4



29. $m\overset{\frown}{BC} = 50°, \overset{\frown}{AB} \cong \overset{\frown}{ED}, m\overset{\frown}{AE} =$? 80°



Write a two-column proof or a paragraph proof.

20. Given: $\odot P, \odot O, \overline{CO} \cong \overline{AP}$

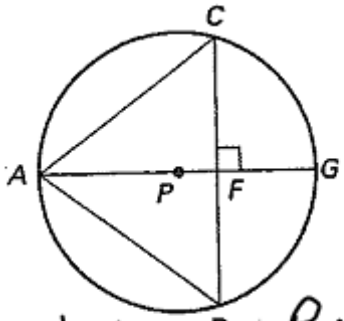
D

Write a two-column proof or a paragraph proof.

19. Given: $\odot P$, $\overline{AG} \perp \overline{CD}$

$\overline{AG}$ is a diameter of $\odot P$.

Prove: $\overline{AC} \cong \overline{AD}$



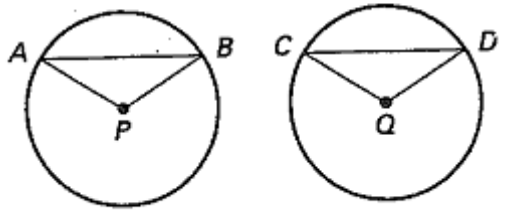
Statement	Reason
① $\odot P$, $\overline{AG} \perp \overline{CD}$, $\overline{AG}$ diam $\odot P$	② Given

you finish it!

20. Given: $\odot P$, $\odot Q$, $\overline{CQ} \cong \overline{AP}$

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

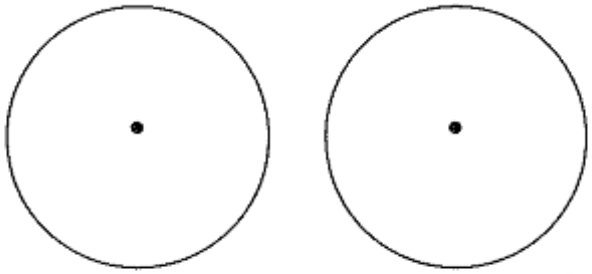
Prove: $\triangle APB \cong \triangle CQD$



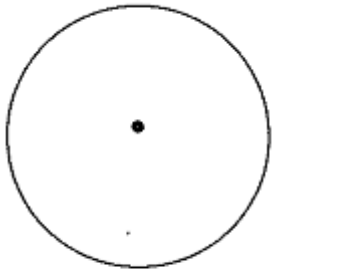
Statement	Reason

Measure of an Arc

Minor or Semicircle



Major



Relating Congruent Arcs, Chords, and Central Angles

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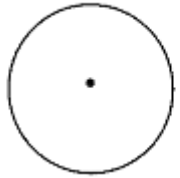

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