Identify the radii, diameters, and chords shown in each circle.
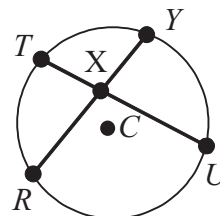
1. Circle O
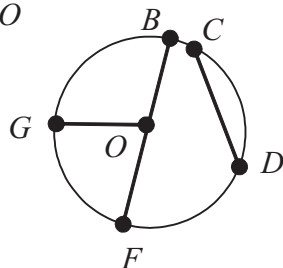
Radii: $\overline{OG}, \overline{OB}, \overline{OF}$

Diameter: $\overline{BF}$

Chords: $\overline{CD}, \overline{BF}$

2. Circle C

Radii: none

Diameters: none

Chords: $\overline{RY}$ and $\overline{TU}$

The length of a radius, r, or diameter, d, is given. Find the missing measure.

3. $d = 61$ m

    $r = ?$

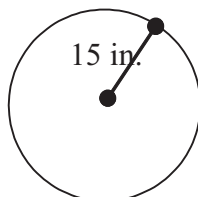 $r = 30.5$ m

4. $r = \dfrac{1}{4}$ ft
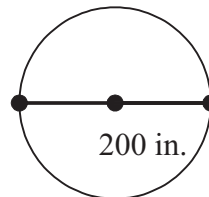
    $d = ?$

    $d = \dfrac{1}{2}$ ft

In each circle, either a radius or diameter is shown. Find the circumference. Round to the nearest inch.

5.

15 in.

About 94 inches

6.

200 in.

About 628 inches

34

Tell whether each statement is always true, sometimes true, or never true.

7. A chord is a radius.

     Never true

8. Diameters in the same circle are congruent.

     Always true

9. Chords pass through the center of a circle.

     Sometimes true

10. A merry-go-round is 630 inches in diameter. Use $\frac{22}{7}$ for π to approximate the circumference of the merry-go-round.

     About 1,980 inches.

11. The diameter of a large pizza is 16 inches. To the nearest inch, what is the circumference of the pizza?

     About 50 inches

**12.** The circumference of a bowl is about 66 centimeters. To the nearest centimeter, what is the diameter of the bowl?

     About 21 centimeters

Module 9   **Characteristics of Geometric Shapes**
Lesson 3   **Circles**

Use the circle below for problems 13–16.

13. Draw and label the center point P.

14. Draw and label diameters $\overline{JT}$ and $\overline{AM}$.

15. Draw and label chord $\overline{HK}$ so that it is not a diameter.

16. Name all the radii shown in circle P.
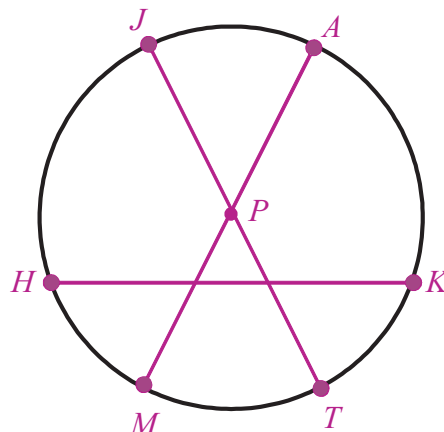
$$\overline{PJ}, \overline{PA}, \overline{PT}, \text{and } \overline{PM}$$

Journal

1. Tell how chords and diameters are alike. Tell how they are different.

2. Describe the relationship between a radius and diameter of the same circle. How can you find one if you are given the other?

3. Explain what *pi* represents in a circle. Give two approximations for *pi*. Then, explain which approximation would be most appropriate for estimating the circumference of a circle with a diameter of 10 feet and which would be most appropriate for estimating a circle with a diameter of 14 feet.
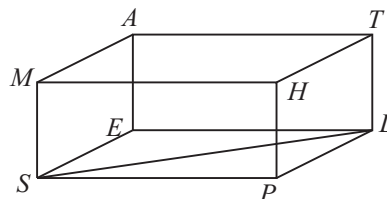
Cumulative Review

Use the diagram on the right for Problems 1 – 6.

1. What point is coplanar with points M, A, and E?

   Point S

2. Describe $\overline{MA}$ and $\overline{HT}$ as parallel, perpendicular, or neither.

   Parallel

36

3. Describe $\overline{EL}$ and $\overline{HP}$ as parallel, perpendicular, or neither.

Neither

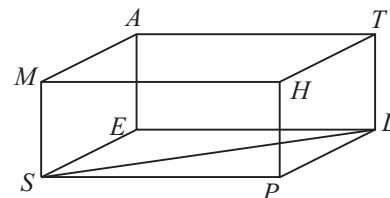**4.** Describe $\overline{HP}$ and $\overline{PL}$ as parallel, perpendicular, or neither.

Perpendicular

5. Classify $\angle PSL$.

Acute

6. The opposite sides of parallelogram *PSEL* are congruent. Tell why $\triangle PLS \cong \triangle ESL$.
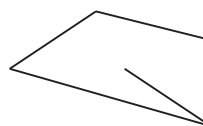
SSS Congruence

Tell if each figure is a polygon. If so, classify it by its number of sides and tell if it is concave or convex.
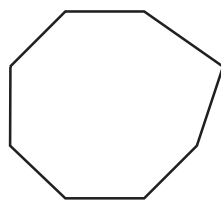
7.

Concave pentagon

8.

Not a polygon

9.

Convex octagon

10.

Not a polygon

Possible Journal Answers

1. Chords and diameters are both line segments, and they both have their endpoints on a circle. A chord may or may not pass through the center of the circle. A diameter always passes through the center of the circle.

2. In the same circle, the length of a radius is half the length of a diameter. If given the length of the radius, double it to find the length of the diameter. Because a diameter is twice as long as a radius, if given the length of the diameter, divide it by two to find the length of the radius.

3. In a circle, *pi* represents the ratio of the circumference to its diameter. The ratio is the same for any circle. *Pi* is an irrational number but can be approximated by 3.14 or $\dfrac{22}{7}$. The circumference of a circle can be found by multiplying *pi* times the diameter of the circle: $C = \pi d$. For a circle with a circumference of 10 feet, the decimal approximation would be most appropriate because the circumference can be found by simply moving the decimal point one place to the right: $C \approx 3.14(10) = 31.4$ feet. For a circle with a circumference of 14 feet, the fraction approximation would be most appropriate because the numerator and denominator have a common factor: $C \approx \dfrac{22}{\cancel{7}_{1}} \times \dfrac{\cancel{14}^{2}}{1} = 44 \text{ ft}$.