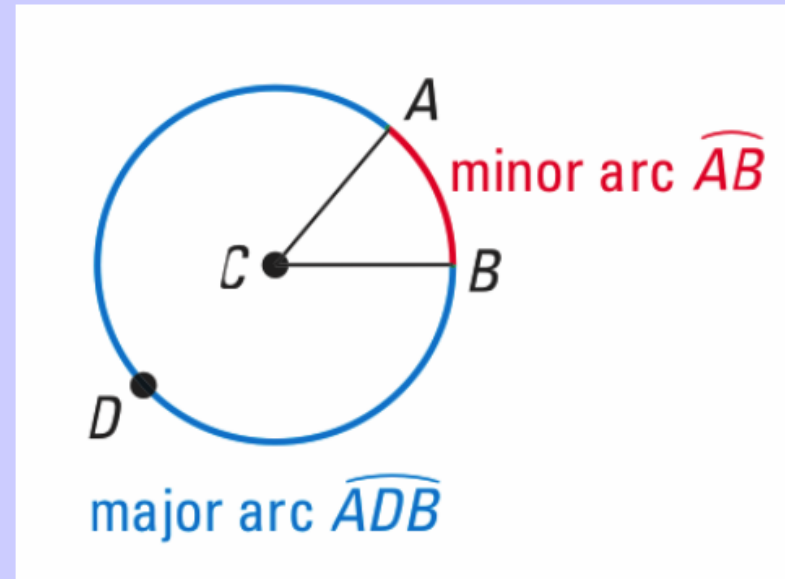


10.2 Find Arc Measures

central angle-An Angle whose vertex is the center of the circle

minor arc-Arc with measure less than 180

major arc-Arc with measure greater than 180



Naming

Minor arcs:

*named by their endpoints

*they will have two letters in their name

Major arcs & Semicircles:

*named by their endpoints and a point on the arc

*they will have three letters in their name

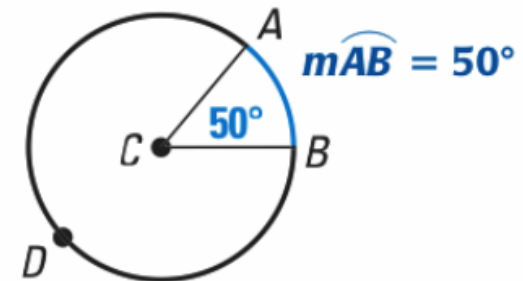
KEY CONCEPT

Measuring Arcs

The **measure of a minor arc** is the measure of its central angle. The expression $m\widehat{AB}$ is read as “the measure of arc AB .”

The measure of the entire circle is 360° . The **measure of a major arc** is the difference between 360° and the measure of the related minor arc. The measure of a semicircle is 180° .

For Your Notebook



$$m\widehat{ADB} = 360^\circ - 50^\circ = 310^\circ$$

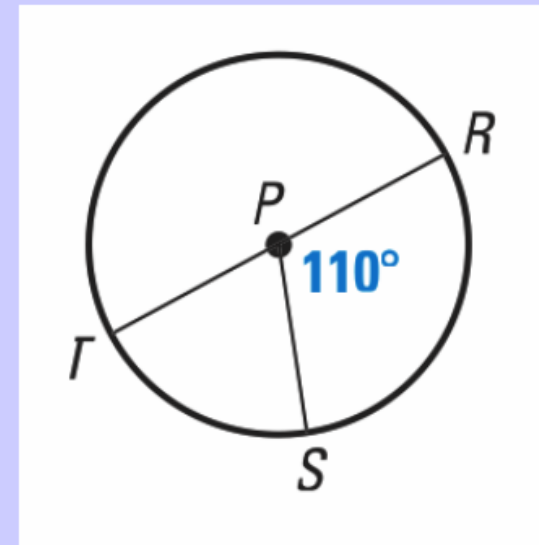
EXAMPLE 1 Find measures of arcs

Find the measure of each arc of $\odot P$, where \overline{RT} is a diameter.

a. \widehat{RS}

b. \widehat{RTS}

c. \widehat{RST}



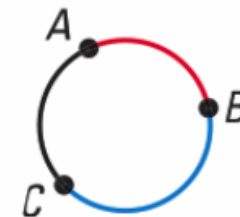
ADJACENT ARCS Two arcs of the same circle are *adjacent* if they have a common endpoint. You can add the measures of two adjacent arcs.

POSTULATE

For Your Notebook

POSTULATE 23 Arc Addition Postulate

The measure of an arc formed by two adjacent arcs is the sum of the measures of the two arcs.



$$m\widehat{ABC} = m\widehat{AB} + m\widehat{BC}$$

EXAMPLE 2 Find measures of arcs

SURVEY A recent survey asked teenagers if they would rather meet a famous musician, athlete, actor, inventor, or other person. The results are shown in the circle graph. Find the indicated arc measures.

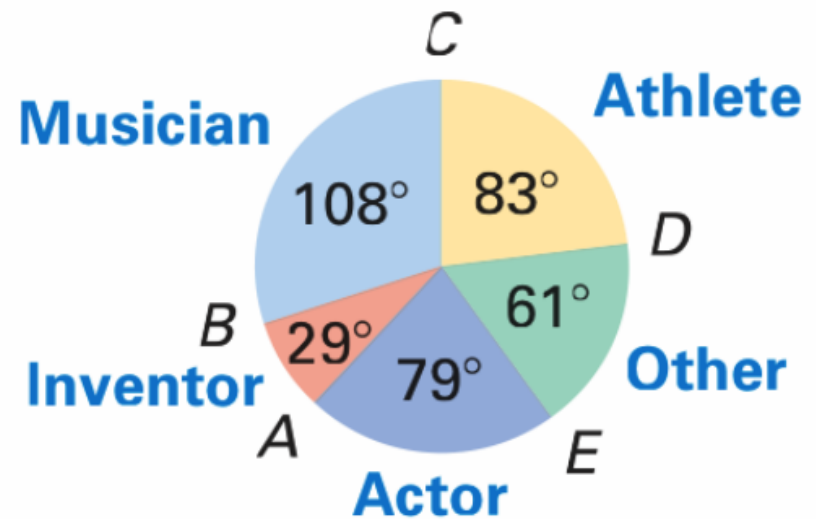
a. $m\widehat{AC}$

b. $m\widehat{ACD}$

c. $m\widehat{ADC}$

d. $m\widehat{EBD}$

Whom Would You Rather Meet?

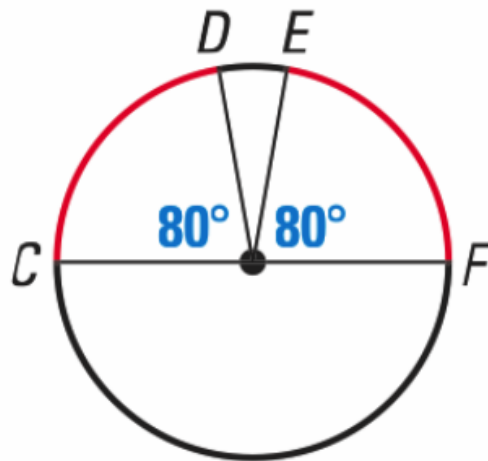


CONGRUENT CIRCLES AND ARCS Two circles are **congruent circles** if they have the same radius. Two arcs are **congruent arcs** if they have the same measure and they are arcs of the same circle or of congruent circles. If $\odot C$ is congruent to $\odot D$, then you can write $\odot C \cong \odot D$.

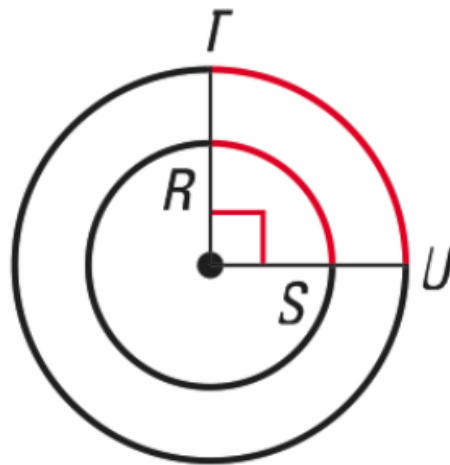
EXAMPLE 3 Identify congruent arcs

Tell whether the red arcs are congruent. Explain why or why not.

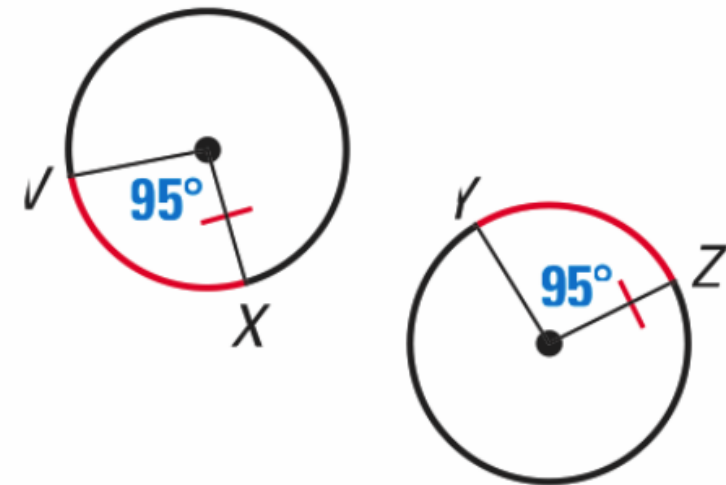
a.



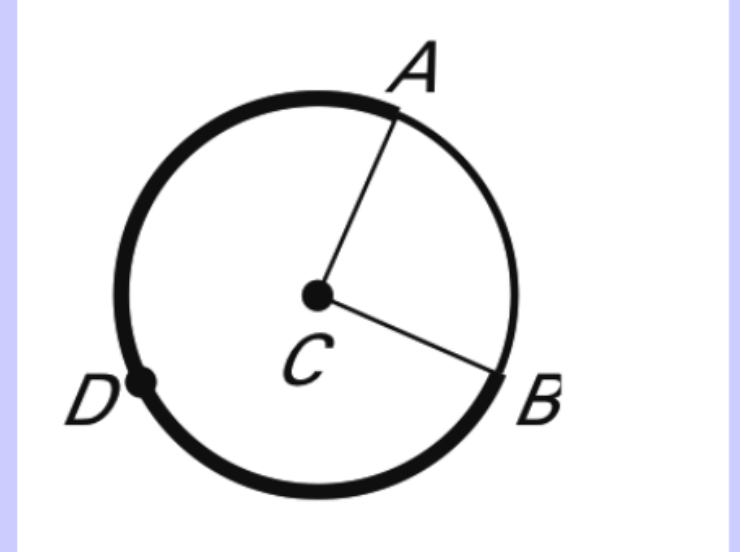
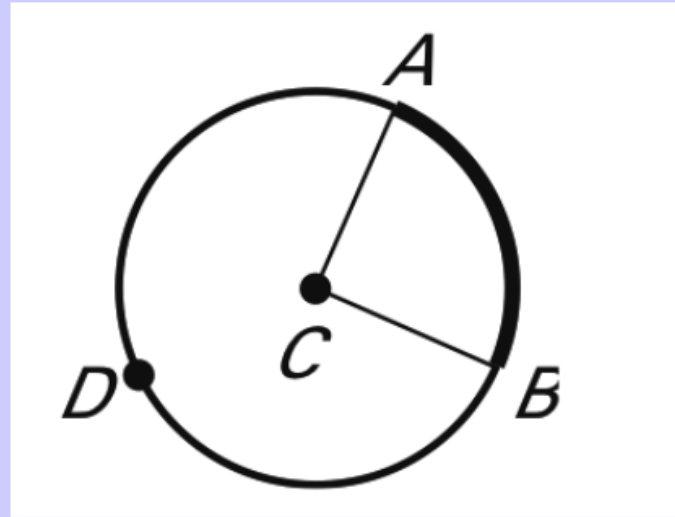
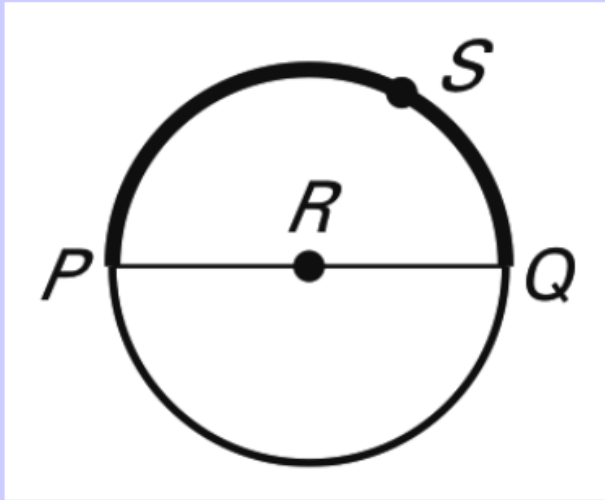
b.



c.



Name the arc shown in bold.



\overline{AB} and \overline{FE} are diameters of $\odot C$. Determine whether the given arc is a *minor arc*, *major arc*, or *semicircle*.

4. \widehat{AE}

6. \widehat{FDE}

8. \widehat{FA}

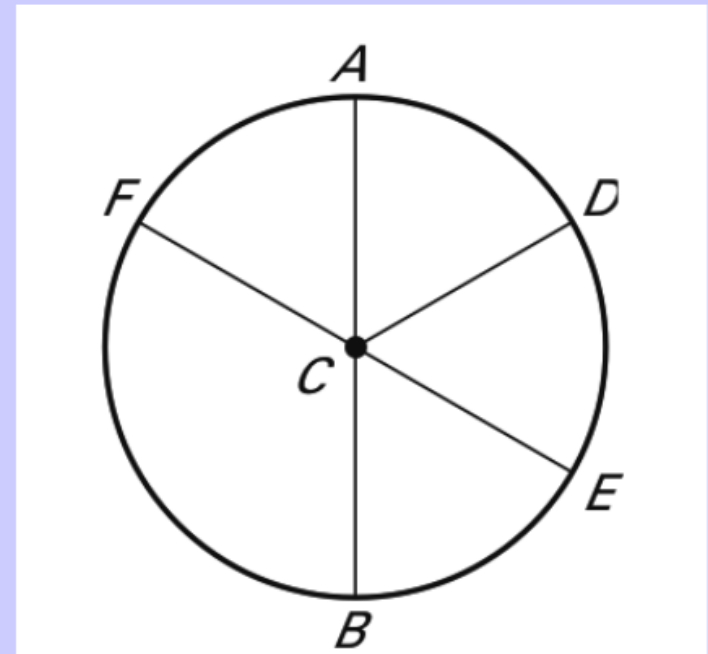
10. \widehat{BDA}

5. \widehat{AEB}

7. \widehat{DFB}

9. \widehat{BE}

11. \widehat{FB}



In $\odot O$, \overline{MQ} and \overline{NR} are diameters. Find the indicated measure.

12. $m\widehat{MN}$

14. $m\widehat{NQR}$

16. $m\widehat{QR}$

18. $m\widehat{QMR}$

20. $m\widehat{PRN}$

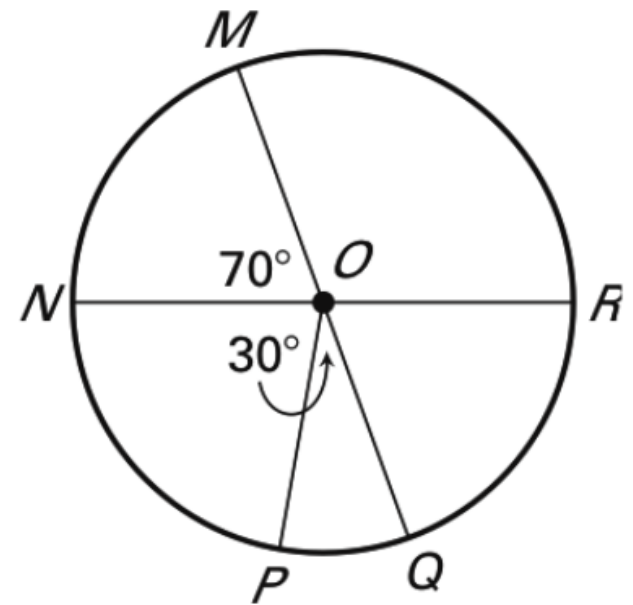
13. $m\widehat{NQ}$

15. $m\widehat{MRP}$

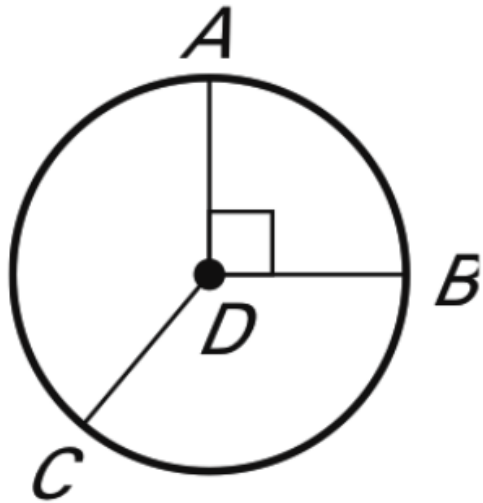
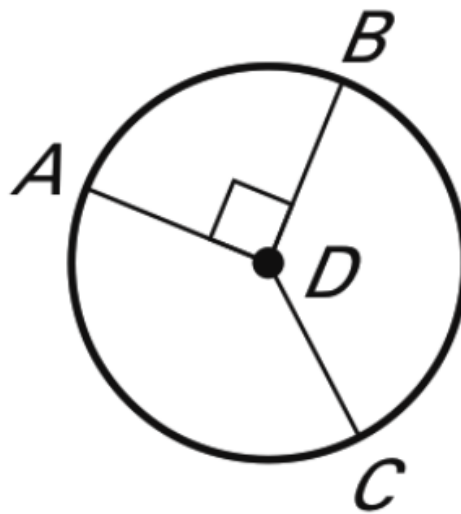
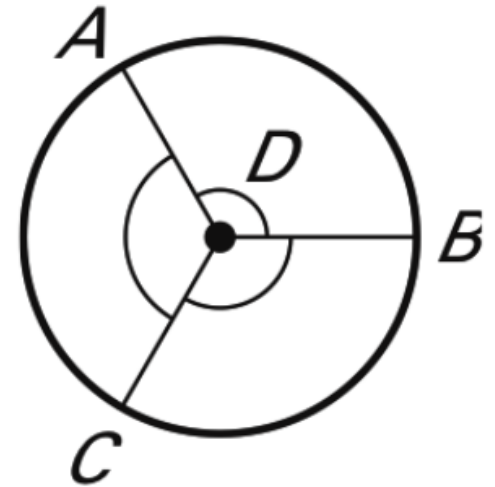
17. $m\widehat{MR}$

19. $m\widehat{PQ}$

21. $m\widehat{MQN}$



Find the indicated arc measure.

 $m\widehat{AB}$

 $m\widehat{ACB}$

 $m\widehat{CA}$


**Assignment: Pg. 661,
3-14, 22, 29-34**