

10.3 Start Thinking

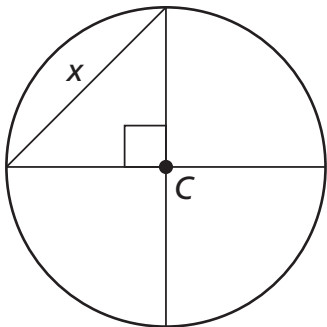
Determine if the statement is always true, sometimes true, or never true. Explain your reasoning.

1. A chord is a diameter.
2. A diameter is a chord.
3. A chord and a radius have the same measure.
4. A chord is longer than a diameter.

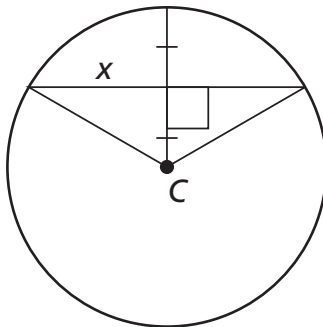
10.3 Warm Up

Find the value of x given that C is the center of the circle and that the circle has a diameter of 12.

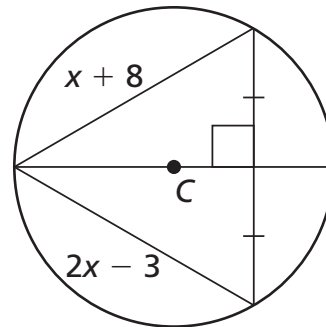
1.



2.



3.

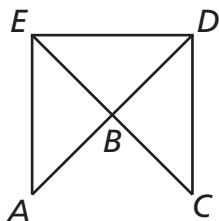


10.3 Cumulative Review Warm Up

Write a proof.

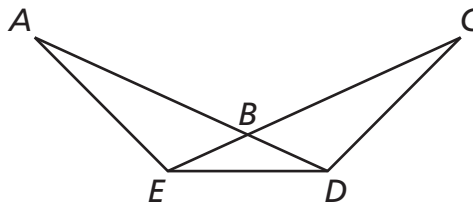
1. **Given:** B is the midpoint of \overline{EC} and \overline{DA} .

Prove: $\triangle AEB \cong \triangle DCB$



2. **Given:** $\angle BDE \cong \angle BED$
 $\angle A \cong \angle C$

Prove: $\triangle AED \cong \triangle CDE$

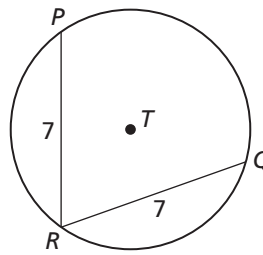


10.3

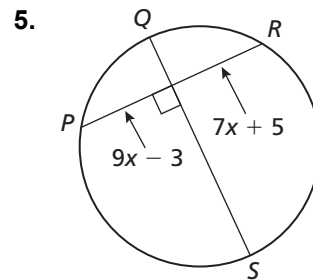
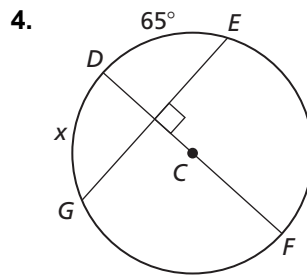
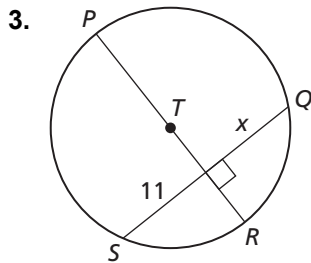
Practice A

In Exercises 1 and 2, use the diagram of $\odot T$.

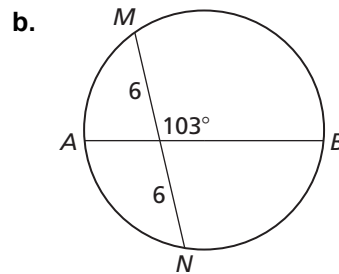
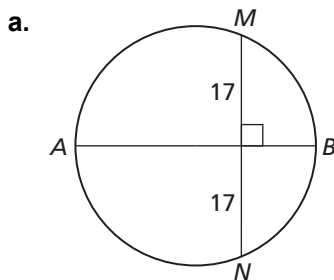
1. If $m\widehat{PQ} = 130^\circ$, find $m\widehat{RQ}$.
2. If $m\widehat{PR} = 100^\circ$, find $m\widehat{PQ}$.



In Exercises 3–5, find the value of x .

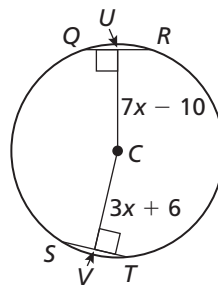


6. Determine whether \overline{AB} is a diameter of each circle. Explain your reasoning.



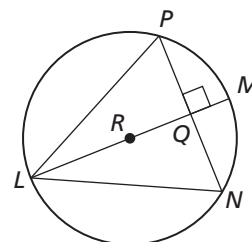
In Exercises 7–9, use the diagram to find the given length.

7. CU
8. UR
9. the radius of $\odot C$



10. In the diagram of $\odot U$, which congruence relation is *not* necessarily true?

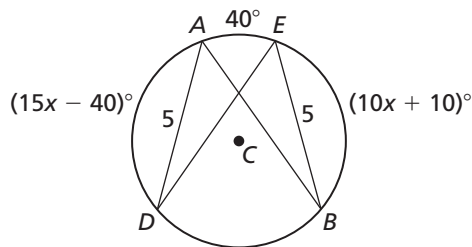
- | | |
|--|--|
| A. $\overline{PQ} \cong \overline{QN}$ | B. $\overline{NL} \cong \overline{LP}$ |
| C. $\widehat{MN} \cong \widehat{MP}$ | D. $\widehat{PN} \cong \widehat{PL}$ |



10.3

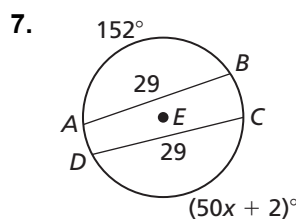
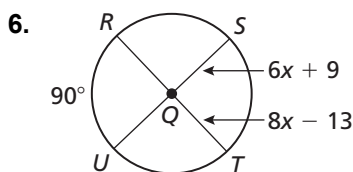
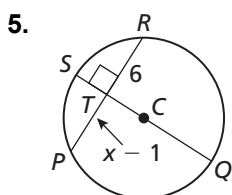
Practice B

In Exercises 1–4, use the diagram of $\odot C$.

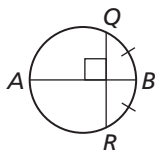


1. Explain why $\widehat{AD} \cong \widehat{BE}$.
2. Find the value of x .
3. Find $m\widehat{AD}$ and $m\widehat{BE}$.
4. Find $m\widehat{BD}$.

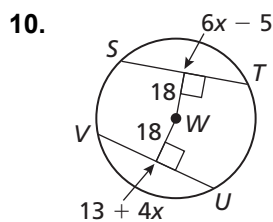
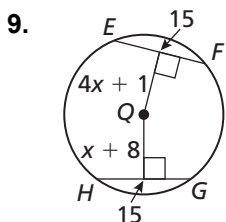
In Exercises 5–7, find the value of x .



8. Determine whether \overline{AB} is a diameter of the circle. Explain your reasoning.



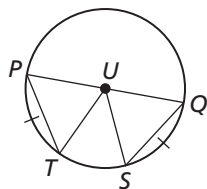
In Exercises 9 and 10, find the radius of $\odot C$.



11. Copy and complete the proof.

Given: \overline{PQ} is a diameter of $\odot U$.
 $\widehat{PT} \cong \widehat{QS}$

Prove: $\triangle PUT \cong \triangle QUS$



STATEMENTS

REASONS

1. \overline{PQ} is a diameter of $\odot U$.
2. _____
3. $\overline{UP} \cong \overline{UQ} \cong \overline{UT} \cong \overline{US}$
4. $\triangle PUT \cong \triangle QUS$

1. _____
2. Congruent Corresponding Chords Theorem (Thm. 10.6)
3. _____
4. _____

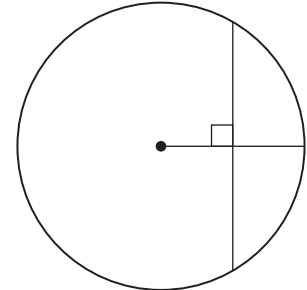
12. Briefly explain what other congruence theorem you could use to prove that $\triangle PUT \cong \triangle QUS$ in Exercise 11.

10.3 Enrichment and Extension

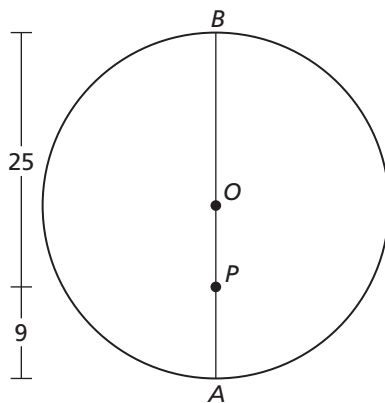
Using Chords of Circles

In Exercises 1–6, give the degree measure of the arc intercepted by the chord described. Round to the nearest tenth, if necessary.

1. a chord congruent to the radius
2. a chord one-third the length of the radius
3. a chord congruent to the segment from the center to the chord
4. a chord twice the length of the segment from the center to the chord
5. a chord one-fourth the length of the circumference
6. a chord with length $\frac{1}{\pi}$ times the length of the circumference



7. \overline{PQ} is a chord of a circle with center O . \overline{OA} intersects \overline{PQ} at R . If $PR = 1.5$ and the measure of $\widehat{PQ} = 80^\circ$, is PQ necessarily 3? Is the measure of \widehat{PA} 40° ? If not, sketch a counterexample.
8. \overline{AB} is the diameter of circle O , as shown. P is a point such that $PA = 9$ and $PB = 25$. Find the length of the shortest chord through point P .



10.3 Puzzle Time

Why Did The College Give A Baby Ghost A Scholarship?

A	B	C	D	E	F
G	H	I	J		

Complete each exercise. Find the answer in the answer column. Write the word under the answer in the box containing the exercise letter.

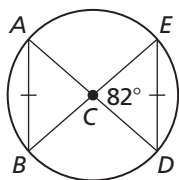
equidistant SCHOOL
intersects FOR
98° ALL
chord BECAUSE
12 ARE
6 A
straight EVERYONE
perpendicular THE
circles GHOSTS
similar IS

Complete the sentence.

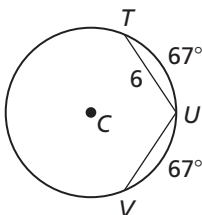
- A. A(n) _____ is a segment with endpoints on a circle.
- B. In the same circle, or in congruent circles, two minor arcs are congruent if and only if their _____ chords are congruent.
- C. If a diameter of a circle is perpendicular to a chord, then the diameter _____ the chord and its arc.
- D. If one chord of a circle is a(n) _____ bisector of another chord, then the first chord is a diameter.
- E. In the same circle, or in congruent circles, two chords are congruent if and only if they are _____ from the center.
- F. A diameter divides a circle into two congruent _____.

Find the measure of the given arc or chord in $\odot C$.

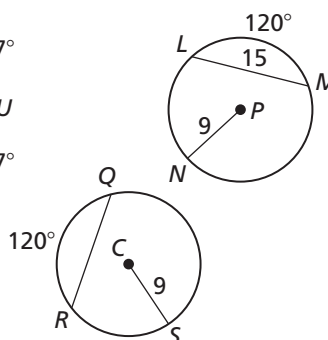
G. \widehat{AB}



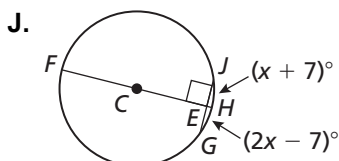
H. \overline{UV}



I. \overline{QR}



Find the value of x.



semicircles TO
at EVEN
14 SPIRIT
7.5 WELCOME
corresponding IT
secant COLLEGE
bisects WANTED
7 GROW UP
82° HAVE
15 LITTLE