



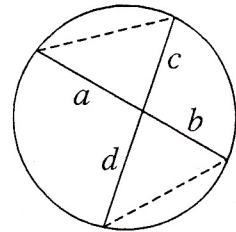
METHODS AND MEANINGS

A # 26

Intersecting Chords

When two chords in a circle intersect, an interesting relationship between the lengths of the resulting segments occurs. If the ends of the chords are connected as shown in the diagram, similar triangles are formed (see problem 10-25). Then, since corresponding sides of similar triangles have a common ratio, $\frac{a}{d} = \frac{c}{b}$, and

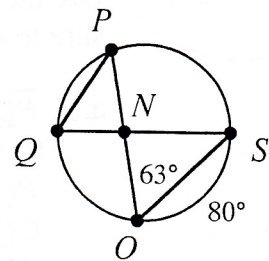
$$ab = cd$$



10-38.

If $\overline{QS}$ is a diameter and $\overline{PO}$ is a chord of the circle at right, find the measure of the geometric parts listed below.

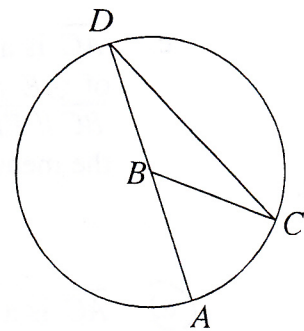
- | | | |
|--------------------|--------------------|------------------|
| a. $m\angle QSO$ | b. $m\angle QPO$ | c. $m\angle ONS$ |
| d. $m\widehat{PS}$ | e. $m\widehat{PQ}$ | f. $m\angle PQN$ |



10-28.

Assume point B is the center of the circle below. Match each item in the left column with the best description for it in the right column.

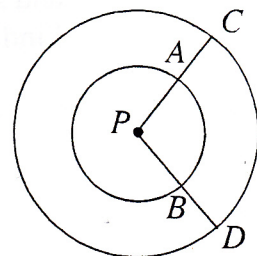
- | | |
|--------------------|--------------------|
| a. $\overline{AB}$ | 1. inscribed angle |
| b. $\overline{CD}$ | 2. semicircle |
| c. $\widehat{AD}$ | 3. radius |
| d. $\angle CDA$ | 4. minor arc |
| e. $\widehat{AC}$ | 5. central angle |
| f. $\angle ABC$ | 6. chord |



10-29.

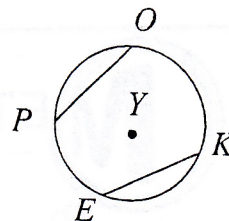
The figure at right shows two concentric circles.

- Which arc has greater **measure**: $\widehat{AB}$ or $\widehat{CD}$? Explain.
- Which arc has greater **length**? Explain how you know.
- If $m\angle P = 60^\circ$ and $PD = 14$, find the length of $\widehat{CD}$. Show all work.



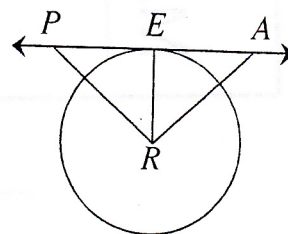
10-30.

In $\odot Y$ at right, assume that $m\widehat{PO} = m\widehat{EK}$. Prove that $\overline{PO} \cong \overline{EK}$. Use the format of your choice.



10-36.

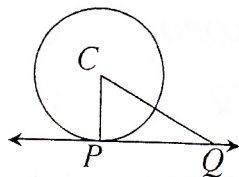
In the figure at right, $\overline{PA}$ is tangent to $\odot R$ at E and $PE = EA$. Is $\triangle PER \cong \triangle AER$? If so, prove it. If not, show why not.



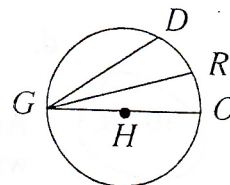
10-37.

Use the relationships in the diagrams below to answer the following questions. Be sure to name what relationship(s) you used.

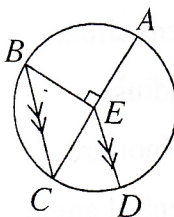
- a. $\overline{PQ}$ is tangent to $\odot C$ at P . If $PQ = 5$ and $CQ = 6$, find CP and $m\angle C$.



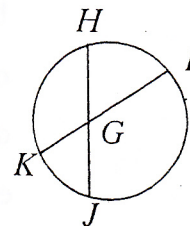
- b. In $\odot H$, $m\widehat{DR} = 40^\circ$ and $m\widehat{GOR} = 210^\circ$. Find $m\widehat{GD}$, $m\widehat{OR}$, and $m\angle RGO$.



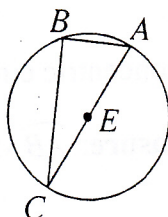
- c. $\overline{AC}$ is a diameter of $\odot E$ and $\overline{BC} \parallel \overline{ED}$. Find the measure of $\widehat{CD}$.



- d. $\overline{HJ}$ and $\overline{IK}$ intersect at G . If $HG = 9$, $GJ = 8$, and $GK = 6$, find IG .



- e. $\overline{AC}$ is a diameter of $\odot E$, the area of the circle is $289\pi \text{ un}^2$, and $AB = 16$ units. Find BC and $m\widehat{BC}$.



- f. $\triangle ABC$ is inscribed in the circle at right. Using the measurements provided in the diagram, find $m\widehat{AB}$.

