

LESSON  
31.2

Exercise  
Set A



- MM2G3c Use the properties of circles to solve problems involving the length of an arc and the area of a sector.
- MM2G3d Justify measurements and relationships in circles using geometric and algebraic properties.

Find the exact area of the circle. Then find the area to the nearest hundredth.

1.  $A = \pi(6)^2$   
 $A = 36\pi \text{ in}^2$   
 or  
 $A = 113.10 \text{ in}^2$

$A = \pi(10.5)^2$   
 $A = 110.25\pi$   
 or  $\text{ft}^2$   
 $A = 346.36 \text{ ft}^2$

$r = 12.4 \text{ cm}$   
 $A = (12.4)^2 \pi$   
 $A = 153.76\pi \text{ cm}^2$   
 or  
 $A = 483.05 \text{ cm}^2$

Find the indicated measure.

- The area of a circle is 173 square inches. Find the radius.  $A = \pi r^2$   
 $173 = \pi r^2$   
 $r = 7.42 \text{ cm}$
- The area of a circle is 290 square meters. Find the radius.  $r = 9.61 \text{ m}$
- The area of a circle is 52 square millimeters. Find the radius.  $r = 4.07 \text{ mm}$
- The area of a circle is 342 square yards. Find the diameter.  $r = 10.43 \text{ yds}$  diameter = 20.86 yd
- The area of a circle is 654 square centimeters. Find the diameter.  $r = 14.43 \text{ cm}$  diameter = 28.86 cm
- The area of a circle is 528 square feet. Find the diameter.  $r = 12.96 \text{ ft}$  diameter = 25.92 ft

Find the areas of the sectors formed by  $\angle ACB$ .

10.  $S = 9.08 \text{ in}^2$  (small)  
 $S = 41.19 \text{ in}^2$  (large)

11.  $S = 827.02 \text{ cm}^2$  (small)  
 $S = 1463.20 \text{ cm}^2$  (large)

12.  $S = 426.94 \text{ m}^2$  (small)  
 $S = 590.93 \text{ m}^2$  (large)

Use the diagram to find the indicated measure.

13. Find the area of  $\odot H$ .  $A = 107.06 \text{ ft}^2$   
 $A = 23.79 \text{ ft}^2$

14. Find the radius of  $\odot H$ .  $r = 6.89 \text{ in}$

15. Find the diameter of  $\odot H$ .  $r = 6.83 \text{ m}$



16)  $295.52 = \pi r^2$   
 $r = 9.70 \text{ in}$

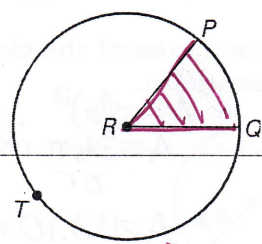
17)  $C = 2\pi r$   
 $C = 2\pi(9.7)$   
 $C = 60.94 \text{ in}$

18)  $\frac{S}{A} = \frac{m}{360}$   
 $\frac{55}{295.52} = \frac{m}{360}$   
 $m = 67^\circ$

19)  $\frac{l}{C} = \frac{m}{360}$   
 $\frac{l}{60.94} = \frac{67}{360}$   
 $l = 11.34 \text{ in}$

### Exercise Set A (continued)

The area of  $\odot R$  is 295.52 square inches. The area of sector  $PRQ$  is 55 square inches. Find the indicated measure.



16. Radius of  $\odot R = 9.70 \text{ in}$     17. Circumference of  $\odot R = 60.94 \text{ in}$

18.  $m\widehat{PQ} = 67^\circ$     19. Length of  $\widehat{PQ} = 11.34 \text{ in}$

20. Perimeter of shaded region:  $9.7 + 9.7 + 11.34 = 30.74 \text{ in}$   
 21. Perimeter of unshaded region:  $9.7 + 9.7 + (60.94 - 11.34) = 69.01 \text{ in}$

Find the area of the shaded region.

22.  $86.08 \text{ cm}^2$

23.  $199.10 \text{ in}^2$

24.  $236.40 \text{ m}^2$   
 Big  $\odot$  - small  $\odot$  area

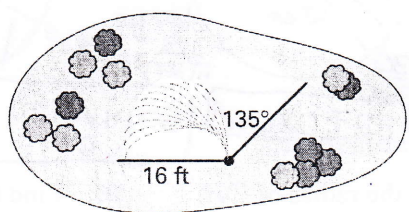
25.  $37.70 \text{ ft}^2$

26.  $19.27 \text{ in}^2$

27.  $117.92 \text{ cm}^2$

28. Fountain A circular water fountain has a diameter of 42 feet. Find the area of the fountain.  $1385.44 \text{ ft}^2$      $r = 21$      $A = \pi(21)^2$

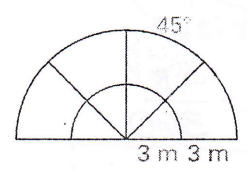
29. Landscaping The diagram below shows the area of a lawn covered by a water sprinkler.



a. What is the area of the lawn that is covered by the sprinkler?  $301.59 \text{ ft}^2$      $\frac{S}{\pi(16)^2} = \frac{135}{360}$

b. The water pressure is lowered so that the radius is 10 feet. What is the area of lawn that will be covered?  $117.81 \text{ ft}^2$      $\frac{S}{\pi(10)^2} = \frac{135}{360}$

30. Window Design The window shown is in the shape of a semicircle. Find the area of the glass in the shaded region.  $10.60 \text{ m}^2$



$\left( \frac{S}{\pi(6)^2} = \frac{45}{360} \right) - \left( \frac{S}{\pi(3)^2} = \frac{45}{360} \right)$