KEY

LESSON 6.6 **Exercise Set A**
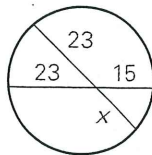
MM2G3a Understand and use properties of chords, tangents, and secants as an application of triangle similarity.

MM2G3d Justify measurements and relationships in circles using geometric and algebraic properties.
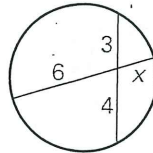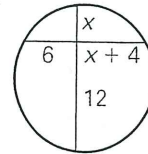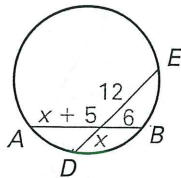
Find the value of x.

1. $23(x) = 15(23)$

$\boxed{15}$

23, 23, 15, x
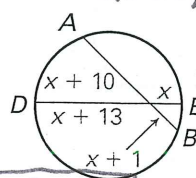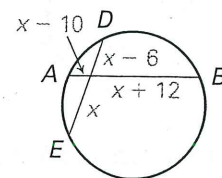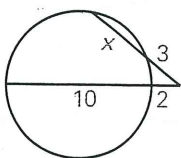
2. 6, 3, 4, x

3. $12(x) = 6(x+4)$

x, 6, $x+4$, 12

$\boxed{x=4}$

Find AB and DE.

4. E, 12, $x+5$, 6, A, x, B, D

5. $x(x+10) = (x+1)(x+13)$

A, $x+10$, x, D, $x+13$, E, $x+1$, B

$\boxed{AB=21 \\ DE=23}$

6. $x-10$ D, $x-6$, A, $x+12$, B, x, E

Find the value of x.

7. $\boxed{x=5}$

x, 3, 10, 2

$3(x+3) = 2(2+10)$

8. 3, 5, x, 4

9. $\boxed{x=7}$ $6(4+6) = 5(x+5)$

6, 4, 5, x

Find RT and TV.

10. R, S, 8, T, $x+3$, 10, $x-3$, U, V

11. $\boxed{RT=35 \\ TV=45}$

V, U, $2x+8$, 21, T, 27, S, R, x

12. R, 3x, S, 15, x, V, U, 20, T

Find the value of x.

13. 10, 5, x

$\boxed{x=15}$

14. x, 7, 9

15. $\boxed{x=4}$

4x, 15, 9

Find PQ.

16. P, 15, S, R, 12, Q

17. 24, Q, P, R, 36, S, ✗

$\boxed{x=30}$

18. N, 70, P, 48, Q, R

UNIT 6
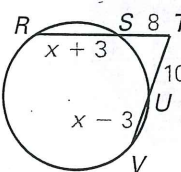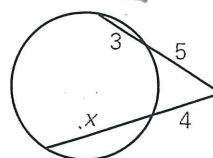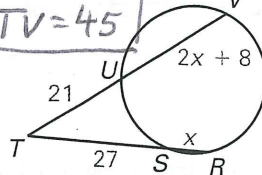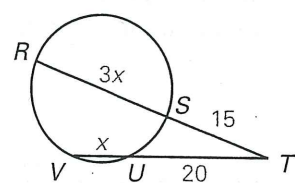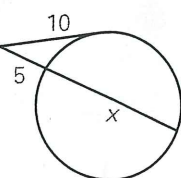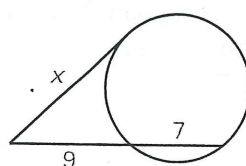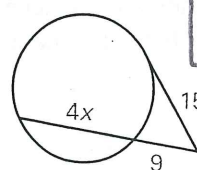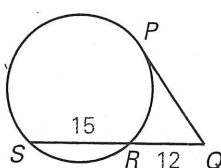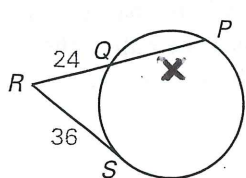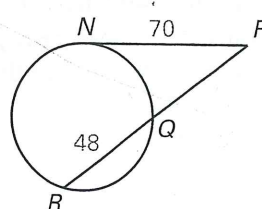
Exercise Set A (continued)

Find the value of x.

19.

20.

21.
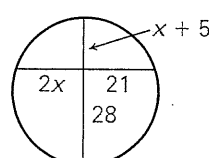
22.
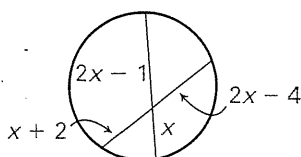
23.

24.

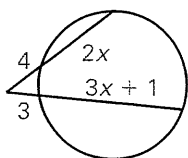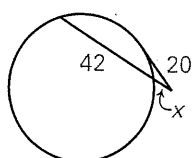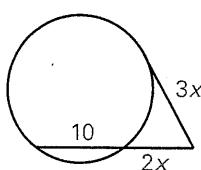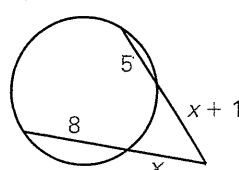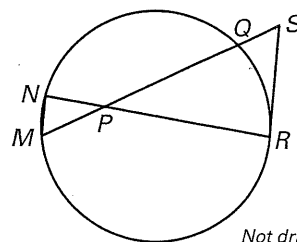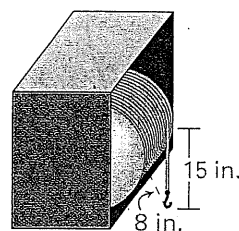**25.** In the diagram, $\overline{RS}$ is a tangent segment, $MP = 6$, $NP = \sqrt{30}$, $QP = 10$, and $RS = 6$. Show that $\triangle MNP \sim \triangle SRP$.

*Not drawn to scale*

26. **Winch** A large industrial winch is enclosed as shown. There are 15 inches of the cable hanging free off of the winch's spool and the distance from the end of the cable to the spool is 8 inches. What is the diameter of the spool?

27. **Storm Drain** The diagram shows a cross-section of a large storm drain pipe with a small amount of standing water. The distance across the surface of the water is 48 inches and the water is 4.25 inches deep at its deepest point. To the nearest inch, what is the diameter of the storm drain pipe?
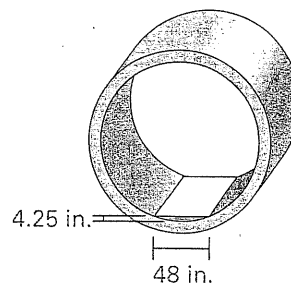
28. **Basketball** The Xs show the positions of two basketball teammates relative to the circular "key" on a basketball court. The player outside the key passes the ball to the player on the key. To the nearest tenth of a foot, how long is the pass?
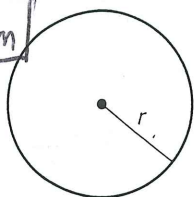
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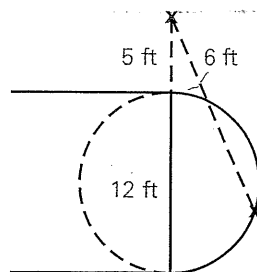
LESSON 6.7

Exercise Set B

MM2G3c Use the properties of circles to solve problems involving the length of an arc and the area of a sector.
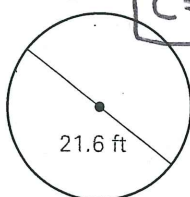
1. Find the circumference.

$C = 35.81 cm$

r = 5.7cm

2. Find the circumference.

$C = 67.86 ft$
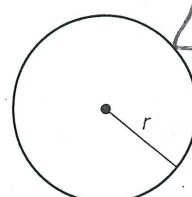
21.6 ft

3. Find the radius.

$r = 14.96 in.$

C ≈ 94 in.

Find the indicated measure.

4. The exact radius of a circle with circumference 74 centimeters $\dfrac{37}{\pi}$

5. The exact diameter of a circle with circumference 58 feet $\dfrac{58}{\pi}$

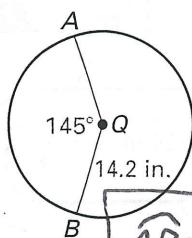6. The exact circumference of a circle with diameter 26.3 inches 26.3π

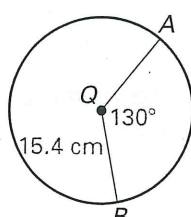7. The exact circumference of a circle with radius 31.9 meters 63.8π

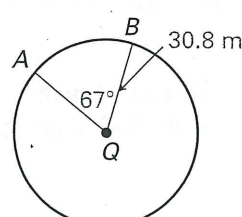**Find the length of $\overarc{AB}$.**

8.

145° Q
14.2 in.

$\overarc{AB} = 35.94 in.$

9.

Q 130°
15.4 cm

$\overarc{AB} = 34.94 cm$

10.

67°
30.8 m
Q

$\overarc{AB} = 36.02 m$

In ⊙D shown below, ∠ADC ≅ ∠BDC. Find the indicated measure.

11. $m\overarc{ACB}$ 259°

12. $m\overarc{CB}$ 129.5°

13. Length of $\overarc{ACB}$ 112.56

14. Length of $\overarc{CB}$ 56.28m

15. $m\overarc{ABC}$ 230.5°

16. Length of $\overarc{BAC}$ 100.17m

D 101°
24.9 m
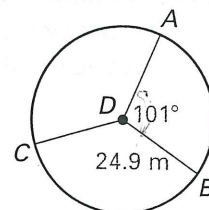
Find the indicated measure.

17. Circumference of ⊙Q

Q 85°
12 cm
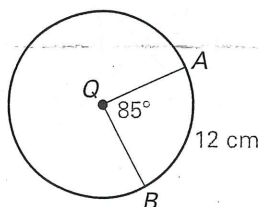
C = 50.82cm

18. Radius of ⊙Q

14.2 in.
Q 132°
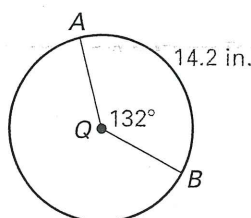
r = 6.16 in.

19. Length of $\overarc{AB}$

17.6 ft
Q 118°
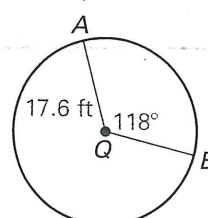
$\overarc{AB} = 36.25 ft.$

Exercise Set B (continued)

Find the perimeter of the region.

20.

|←6 cm→|

6 cm   6 cm

36.85cm

21.

7 in.

87.96in.

22.

90°   90°

2 in.   6 in.

90°   90°

6 in.
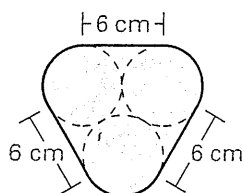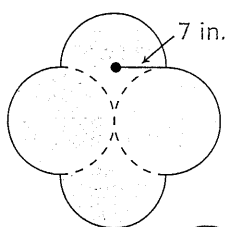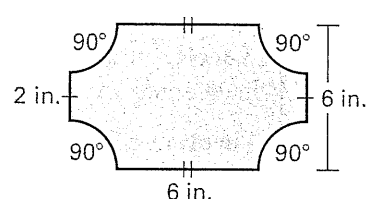
23. In the table below, $\overset{\frown}{AB}$ refers to the arc of a circle. Copy and complete the table.

Radius	6.7	11.4	?	?	25.8	19.3
$m\overset{\frown}{AB}$	103°	?	25°	261°	?	332°
Length of $\overset{\frown}{AB}$	?	15.72	7.46	61.95	64.39	?

**24. Thread** A spool of thread contains 150 revolutions of thread. The diameter of the spool is 3 centimeters. Find the length of the thread to the nearest centimeter.

3 cm
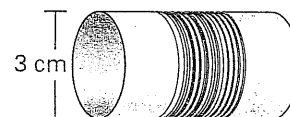
25. Go-Cart Track Find the distance around the track on the inside lane and on the outside lane.

5 m   20 m   9 m
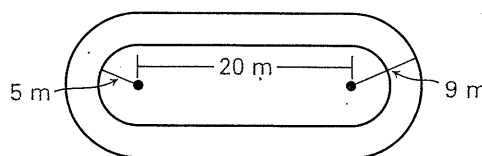
26. Pendulum Find the distance traveled in one back and forth swing by the weight of a 16 inch pendulum that swings through a 70° angle.

70°
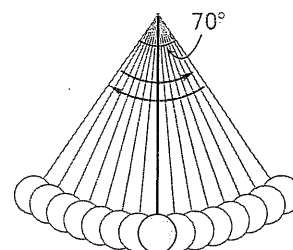
27. Turntable Two belt-driven gears for a turntable are shown. What is the total length of the belt?

1 in.

3 in.