

1. Find the circumference.

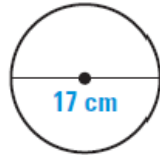


$$C = \pi d$$

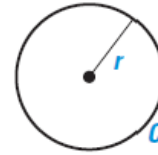
or

$$2\pi r$$

2. Find the circumference.



3. Find the radius.



$$C = 63 \text{ ft}$$

$$63 = \pi d$$

$$\frac{63}{\pi} = d$$

$$20.05 = d$$

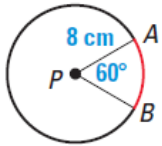
$$10.03 = r$$

1. 12π in.

2. 17π cm

3. 10.03 ft.

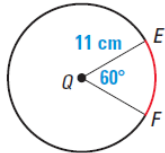
4. Find the length of each indicated arc.



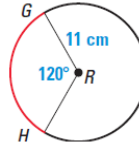
$$\frac{60^\circ}{360^\circ} = \frac{x}{16\pi}$$

Arc Length

Circumference



$$\frac{60^\circ}{360^\circ} = \frac{x}{22\pi}$$



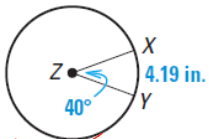
$$\frac{120^\circ}{360^\circ} = \frac{x}{22\pi}$$

A.L. of $\widehat{AB} = \underline{2.67\pi \text{ cm}}$ or $\underline{8.38 \text{ cm}}$

A.L. of $\widehat{EF} = \underline{3.67\pi \text{ cm}}$ or $\underline{11.52 \text{ cm}}$

A.L. of $\widehat{GH} = \underline{7.3\pi \text{ cm}}$ or $\underline{23.04 \text{ cm}}$

5. Find circumference of $\odot Z$.

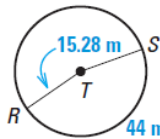


$$\frac{40^\circ}{360^\circ} = \frac{4.19}{C}$$

$$\frac{1}{9} = \frac{4.19}{C}$$

$$C = 37.71$$

6. Find $m\angle RTS$.



$$\frac{x^\circ}{360^\circ} = \frac{44}{30.56\pi}$$

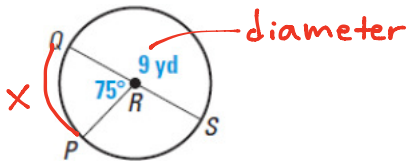
$$\frac{(30.56\pi)x}{(30.56\pi)} = \frac{15840}{(30.56\pi)}$$

5. 37.71 in.

6. 164.99°

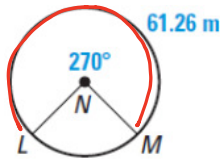
Find the indicated measure.

7. Arc Length of \widehat{PQ} .



$$\frac{75^\circ}{360^\circ} = \frac{x}{9\pi}$$

8. Circumference of $\odot N$.

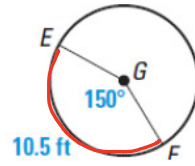


$$\frac{270^\circ}{360^\circ} = \frac{61.26}{C}$$

$$3C = 245.04$$

$$C = 81.68$$

9. Radius of $\odot G$.



$$\frac{150^\circ}{360^\circ} = \frac{10.5}{C}$$

$$5C = 126$$

$$C = 25.2$$

$$\frac{\pi d}{\pi} = \frac{25.2}{\pi}$$

$$d = 8.02$$

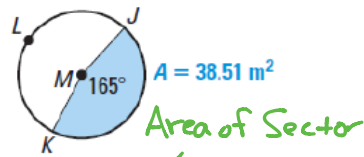
$$r = 4.01$$

7. 5.89 yd. or 1.88π yd.

8. 81.68 m

9. 4.01 ft.

10. Find the radius.



$$\frac{165^\circ}{360^\circ} = \frac{38.51}{A}$$

Area of Sector

Area of Circle

$$165A = 13863.6$$

$$A = 84.02$$

$$\frac{\pi r^2}{\pi} = \frac{84.02}{\pi}$$

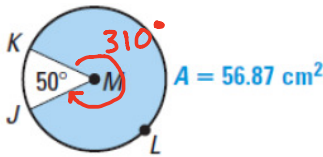
$$r^2 = 26.74$$

$$r = \sqrt{26.74}$$

$$r = 5.17$$

10. 5.17 m

11. Find the radius.



$$\frac{310^\circ}{360^\circ} = \frac{56.87}{A}$$

$$310A = 20473.2$$

$$A = 66.04$$

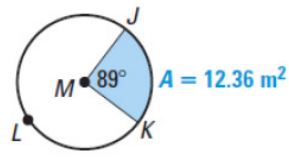
$$\frac{\pi r^2}{\pi} = \frac{66.04}{\pi}$$

$$r^2 = 21.02$$

$$r = \sqrt{21.02}$$

11. 4.58 cm

12. Find the radius.



$$\frac{89^\circ}{360^\circ} = \frac{12.36}{A}$$

$$89A = 4449.6$$

$$A = 49.9955$$

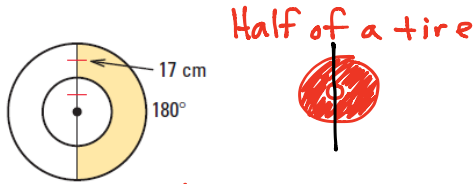
$$\frac{\pi r^2}{\pi} = \frac{49.9955}{\pi}$$

$$r^2 = 15.91$$

$$r = \sqrt{15.91}$$

12. 3.99 m

13. Find the area of the shaded region.
(Note: the radius of the entire diagram is 34cm)



$$A_{Big} - A_{Small}$$

$$\pi 34^2 - \pi 17^2$$

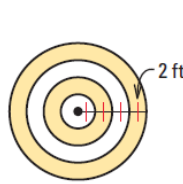
$$1156\pi - 289\pi$$

$$867\pi$$

Divide by 2 \rightarrow 433.5π

13. $433.5\pi \text{ cm}^2$
or 1361.88 cm^2

14. Find the area of the shaded region.
(Note: the radius of the entire diagram is 8cm)



$$A_{Big} - A_{Small}$$

$$\pi 4^2 - \pi 2^2$$

$$16\pi - 4\pi$$

$$12\pi$$

Bigger Ring

$$A_{Big} - A_{Small}$$

$$\pi 8^2 - \pi 6^2$$

$$64\pi - 36\pi$$

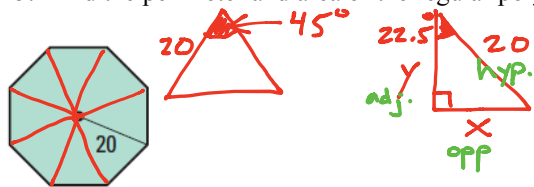
$$28\pi$$

Add together \rightarrow

$$12\pi + 28\pi = 40\pi$$

14. $40\pi \text{ ft.}^2$
or 125.66 ft.^2

15. Find the perimeter and area of the regular polygon.



$$\sin(22.5^\circ) = \frac{x}{20} \quad \cos(22.5^\circ) = \frac{y}{20}$$

$$x = 20(\sin 22.5^\circ) \quad y = 20(\cos 22.5^\circ)$$

$$x = 7.65 \quad y = 18.48$$

$$A_{\Delta} = \left(\frac{1}{2}\right)(15.31)(18.48)$$

$$A_{\Delta} = 141.42$$

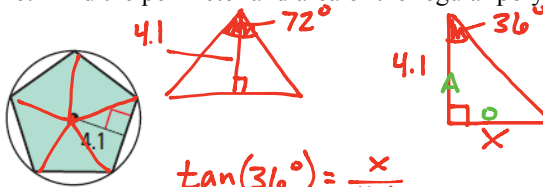
* 8 sides

Perimeter:

$$122.46 \text{ un}$$

15. 1131.37 un²

16. Find the perimeter and area of the regular polygon.



$$\tan(36^\circ) = \frac{x}{4.1}$$

$$x = 4.1(\tan 36^\circ)$$

$$x = 2.98$$

$$A_{\Delta} = \left(\frac{1}{2}\right)(5.96)(4.1)$$

$$A_{\Delta} = 12.21$$

* 5 sides

Perimeter:

$$29.79 \text{ un}$$

16. 61.07 un²

17. A polyhedron has 8 vertices and 12 edges. How many faces does the polyhedron have?

Euler's Theorem:

$$F + V = E + 2$$

$$F + 8 = 12 + 2$$

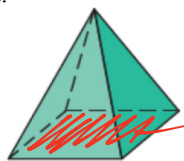
$$F + 8 = 14$$

$$F = 6$$

6 Faces

18. Name the solids shown below. Determine the number of faces, vertices, and edges.

a.

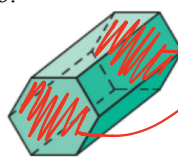


1 Base

Name Square Pyramid Faces 5

Vertices 5 Edges 8

b.



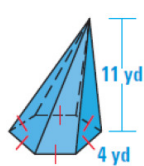
2 Bases

Name Hexagonal Prism Faces 8

Vertices 12 Edges 18

19. Classify and find the volume of the solid.

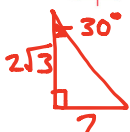
a.



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

$$V = \left(\frac{1}{3}\right)(41.57)(11)$$

$$V = 152.42$$



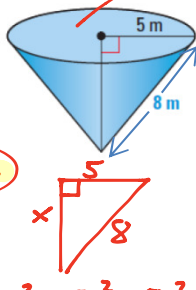
$$A_{\Delta} = \left(\frac{1}{2}\right)(4)(2\sqrt{3})$$

$$A_{\Delta} = 6.93$$

* 6 sides

$$41.57$$

b.



$$A = \pi r^2 = 25\pi$$

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

$$V = \left(\frac{1}{3}\right)(25\pi)(6.24)$$

$$V = 163.49$$

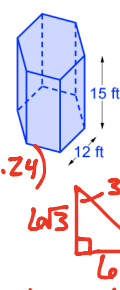
$$x^2 + 5^2 = 8^2$$

$$x^2 + 25 = 64$$

$$x^2 = 39$$

$$x = 6.24$$

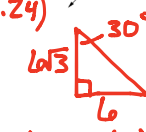
c.



$$V = Bh$$

$$V = (374.12)(15)$$

$$V = 5611.84$$



$$A_{\Delta} = \left(\frac{1}{2}\right)(12)(6\sqrt{3})$$

$$A_{\Delta} = 62.35$$

* 6 sides

$$374.12$$

Name Hexagonal Pyramid

Volume 152.42 yd³

Name Cone

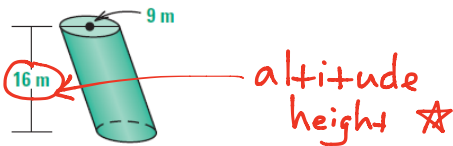
Volume 163.49 m³
or 52π m³

Name Hexagonal Prism

Volume 5611.84 ft³

20. Classify and find the volume of the figure.

a.

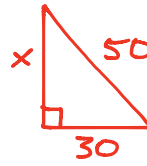
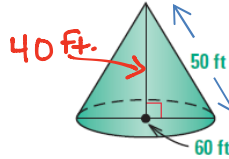


$$V = Bh$$

$$= (\pi 4.5^2)(16)$$

$$= 324\pi$$

b.



$$30^2 + x^2 = 50^2$$

$$\frac{-30^2}{-30^2} \quad \frac{-30^2}{-30^2}$$

$$x^2 = 1600$$

$$x = 40$$

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

$$= \left(\frac{1}{3}\right)(\pi 30^2)(40)$$

$$= 12000\pi$$

Name Cylinder

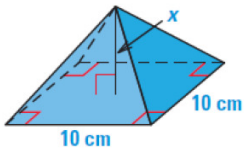
Name Cone

Volume $324\pi \text{ m}^3$ or 1017.88 m^3

Volume $12000\pi \text{ ft}^3$ or 37699.11 ft^3

In problems 21 and 22 find the value of x.

21. Volume 5200 cm^3 $V = \frac{1}{3} Bh$



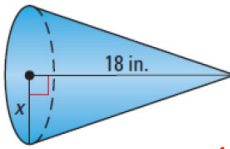
$$\frac{5200}{100} = \frac{\left(\frac{1}{3}\right)(100)(x)}{100}$$

$$\frac{3}{1} \cdot 52 = \left(\frac{1}{3}\right)x \cdot \frac{3}{1}$$

$$156 = x$$

x = 156 cm

22. Volume $5216\pi \text{ in}^3$ $V = \frac{1}{3} Bh$



$$\frac{5216\pi}{\pi} = \frac{\left(\frac{1}{3}\right)(\pi x^2)(18)}{\pi}$$

$$5216 = \left(\frac{1}{3}\right)(x^2)(18)$$

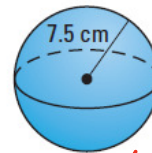
$$\frac{5216}{6} = \frac{6}{6}(x^2)$$

$$869.\bar{3} = x^2$$

$$29.48 = x$$

x = 29.48 in

23. Find the volume of the sphere.



$$V = \frac{4}{3} \pi r^3$$

$$V = \left(\frac{4}{3}\right)(\pi)(7.5)^3$$

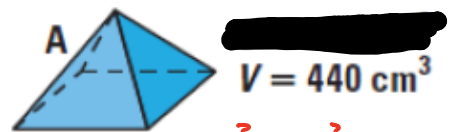
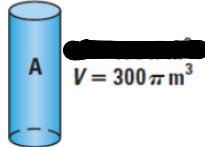
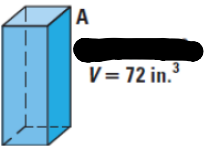
Volume 1767.15 cm

Solid A (shown) is similar to Solid B (not shown) with the given scale factor of A to B. Find the volume of Solid B.

24. Scale factor of 1:2

25. Scale factor of 3:1

26. Scale factor of 5:2



Volume ratio $1^3 : 2^3$
 $1 : 8$

$$\frac{A}{B} = \frac{72 \text{ in}^3}{x}$$

Volume ratio $3^3 : 1^3$
 $27 : 1$

$$\frac{A}{B} = \frac{300\pi}{x}$$

Vol. ratio $5^3 : 2^3$
 $125 : 8$

$$\frac{A}{B} = \frac{440}{x}$$

V = 576 in.³

V = 34.91 m^3
or $11.11\pi \text{ m}^3$

V = 28.16 cm³