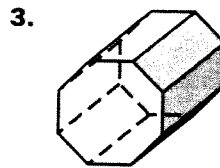
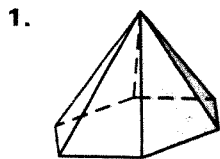


**CHAPTER 12** **Chapter Test B**  
For use after Chapter 12

Tell whether the solid is a polyhedron. If it is, find the number of faces, vertices, and edges.



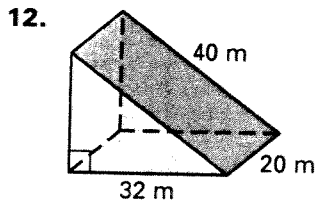
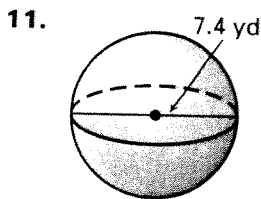
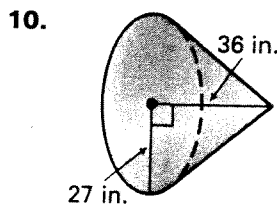
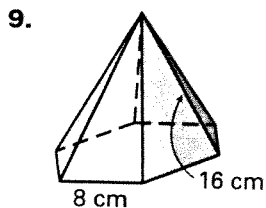
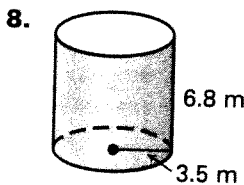
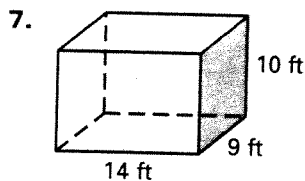
**Answers**

1. yes,  $F=7$   
 $V=7, E=12$
2. Not a  
polyhedron
3. yes,  $F=10$   
 $V=16, E=24$
4.  $n=18$
5.  $n=14$
6.  $n=10$
7.  $712 \text{ ft}^2$
8.  $226.51 \text{ m}^2$
9.  $538.08 \text{ cm}^2$
10.  $6107.26 \text{ in}^2$
11.  $172.03 \text{ yd}^2$
12.  $2688 \text{ m}^2$
13.  $50 \text{ m} = x$
14.  $6.99 \text{ m} = x$
15.  $34 \text{ m} = x$

Use Euler's Theorem to find the value of  $n$ .  $F+V=E+2$

- |              |               |               |
|--------------|---------------|---------------|
| 4. Faces: 8  | 5. Faces: 9   | 6. Faces: $n$ |
| Vertices: 12 | Vertices: $n$ | Vertices: 16  |
| Edges: $n$   | Edges: 21     | Edges: 24     |

Find the surface area of the solid. The pyramids are regular and the prisms, cones, and cylinders are right. Round your answers to two decimal places, if necessary.

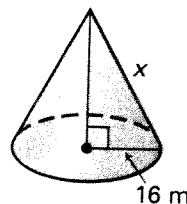
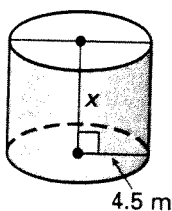
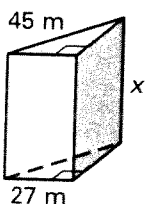


Solve for  $x$  given the surface area  $S$  of the right solid. Round your answer to the nearest meter.

13.  $S = 6372 \text{ m}^2$

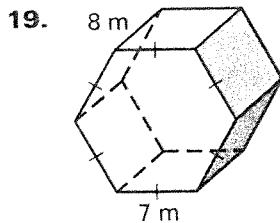
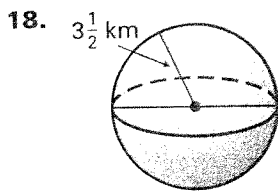
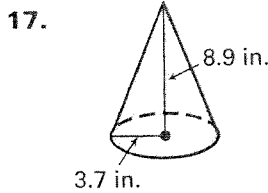
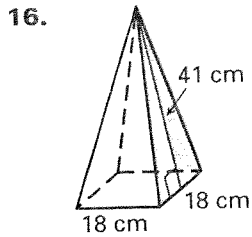
14.  $S = 325 \text{ m}^2$

15.  $2513.3 \text{ m}^2$

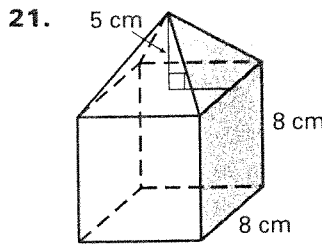
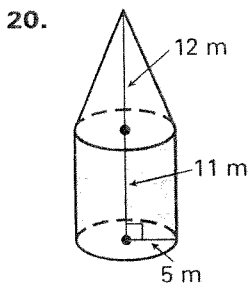


**CHAPTER 12** **Chapter Test B** *continued*  
For use after Chapter 12

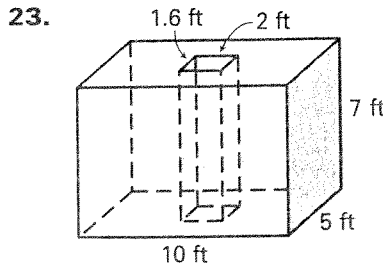
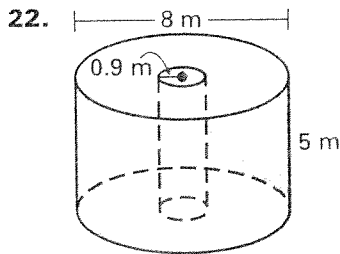
Find the volume of the solid. The pyramids are regular and the prisms, cones, and cylinders are right. Round your answers to two decimal places, if necessary.



Find the surface area and volume of the solid. The pyramids are regular and the prisms, cones, and cylinders are right. Round your answer to two decimal places, if necessary.



Find the volume of the solid. The cylinders and prisms are right. Round your answer to two decimal places, if necessary.



24. Two cones have a scale factor of 2 : 5. The smaller cone has a surface area of  $96\pi$  square yards. Find the surface area of the larger cone. Write your answer in terms of  $\pi$ .

25. Two spheres have a scale factor of 3 : 8. The smaller sphere has a volume of about  $54\pi$  cubic meters. Find the volume of the larger sphere. Write your answer in terms of  $\pi$ .

**Answers**

16.  $4320 \text{ cm}^3$   
 17.  $127.59 \text{ in}^3$   
 18.  $179.59 \text{ km}^3$   
 19.  $1018.08 \text{ m}^3$   
 20.  $SA = 628.32 \text{ m}^2$   
      $V = 1178.10 \text{ m}^3$   
 21.  $SA = 422.40 \text{ cm}^2$   
      $V = 618.67 \text{ cm}^3$   
 22.  $238.60 \text{ m}^3$   
 23.  $327.6 \text{ ft}^3$   
 24.  $600\pi \text{ yd}^2$   
 25.  $1024 \pi \text{ m}^3$

$$7.) SA = 2(126) + 46(10) = \boxed{712 \text{ ft}^2}$$

$$B = 14 \times 9 = 126$$

$$P = 2(14) + 2(9) = 46$$

$$h = 10$$

$$8.) B = \pi(3.5)^2 \quad P = 2\pi \cdot 3.5$$

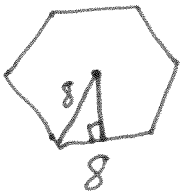
$$h = 6.8 \quad B = 12.25\pi \quad P = 7\pi$$

$$SA = 2(12.25\pi) + 7\pi(6.8)$$

$$= 24.5\pi + 47.6\pi$$

$$SA = 226.51$$

9.)



$$P = 8 \times 6 = 48$$

$$B = \frac{(6.93)(48)}{2}$$

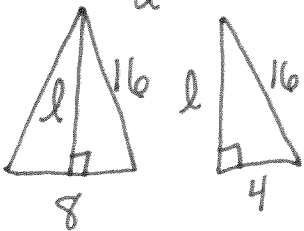
$$B = 166.32$$



$$4^2 + a^2 = 8^2$$

$$a^2 = 48$$

$$a = 4\sqrt{3} \approx 6.93$$



$$4^2 + l^2 = 16^2$$

$$l^2 = 240$$

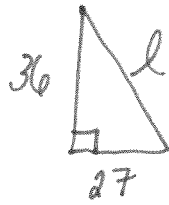
$$l = 15.49$$

$$SA = 166.32 + \frac{1}{2}(48)(15.49)$$

$$SA = 538.08$$

$$10.) SA = \pi(27)^2 + \frac{1}{2}(2\pi(27)(45))$$

$$SA = \boxed{6107.26 \text{ in}^2}$$



$$\sqrt{36^2 + 27^2} = l^2$$

$$45 = l$$

$$11.) SA = 4\pi(3.7)^2$$

$$SA = \boxed{172.03}$$

$$\frac{7.4}{2} = 3.7 = r$$

$$12.) B = \frac{1}{2}(32)(24)$$

$$B = 384$$

$$P = 40 + 24 + 32$$

$$P = 96$$

$$h = 20$$

$$SA = 2(384) + 96(20)$$

$$SA = 2688$$



$$h^2 + 32^2 = 40^2$$

$$-32^2 \quad -32^2$$

$$\sqrt{h^2} = \sqrt{576}$$

$$h = 24$$

$$13.) \begin{array}{r} 27^2 + x^2 = 45^2 \\ -27^2 \quad -27^2 \\ \hline x^2 = 1296 \\ x = 36 \end{array}$$

$$B = \frac{1}{2}(36)(27)$$

$$B = \boxed{486}$$

$$P = 36 + 27 + 45$$

$$P = \boxed{108}$$

$$h = x$$

$$6372 = 2(486) + 108x$$

$$-972 \quad -972$$

$$\frac{5400}{108} = \frac{108x}{108}$$

$$50 = x$$

$$14) 325 = 2(\pi 4.5^2) + (2\pi 4.5)x$$

$$325 = 127.23 + 9\pi x$$

$$\begin{array}{r} 325 \\ -127.23 \\ \hline 197.77 \end{array}$$

$$\frac{197.77}{(9\pi)} = \frac{9\pi x}{(9\pi)}$$

$$6.99 = x$$

$$15) SA = 2513.3$$

$$2513.3 = \pi 16^2 + \frac{1}{2}(\pi 16)x$$

$$2513.3 = 256\pi + 16\pi x$$

$$\begin{array}{r} 2513.3 \\ -256\pi \\ \hline 1709.05 \end{array}$$

$$\frac{1709.05}{(16\pi)} = \frac{16\pi x}{(16\pi)}$$

$$34 = x$$

$$16) V = \frac{1}{3}(324)(40) = 4320$$

$$B = 18^2 = 324$$



$$h^2 + 9^2 = 41^2$$

$$\begin{array}{r} h^2 + 81 \\ -81 \\ \hline h^2 \end{array}$$

$$\sqrt{h^2} = \sqrt{1600}$$

$$h = 40$$

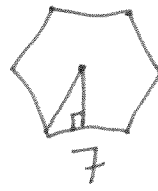
$$17) V = \frac{1}{3}(\pi 3.7^2)(8.9)$$

$$V = 127.59$$

$$18) V = \frac{4}{3}\pi(3.5^3)$$

$$= 179.59$$

19.)



30-60-90

$$a = 3.5\sqrt{3}$$

$$3.5^2 + a^2 = 7^2$$

$$\begin{array}{r} 3.5^2 + a^2 \\ -3.5^2 \\ \hline a^2 = 36.75 \end{array}$$

$$\sqrt{a^2} = \sqrt{36.75}$$

$$a = 6.06$$

$$B = \frac{(6.06)(42)}{2}$$

$$B = 127.26$$

$$P = 7 \times 6 = 42$$

$$V = (127.26)(8)$$

$$= 1018.08$$

$$20.) SA = SA_{cyl} - B_{cyl} + Lat SA_{cone}$$



$$= 2(\pi 5^2) + 2\pi 5(11) - \pi 5^2 + \pi 5$$

$$= 50\pi + 110\pi - 25\pi + 5\pi$$

$$13 = l = 200\pi$$

$$SA = 200\pi = 628.32$$

$$V = (\pi 5^2)(11) + \frac{1}{3}(\pi 5^2)(12)$$

$$= 275\pi + 100\pi$$

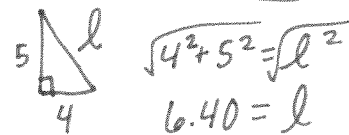
$$= 375\pi = 1178.10$$

$$21) SA = 2(64) + 32(8) - 64 + \frac{1}{2}(32)(6.40)$$

$$B = 8^2 = 64 \quad = 422.40$$

$$P = 8 \times 4 = 32$$

$$h = 8$$



$$\sqrt{4^2 + 5^2} = l$$

$$6.40 = l$$

$$V = 8^3 + \frac{1}{3}(64)(5)$$

$$= 512 + 106.67$$

$$V = 618.67$$

$$\begin{aligned}
 22.) \quad V_{\text{total}} &= V_{\text{big}} - V_{\text{small}} \\
 &= (\pi(4)^2)5 - (\pi(9)^2)(5) \\
 &= 80\pi - 405\pi
 \end{aligned}$$

$$V = 238.60 \text{ m}^3$$

$$\begin{aligned}
 23.) \quad V_{\text{total}} &= V_{\text{big}} - V_{\text{small}} \\
 &= (10 \cdot 5)(7) - (1.6 \cdot 2)(7) \\
 &= 350 - 22.4
 \end{aligned}$$

$$V = 327.60 \text{ ft}^3$$

$$\begin{array}{cc}
 a:b & a^2:b^2 \\
 2:5 & 4:25
 \end{array}$$

$$\frac{4}{25} = \frac{96\pi}{x}$$

$$\frac{4x}{4} = \frac{2400\pi}{4}$$

$$x = 600\pi \text{ yd}^2$$

$$= 1884.96 \text{ yd}^2$$

$$\begin{array}{cc}
 a:b & a^3:b^3 \\
 3:8 & 27:512
 \end{array}$$

$$\frac{27}{512} = \frac{54\pi}{V}$$

$$\frac{27V}{27} = \frac{27648\pi}{27}$$

$$V = 1024\pi \text{ m}^3$$

$$13216.99 \text{ m}^3$$