12. $\overline{PQ}$, $\overline{QR}$, $\overline{RS}$, and $\overline{SP}$ are tangent to $\odot X$. Find RS.

1

8 in. Q
P
1 in.
$X\bullet$
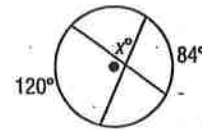7 in.
6 in.
S R
7   6
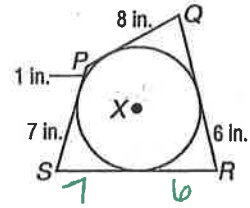
12. _13 in_

13. Find the circumference of a circle that has a radius of 3.

$C = 2\pi r$

13. _6π or 18.85_

14. Find x.

$\dfrac{120+84}{2} = 102$ $\begin{array}{r}180\\-102\\\hline 78\end{array}$

$120°$ $x°$ $84°$

14. _78°_

15. Find y.

$\dfrac{y-33}{2} = 12$

$y - 33 = 24$

$y = 57$

$33°$ $y°$
$12°$
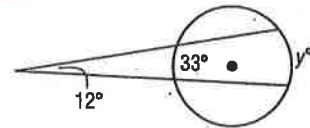
15. _57°_

16. Find z.

$3z = 6(4)$

$3z = 24$ $z = 8$
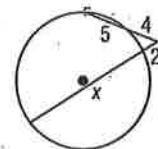
3   6
4   z
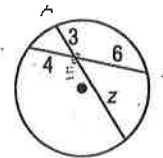
16. _8_

17. Find x.

$4(5+4) = 2(x+2)$ $2x = 32$

$36 = 2x + 4$ $x = 16$

5   4
2
x

17. _16_

18. Find the center of the circle whose equation is ($x^2 + 22x + y^2 - 14y = -49$

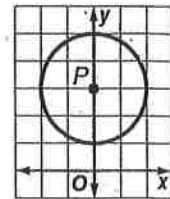$(x^2 + 22x + 121) + (y^2 - 14y + 49) = -49 + 121 + 49$ $(x+11)^2 + (y-7)^2 = 121$

18. _(-11, 7)_

19. Find the equation of a circle whose center is at $(2, 3)$ and radius is 6.

$(x-2)^2 + (y-3)^2 = 36$

19. _____

20. Find the equation of $\odot P$.

$x^2 + (y-3)^2 = 4$

P

20. _____

Bonus A chord of the circle whose equation is $x^2 + y^2 = 57$ is tangent to the circle whose equation is $x^2 + y^2 = 32$ at the point $(4, -4)$. Find the length of the chord.

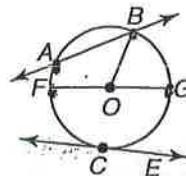$x^2 + \sqrt{32}^2 = \sqrt{57}^2$

B: _10_

$\sqrt{57}$
$\sqrt{32}$ $x = 5$
$x = 5$

$2x = 10$

For Questions 1–3, use ⊙O.

1. Name a diameter.

1. $\overline{FG}$

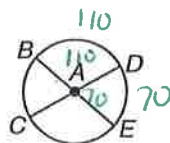2. Name a chord.

2. $\overline{AB}$

3. Name a secant.

3. $\overleftrightarrow{AB}$

4. If the diameter of a circle is 10 inches, find the circumference to the nearest hundredth.

4. 31.42 in

5. If $m\angle BAD = 110$ in ⊙A, find $m\widehat{DE}$.

(handwritten on figure: 110, 110°, 70)

5. 70

6. Points X and Y lie on ⊙P so that $PX = 5$ meters and $m\angle XPY = 90$. Find the length of $\widehat{XY}$ to the nearest hundredth.

$$\frac{90}{360} = \frac{XY}{10\pi}$$

6. 7.85in

7. Chords $\overline{XY}$ and $\overline{WV}$ are equidistant from the center of ⊙O. If $XY = 2x + 30$ and $WV = 5x - 12$, find x.
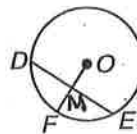
$$2x+30 = 5x-12$$
$$42 = 3x \qquad X = 14$$

7. 14
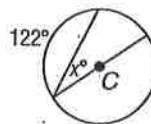
8. Find the radius of ⊙O if $DE = 12$ inches and $OM = 3$.

$\sqrt{45} = 3\sqrt{5}$

8. 6.71

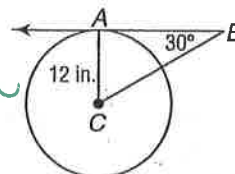9. Find x.

$$180 - 122 = \frac{58}{2}$$

(figure: 122°, x°, C)

9. 29

10. EFGH is a quadrilateral inscribed in ⊙P with $m\angle E = 72$ and $m\angle F = 49$. Find $m\angle H$.

10. 131

11. If $\overline{AB}$ is tangent to ⊙C at A, find BC.
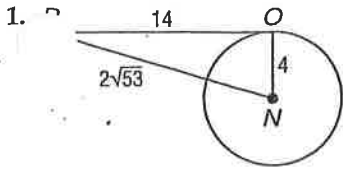
30-60-90
or sohcahtoa

$$\sin 30 = \frac{12}{BC}$$

$BC = 2(AC)$

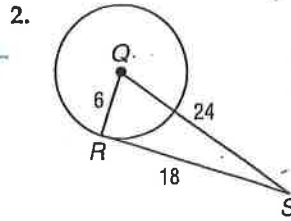*(figure: A, 30°, B, 12 in., C)*

11. 24

Lesson 10-5

Determine whether each segment is tangent to the given circle.

1.

14   O

2√53   4

N
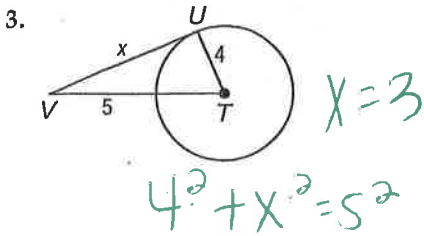
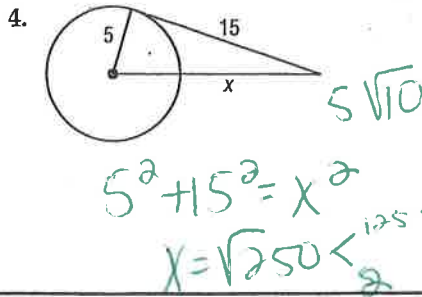$14^2 + 4^2 = (2\sqrt{53})^2$

yes

2.

Q

6   24

R

18

S

$6^2 + 18^2 = 24^2$

no

Find x. Assume that segments that appear to be tangent are tangent.
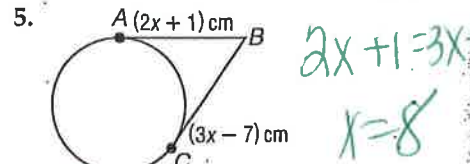
3.

U

x   4

V   5   T

$X = 3$

$4^2 + x^2 = 5^2$

4.

5   15

x

$5\sqrt{10}$

$5^2 + 15^2 = x^2$

$X = \sqrt{250} <$ $\frac{125 < 25 < 5}{5}$

5.

A (2x + 1) cm   B

(3x − 7) cm   C

$2x + 1 = 3x - $

$X = 8$

Lesson 10-6

Find each measure.

1. $m\angle 5$ = 75°

80°

5

70°

$\frac{80 + 70}{2}$

2. $m\angle 6$ = 142.5
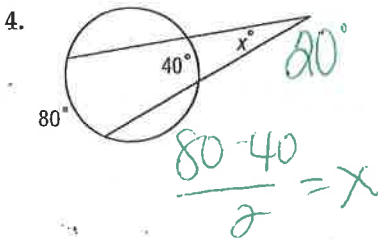
40°

6   35°

$\frac{40 + 35}{2} = 37.5$

$180 - 37.5$

3. $m\angle 7$ = 110°

140°

7   70
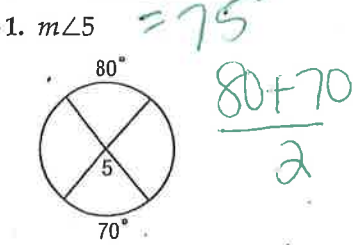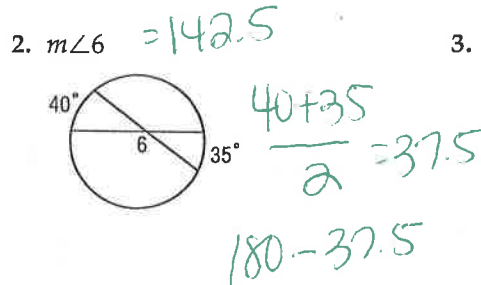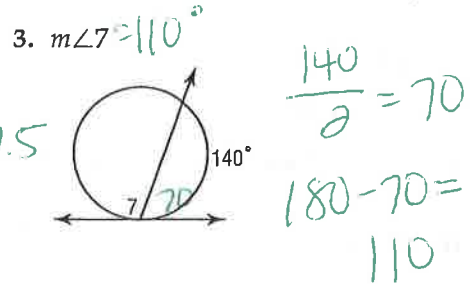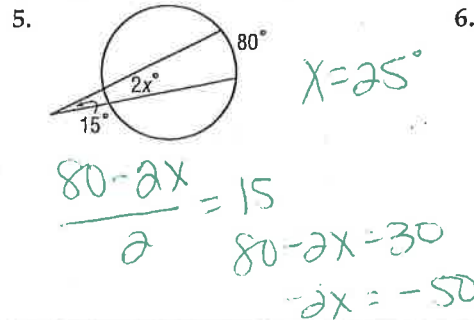
$\frac{140}{2} = 70$

$180 - 70 = 110$

Find x. Assume that any segment that appears to be tangent is tangent.

4.

40°   x°

80°

20°

$\frac{80 - 40}{2} = X$

5.

80°

2x°

15°

$X = 25°$

$\frac{80 - 2x}{2} = 15$

$80 - 2x = 30$

$-2x = -50$

6.

6x°   x°

40°
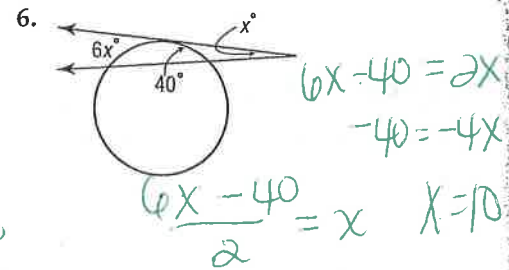
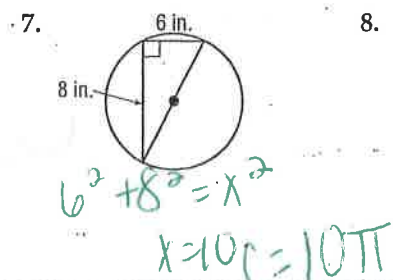$6x - 40 = 2x$

$-40 = -4x$

$\frac{6x - 40}{2} = x$ $X = 10$

Lesson 10-1

The radius, diameter, or circumference of a circle is given. Find the missing measures to the nearest hundredth.

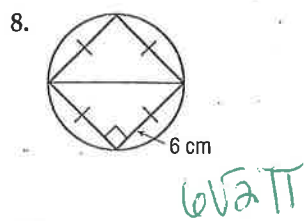1. $r = 18$ in., $d = \underline{36}$, $C = \underline{? \; 36\pi}$

2. $d = 34.2$ ft, $r = \underline{17.1 \; ?}$, $C = \underline{? \; 34.2\pi}$

3. $C = 12\pi$ m, $r = \underline{6 \; ?}$, $d = \underline{? \; 12}$

4. $C = 84.8$ mi, $r = \underline{13.5 \; ?}$, $d = \underline{? \; 26.99}$

5. $d = 8.7$ cm, $r = \underline{? \; 4.35}$, $C = \underline{? \; 8.7\pi}$

6. $r = 3b$ in., $d = \underline{6b \; ?}$, $C = \underline{? \; 6b\pi}$

Find the exact circumference of each circle.

7.

6 in.

8 in.

$6^2 + 8^2 = x^2$

$X = 10$ $C = 10\pi$

8.

6 cm

$6\sqrt{2}\pi$

9.

12 yd

$\sqrt{288}$

$\frac{\wedge}{2 \; 144}$

$\frac{\wedge}{12 \; 12}$

$12^2 + 12^2 = x^2$

$12\sqrt{2}\pi$

10.

21 m

13 m

$\sqrt{610}$

$\frac{\wedge}{2 \; 305}$
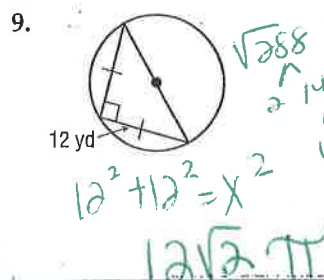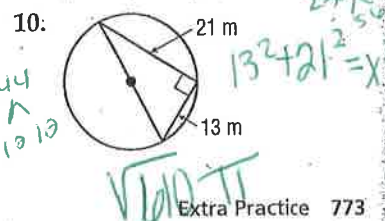
$13^2 + 21^2 = x^2$

$\sqrt{610}\pi$

Lesson 10-2

(pages 529–535)

Find each measure.

1. $m\angle GKI$ 90
2. $m\angle LKJ$ 23
3. $m\angle LKI$ 113
4. $m\angle LKG$ 157
5. $m\angle HKI$ 67
6. $m\angle HKJ$ 157
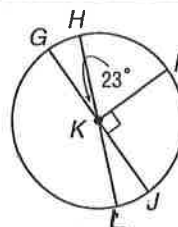
In $\odot X$, $\overline{WS}$, $\overline{VR}$, and $\overline{QT}$ are diameters, $m\angle WXV = 25$ and $m\angle VXU = 45$. **Find each measure.**

7. $m\widehat{QR}$ 90
8. $m\widehat{QW}$ 45
9. $m\widehat{TU}$ 45
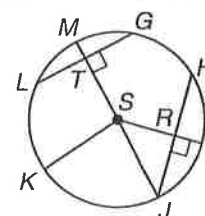10. $m\widehat{WRV}$ 335
11. $m\widehat{SV}$ 155
12. $m\widehat{TRW}$ 245
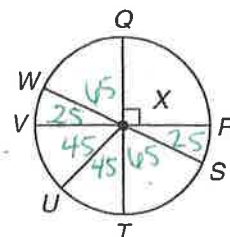
Lesson 10-3

(pages 536–543)

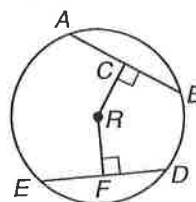In $\odot S$, $HJ = 22$, $LG = 18$, $m\widehat{IJ} = 35$, and $m\widehat{LM} = 30$. **Find each measure.**

1. HR 11
2. RJ 11
3. LT 9
4. TG 9
5. $m\widehat{HJ}$ 70
6. $m\widehat{LG}$ 60
7. $m\widehat{MG}$ 30
8. $m\widehat{HI}$ 35

In $\odot R$, $CR = RF$, and $ED = 30$. **Find each measure.**

9. AB 30
10. EF 15
11. DF 15
12. BC 15

Lesson 10-4

(pages 544–551)

Find the measure of each numbered angle for each figure.

1. $m\widehat{AB} = 176$, and $m\widehat{BC} = 42$

$m\angle 1 = 21$
$m\angle 2 = 71$
$m\angle 3 = 88$

2. $\overline{WX} \cong \overline{ZY}$, and $m\widehat{ZW} = 120$

$m\angle 1 = 60$
$m\angle 2 = 60$
$m\angle 3 = 60$
$m\angle 4 = 60$
$m\angle 5 = 60$
$m\angle 6 = 60$

3. $m\widehat{QR} = 40$, and $m\widehat{TS} = 110$

$m\angle 1 = 55$
$m\angle 2 = 105$
$m\angle 3 = 20$
$m\angle 4 = 55$
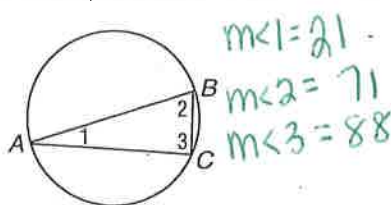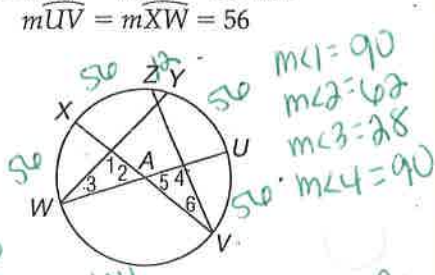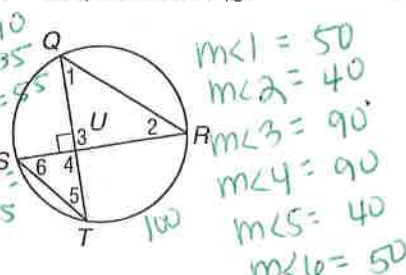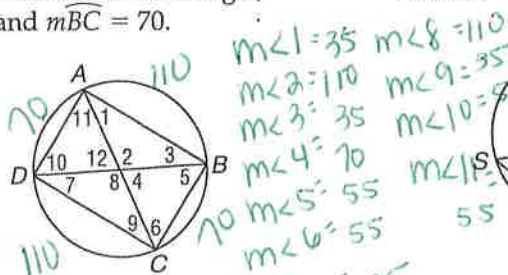$m\angle 5 = 105$
$m\angle 6 = 20$
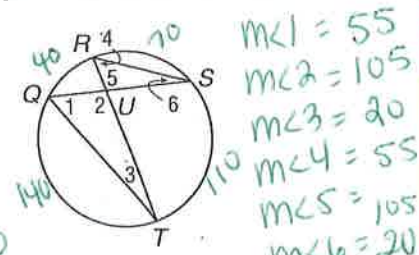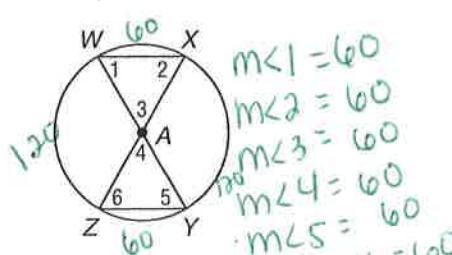
4. $\square ABCD$ is a rectangle, and $m\widehat{BC} = 70$.

$m\angle 1 = 35$ $m\angle 8 = 110$
$m\angle 2 = 110$ $m\angle 9 = 35$
$m\angle 3 = 35$ $m\angle 10 = 55$
$m\angle 4 = 70$ $m\angle 11 = 55$
$m\angle 5 = 55$
$m\angle 6 = 55$
$m\angle 7 = 35$

5. $m\widehat{TR} = 100$, and $\overline{SR} \perp \overline{QT}$

$m\angle 1 = 50$
$m\angle 2 = 40$
$m\angle 3 = 90$
$m\angle 4 = 90$
$m\angle 5 = 40$
$m\angle 6 = 50$

6. $m\widehat{UY} = m\widehat{XZ} = 56$ and $m\widehat{UV} = m\widehat{XW} = 56$

$m\angle 1 = 90$
$m\angle 2 = 62$
$m\angle 3 = 28$
$m\angle 4 = 90$
$m\angle 5 = 62$
$m\angle 6 = 28$

7. Rhombus $ABCD$ is inscribed in a circle. What can you conclude about $\overline{BC}$? It is equidistant from center w/ AD

8. Triangle RST is inscribed in a circle. If the measure of $\widehat{RS}$ is 170, what is the measure of $\angle T$? $170/2 = 85°$

774 **Extra Practice**