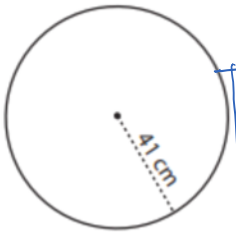
14.2 Assignment
Volume & Area

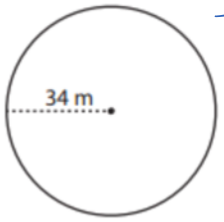
Name: _____

Date: _____ Per: _____

Find the circumference of each circle. Write your answer in terms of pi and rounded to the nearest hundredth.

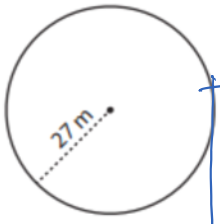
1. 

$C = 2\pi r$
$= 2\pi(41)$
$= 82\pi$
≈ 257.61 cm

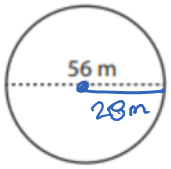
2. 

$C = 2\pi(34)$
$= 68\pi$
≈ 213.6 m

Find the area of each circle. Write your answer in terms of pi and rounded to the nearest hundredth.

3. 

$A = \pi r^2$
$= \pi(27)^2$
$= 729\pi$
$\approx 2290.22\ m^2$

4. 

$A = \pi(28)^2$
$= 784\pi$
$\approx 2463.01 m^2$

5. A round dining room table has a wood top with a circumference of 32 feet. A woodworker is refinishing the top. He needs to find the area of the top to buy materials. What is the area of the tabletop?

$C = 2\pi r$
$\frac{32}{2\pi} = \frac{2\pi r}{2\pi}$
$r = 5.09$

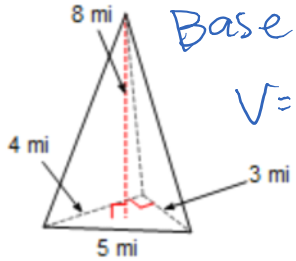
$A = \pi(5.09)^2$
$= 81.49\ ft^2$

6. A carpenter is installing curved wood trim around a circular window. The window is a circle that has an area of 50 square feet. How many feet of wood trim are needed to go around the window?

$A = \pi r^2$
$\frac{50}{\pi} = \frac{\pi r^2}{\pi}$
$\sqrt{r^2} = \sqrt{15.92}$
$r = 3.99$

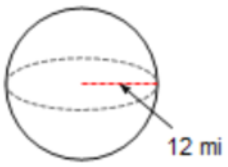
$C = 2\pi(3.99)$
≈ 25.07 ft

Identify each figure then find the volume.

8. 

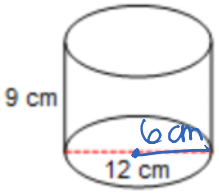
Triangular Pyramid
Base $= \frac{1}{2}(3)(4) = 6$
$V = \frac{1}{3}(6)(8)$
$= 16\ mi^3$

$V = \frac{1}{3}Bh$

9. 

$V = \frac{4}{3}\pi r^3$
$V = \frac{4}{3}\pi(12)^3$
$= 7238.23\ mi^3$

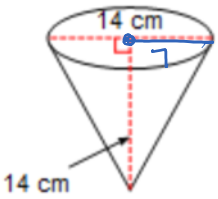
5

10. 

$V = \pi r^2 h$

$= \pi (6)^2 (9)$

$\approx$ 1017.88 cm^3

11. 

$V = \frac{1}{3} \pi r^2 h$

$= \frac{1}{3} \pi (49)(14)$

$=$ 718.38 cm^3

12. A gasoline fuel storage tank at an oil refinery is a cylinder with a radius of 20 meters and a height of 10 meters. How many cubic meters of gasoline will the tank hold?

$V = \pi (20)^2 (10)$

$=$ 12566.4 m^3

13. In July 2012, an ice cream company in England set a new world record for the largest ice cream cone ever made. The total height was 13 feet including the ice cream on top. The cone itself was about 9 feet tall and had a diameter of about 3.5 feet. What is the volume of the cone?

$r = 3.5/2 = 1.75$

$V = \frac{1}{3} \pi (1.75)^2 (9)$

$\approx$ 28.86 ft^3

14. A pyramid in Giza has a square base with side lengths of 230 meters. It's height is 146.5 meters. What is its volume?

Area base $= 230^2 = 52900$

$V = \frac{1}{3} (52900)(146.5)$

$\approx$ 2,583,283.3 m^3

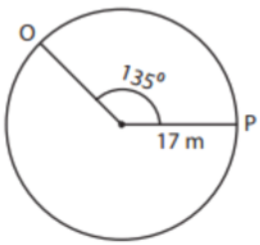
15. A hamster ball has a diameter of 8 inches. What is the volume of the ball?

$r = 4$ in

$V = \frac{4}{3} \pi (4)^3$

$\approx$ 268.08 in^3

16. Find the length of arc OP.



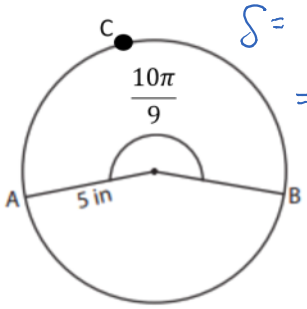
$135° \cdot \frac{\pi}{180°} = \frac{3\pi}{4}$

$S = \frac{3\pi}{4} (17)$

$= \frac{51\pi}{4}$

$\approx$ 40.06 m

17. Find the length of arc ACB.



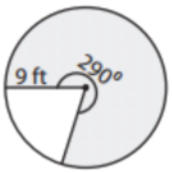
$S = \frac{10\pi}{9} (5)$

$= \frac{50\pi}{9}$

$\approx$ 17.5 in

Find the area of the shaded region. Round answers to two decimal places.

18.

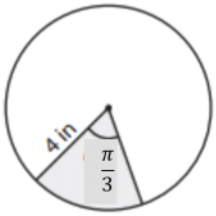


$\pi/180 \cdot 290 = \frac{29\pi}{18}$

$A = \frac{1}{2}\left(\frac{29\pi}{18}\right)(9)^2$

$\approx$ 204.99 ft²

19.



$A = \frac{1}{2}\left(\frac{\pi}{3}\right)(4^2)$

$=$ 8.38 in²

20. A large pizza has a diameter of 12 inches and is cut into 8 equal pieces. Find the area of 2 pieces, rounded to the nearest hundredth.

$r = 6$ $\quad \theta = 2\pi/8 = \pi/4$

$A = \frac{1}{2}\left(\frac{\pi}{4}\right)(6^2) \approx 14.14 \cdot 2 =$ 28.3 in²

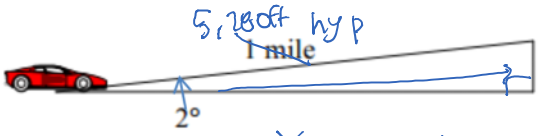
21. Convert 36° to radians.

$36 \cdot \frac{\pi}{180} = \frac{\pi}{5}$

22. Convert $\frac{7\pi}{8}$ to degrees.

$\frac{7\pi}{8} \cdot \frac{180^\circ}{\pi} =$ 157.5°

23. A car is traveling up a slight grade with an angle of elevation of 2°. After traveling 1 mile, what is the vertical change in feet? (1 mile = 5,280 ft)

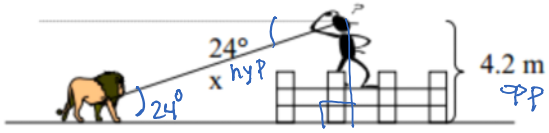


$5{,}280 \cdot \sin 2 = \frac{x}{5{,}280} \cdot 5{,}280$

$x = 5{,}280 \sin 2$

$x =$ 184.3 ft

24. From the top of a fence a person sites a lion on the ground at an angle of depression of 24°. If the man on the fence is 4.2 meters high, how far is the man from the lion?



$x \sin 24^\circ = \frac{4.2}{x} \cdot x$

$\frac{x \sin 24^\circ}{\sin 24^\circ} = \frac{4.2}{\sin 24^\circ}$

$x =$ 10.3 m

Simplify. State whether each resulting number is rational or irrational.

25. $\frac{\sqrt{3}}{4} + \frac{1}{4} = \frac{1+\sqrt{3}}{4}$

irrational

26. $2.5 + 7.33$

9.8

rational

27. $\sqrt{8} \cdot \sqrt{8}$

$\sqrt{64} = 8$

rational