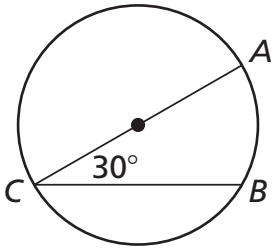
10.5 Start Thinking

Consider two unique chords inside the same circle. Discuss some of the ways the two chords can be drawn within the circle. Include a diagram for each of your possibilities. Use your diagrams to make conclusions about the arcs that are formed by the chords.

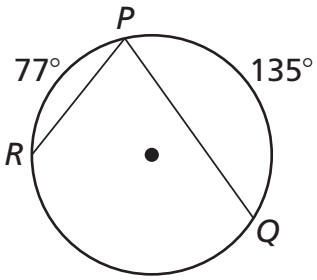
10.5 Warm Up

Find the indicated measure.

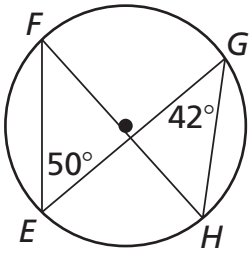
1. $m\overset{\frown}{BC}$



2. $m\angle P$



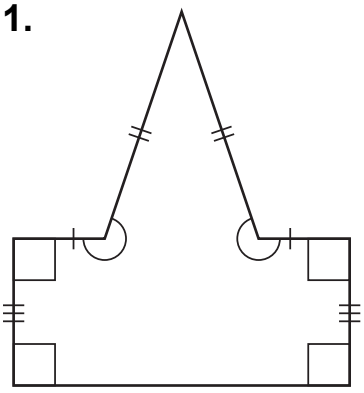
3. $m\overset{\frown}{EH}$



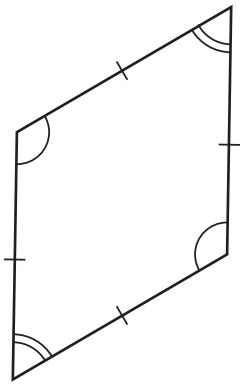
10.5 Cumulative Review Warm Up

Determine the number of lines of symmetry for the figure.

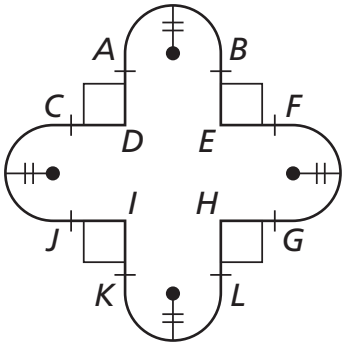
1.



2.



3.

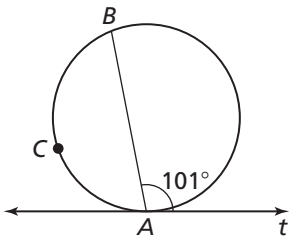


Name_____ Date _____

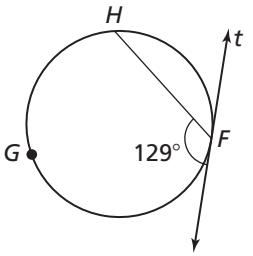
10.5 Practice A

In Exercises 1–3, line *t* is tangent to the circle. Find the indicated measure.

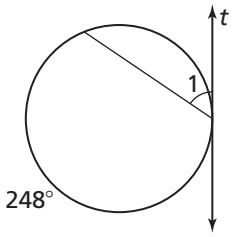
1. $m\overset{\frown}{AB}$



2. $m\overset{\frown}{FH}$

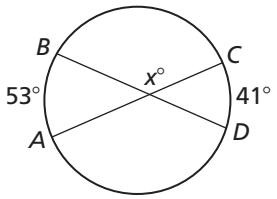


3. $m\angle 1$

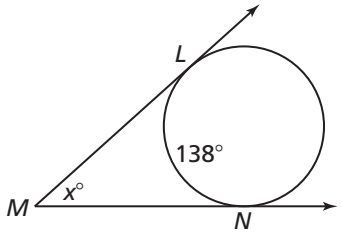


In Exercises 4–7, find the value of *x*.

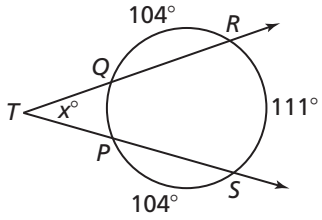
4.



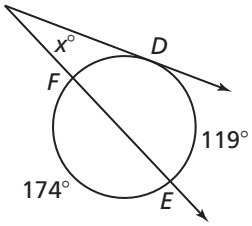
5.



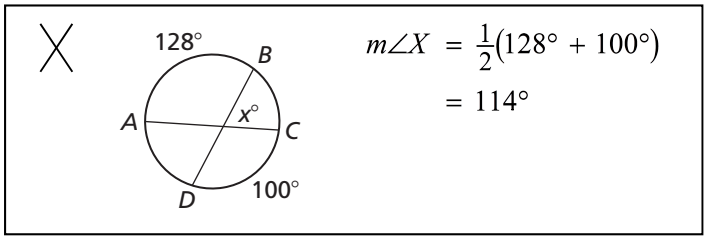
6.



7.

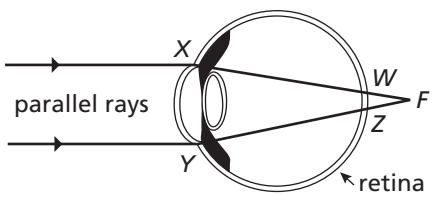


8. Describe and correct the error in finding the angle measure.



9. Parallel light rays enter the eye and are bent by the lens to converge at a single point on the retina called the *focal point*. When a person is farsighted, the rays converge behind the retina, as shown in the diagram. When $m\overset{\frown}{XY} = 52°$ and $m\overset{\frown}{WZ} = 10°$, find the measure of angle *F*.

Focal Point of a Farsighted Eye

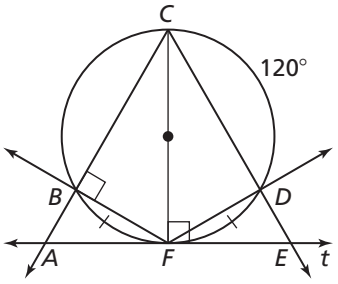


Name _____ Date _____

10.5 Practice B

In Exercises 1–6, use the diagram to find the measure of the angle.

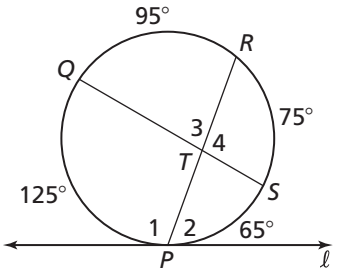
1. $m\angle CAF$
2. $m\angle AFB$
3. $m\angle CEF$
4. $m\angle CFB$
5. $m\angle DCF$
6. $m\angle BCD$



7. In the diagram, ℓ is tangent to the circle at P. Which relationship is *not* true? Explain.

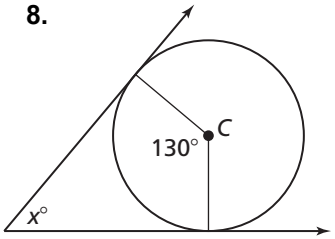
   A. $m\angle 1 = 110°$ **B.** $m\angle 2 = 70°$

   C. $m\angle 3 = 80°$ **D.** $m\angle 4 = 90°$

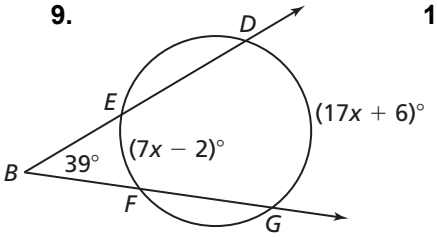


In Exercises 8–10, find the value of *x*.

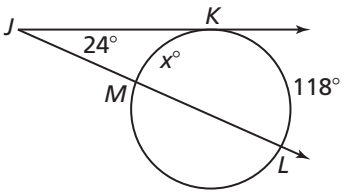
8.



9.



10.

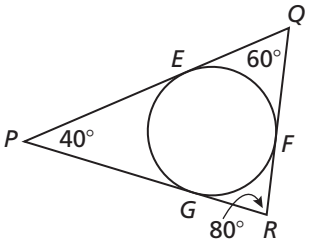


11. In the diagram, the circle is inscribed in $\triangle PQR$.

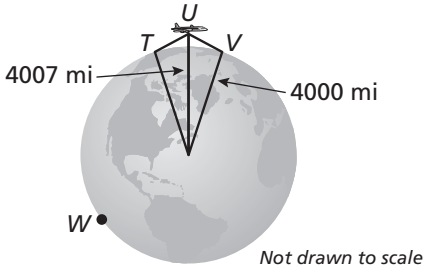
   a. Find $m\overset{\frown}{EF}$.

   b. Find $m\overset{\frown}{FG}$.

   c. Find $m\overset{\frown}{GE}$.



12. A plane at point U is flying at an altitude of 7 miles above Earth. What is the measure of arc TV that represents the part of Earth you can see from the airplane? The radius of Earth is about 4000 miles.

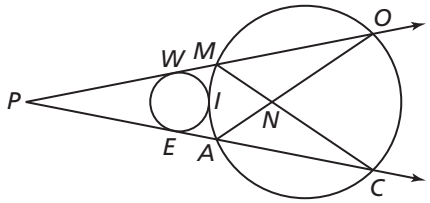


Name_____ Date _____

10.5 Enrichment and Extension

Angle Relationships in Circles

1. In the figure, $m\angle P = 16°$ and $m\overset{\frown}{CO} = 96°$. Find each indicated measurement.



a. $m\overset{\frown}{WE}$

b. $m\overset{\frown}{WIE}$

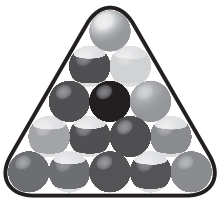
c. $m\angle OAC$

d. $m\angle MOA$

e. $m\overset{\frown}{AM}$

f. $m\angle CNO$

A regulation pocket billiard ball is a perfect sphere with a diameter 2.25 inches. At the start of a game of pocket billiards, the 15 balls must be arranged in five rows in a triangular rack, as shown.



2. The figure depicts just two rows of billiards in a rack. Use the figure to find each of the following.

a. $m\overset{\frown}{KL}$

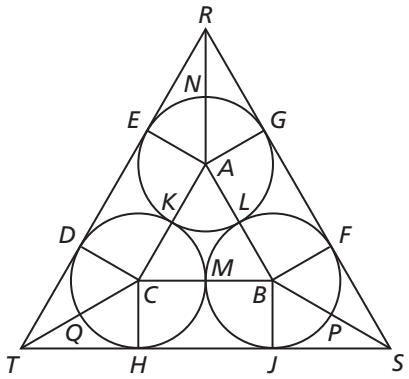
b. $m\angle ERG$

c. ED

d. AE

e. ER

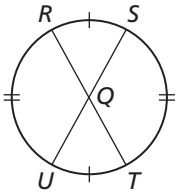
f. TR



3. Write a paragraph proof.

Given: $\overset{\frown}{RS} \cong \overset{\frown}{TU}$, $\overset{\frown}{RU} \cong \overset{\frown}{ST}$

Prove: Q is the center of the circle.



Name _____ Date _____

10.5 Puzzle Time

What Do You Call More Than One L?

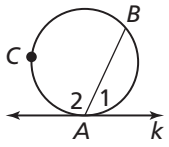
Circle the letter of each correct answer in the boxes below. The circled letters will spell out the answer to the riddle.

Complete the sentence.

1. If a tangent and a chord intersect at a point on a circle, then the measure of each angle formed is _____ the measure of its intercepted arc.
2. If two chords intersect _____ a circle, then the measure of each angle is one half the *sum* of the measures of the arcs intercepted by the angle and its vertical angle.
3. A circumscribed angle is an angle whose sides are _____ to a circle.
4. The measure of a circumscribed angle is equal to 180° minus the measure of the _____ angle that intercepts the same arc.

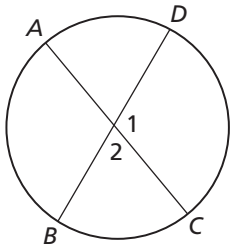
Line *k* is tangent to the circle. Find the indicated measure.

5. $m\overset{\frown}{AB} = 150°$; Find $m\angle 1$.
6. $m\angle 2 = 112°$; Find $m\angle 1$.
7. $m\angle 2 = 142°$; Find $m\overset{\frown}{BCA}$.

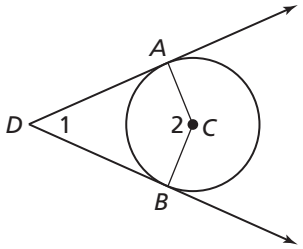


Find the indicated measure.

8. $m\overset{\frown}{AB} = 50°$, $m\overset{\frown}{DC} = 170°$; Find $m\angle 1$.



9. $m\angle 2 = 132°$; Find $m\angle 1$.



A	**E**	**P**	**Y**	**A**	**R**	**A**	**E**	**S**
inside	96°	$\frac{1}{2}$	twice	68°	110°	284°	obtuse	300°
M	**L**	**F**	**I**	**L**	**E**	**N**	**L**	**R**
115°	tangent	55°	secant	48°	central	outside	75°	66°