Chapter 10.1 – Circles VOCABULARY

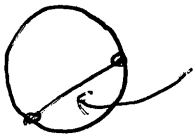
Circle : set of all points **in a plane** equidistant **from a given point, the center:** _____ center

radius

Radius

dius (plural is radii **). Radius is a** segment **with endpoints at the** center **and on the** circle

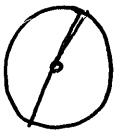
chord: a segment **with** endpoints **on the** circle



Does not have to go through the center of circle

$\boxed{d=2r}$

diameter: a chord **that passes through the** center **of the circle**



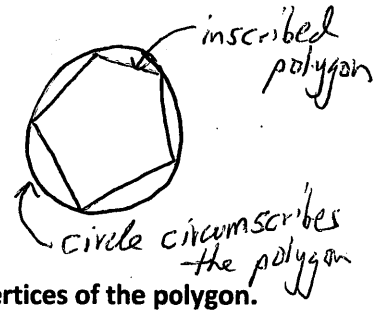
$C=2\pi r$

circumference of a circle is the distance **around the** circle.

3.14159

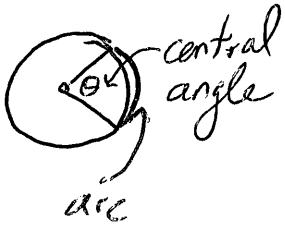
pi π is an irrational **number. Pi is the** circumference **of the** circle **divided by the** diameter

inscribed : A Polygon is inscribed in a circle if all of its vertices **lie on the circle**



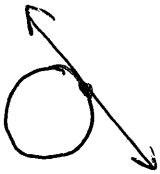
circumscribed : A circle is circumscribed about a polygon **if all of it contains all the vertices of the polygon.**

central angle (of a circle): is an angle with the vertex **in the** center **of the circle:**



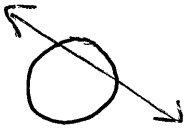
arc: an unbroken part of the circle

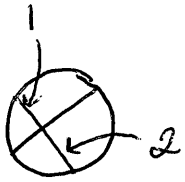
tangent : a line intersecting circle **at only** one ~~one~~ **point.**



chord

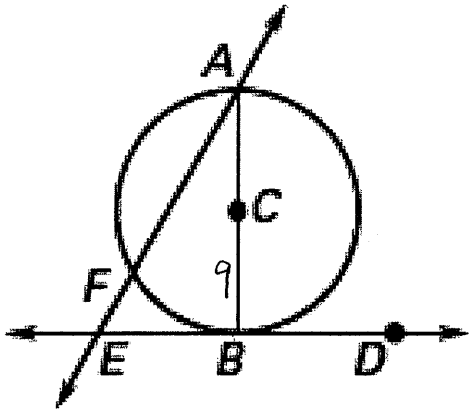
secant : a line that intersects a circle **at** 2 **points**





chord

ord segment: when 2 chords intersect inside a circle **, each chord is divided into** 2 **chord segments**



Identify the following:

Circle name C

diameter AB

radius AC or BC

chord AF or AB

secant $\overleftrightarrow{AF}$

tangent $\overleftrightarrow{BD}$

arc $\overset{\frown}{AF}$, $\overset{\frown}{FB}$

Examples:

If CB = 9 what is the diameter of Circle C? 18 **What is the circumference of Circle C?** $C=18\pi$

$C=2\pi(9)$

Tell whether the line, ray, or segment is best described as a *radius, chord, diameter, secant,* or *tangent* of ⊙P.

$\longleftrightarrow$ line

segment

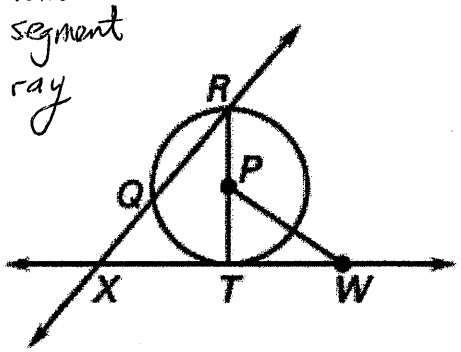
$\longrightarrow$ ray

a. $\overline{RT}$ diameter

b. $\overline{WT}$ tangent

c. $\overline{PT}$ radius

d. $\overleftrightarrow{RQ}$ secant

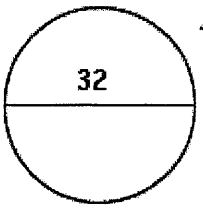


Find the radius or diameter. Then find the circumference: $C=2\pi r$

C = $2\pi r$ or $d\pi$. Remember: d = 2r and r = $\frac{1}{2}$d .

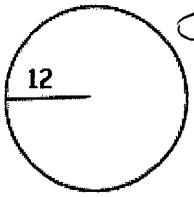
1. r = 16 C = 32π

$C=2\pi(16)$
$=32\pi$



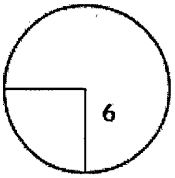
2. d = 24 C = 24π

$C=2\pi(12)$
$C=24\pi$



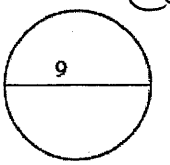
3. d = 12 C = 12π

$C=2\pi(6)$
$C=12\pi$



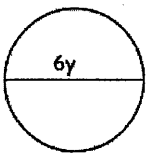
4. r = 4.5 C = 9π

$C=2\pi(4.5)$



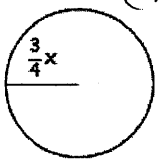
5. r = $3y$ C = $6\pi y$

$C=2\pi(3y)$



6. d = $\frac{3}{2}\cancel{x}$ C = $\frac{3\pi}{2}x$

$2\left(\frac{3}{4}x\right)=\frac{6}{4}\cancel{x}=\frac{3}{2}\cancel{x}$



$C=2\pi\left(\frac{3}{4}x\right)$

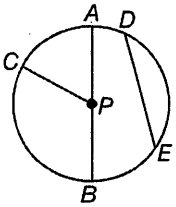
$C=\frac{6\pi}{4}x=\frac{3\pi}{2}x$

NAME _____ DATE _____ PERIOD _____

10-1 Skills Practice

Circles and Circumference

For Exercises 1–7, refer to ⊙*P*.



1. Name the circle. P

2. Name a radius. AP or PB

3. Name a chord. DE

4. Name a diameter. AB

5. Name a radius not drawn as part of a diameter. CP

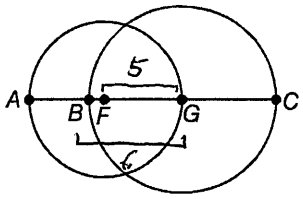
6. Suppose the diameter of the circle is 16 centimeters. Find the radius.

$r = 8$

7. If $PC = 11$ inches, find AB.

22

The diameters of ⊙*F* and ⊙*G* are 5 and 6 units, respectively. Find each measure.



8. BF 1

9. AB 4

Find the diameter and radius of a circle with the given circumference. Round to the nearest hundredth.

10. $C = 36$ m

$C = 2\pi r$

$36 = 2\pi r$

$r = \frac{36}{2\pi} = 18\pi$

$d = 36\pi$

11. $C = 17.2$ ft

$17.2 = 2\pi r$ $17.2 = \pi d$

12. $C = 81.3$ cm

$C = 2\pi r$

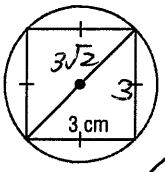
$81.3 = 2\pi r$

13. $C = 5$ yd

$5 = 2\pi r$ $5 = \pi d$

Find the exact circumference of each circle.

14.

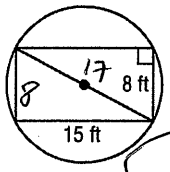


$C = \pi d$

$C = \pi(3\sqrt{2})$

$C = 3\pi\sqrt{2}$

15.



$C = \pi d$

$C = \pi(17)$

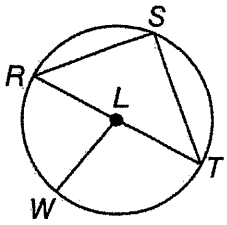
$C = 17\pi$

Lesson 10-1

NAME _____ DATE _____ PERIOD _____

10-1 Practice
Circles and Circumference

For Exercises 1–7, refer to ⊙*L*.



1. Name the circle. L

2. Name a radius. RL or LT

3. Name a chord. SR or TS

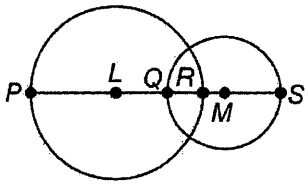
4. Name a diameter. RT

5. Name a radius not drawn as part of a diameter. LW

6. Suppose the radius of the circle is 3.5 yards. Find the diameter. d=7yds.

7. If $RT = 19$ meters, find LW. $\frac{19}{2} = 9.5$

The diameters of ⊙*L* and ⊙*M* are 20 and 13 units, respectively, and *QR* = 4. Find each measure.



8. LQ

9. RM

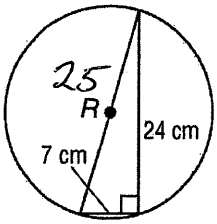
Find the diameter and radius of a circle with the given circumference. Round to the nearest hundredth.

10. $C = 21.2$ ft

11. $C = 5.9$ m

Find the exact circumference of each circle using the given inscribed or circumscribed polygon.

12.

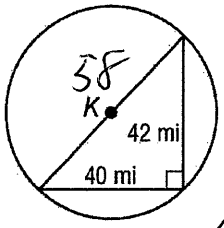


$C = \pi d$

$C = \pi 25$

$C = 25\pi$

13.



$C = \pi d$

$C = \pi(58)$

$C = 58\pi$

14. SUNDIALS Herman purchased a sundial to use as the centerpiece for a garden. The diameter of the sundial is 9.5 inches.

a. Find the radius of the sundial. r = 4.75 in.

b. Find the circumference of the sundial to the nearest hundredth.

$C = \pi d$

$C = \pi(9.5)$

$C = 9.5\pi$ in.