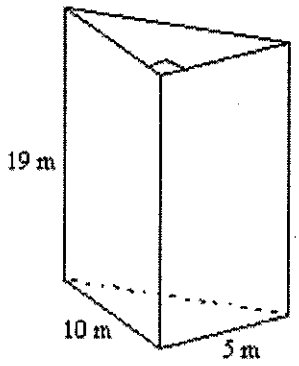
9.3-9.5 Practice

1. Find the volume of the figure below.



$B = \frac{1}{2} b \cdot h$

A. 25 m^3

B. 950 m^3

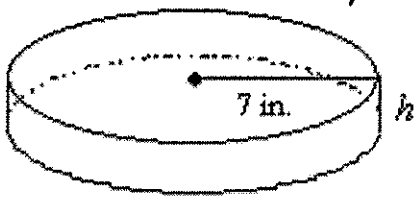
C. 475 m^3

D. 237.5 m^3

$V = B \cdot h = \frac{1}{2} 10 \cdot 5 \cdot 19 = 475 m^3$

2. Find the height of the figure to the nearest tenth of an inch.

$V = 661.9 \text{ in.}^3 = B \cdot h = \pi r^2 h$



A. 94.6 in

B. 96.6 in

C. 4.3 in

D. 4.1 in

$661.9 = \pi (7)^2 h$

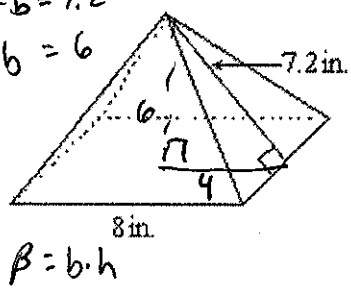
$\frac{661.9}{49\pi} = \frac{49\pi h}{49\pi}$

$4.3 = h$

3. Find the volume of the square pyramid. Round to the nearest whole cubic inch.

$4^2 + b^2 = 7.2^2$

$b = 6$



$B = b \cdot h$

$V = \frac{1}{3} B \cdot h$

$= \frac{1}{3} (8 \cdot 8) \cdot 6$

$= 128 \text{ in}^3$

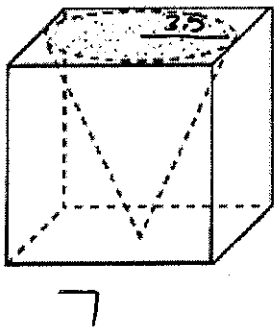
A. 154 in^3

B. 192 in^3

C. 128 in^3

D. 115 in^3

4. A machinist drilled a cone-shaped hole into a solid cube of metal as shown. If the cube has sides of length 7 centimeters, what is the volume of the metal after the hole is drilled?



$V_{CUBE} = B \cdot h = 7 \cdot 7 \cdot 7 = 343$

$V_{CONE} = \frac{1}{3} B \cdot h = \frac{1}{3} \pi r^2 h$

$= \frac{1}{3} \pi (3.5)^2 \cdot 7$

$= 89.797$

$V_{TOTAL} = 343 - 89.797$

$= 253.2 \text{ cm}^3$

A. 89.8 cm^3

B. 253.2 cm^3

C. 359.2 cm^3

D. 343 cm^3

5. Find the surface area of a sphere that has a diameter of 20 cm.

$r = 10$

$SA = 4\pi r^2$

$= 4\pi (10)^2$

$= 400\pi \text{ cm}^2$

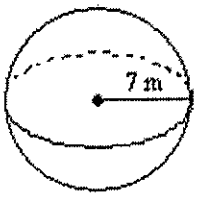
A. 1600π cm^2

B. $\frac{4000}{3}\pi$ cm^3

C. 100π cm^2

D. 400π cm^2

6. Find the volume of the sphere. Leave your answer in terms of π.



$V = \frac{4}{3} \pi r^3 = \frac{4}{3} \pi (7)^3 = 457.3\pi \text{ m}^3$

A. 16.3π m^2

B. 114.3π m^3

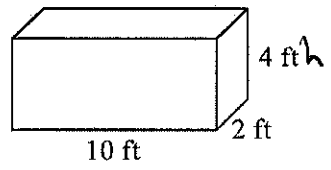
C. 457.3π m^3

D. 65.3π m^2

Chapter 9 Review

Find the lateral area, total surface area, and volume of each figure. Round all answers to the nearest hundredth.

1.



**Note: consider the bottom the base.*

$LA = P_b \cdot h = (10+2+10+2)\cdot 4 = 96\ ft^2$

$SA = LA + 2B = 96 + 2(10\cdot 2)$
$= 96 + 40 = 136\ ft^2$

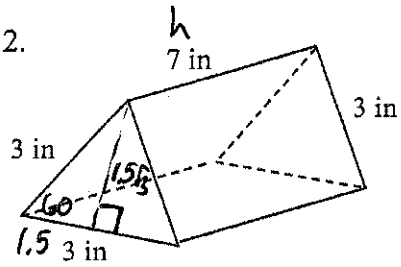
$V = B \cdot h = (10\cdot 2)\cdot 4 = 80\ ft^3$

L.A.= $96\ ft^2$

S.A.= $136\ ft^2$

Vol = $80\ ft^3$

2.



$LA = P_b \cdot h = (3+3+3)\cdot 7 = 63\ in^2$

$SA = LA + 2B = 63 + 2\left(\frac{1}{2}\cdot 3\cdot 1.5\sqrt{3}\right) = 70.79\ in^2$

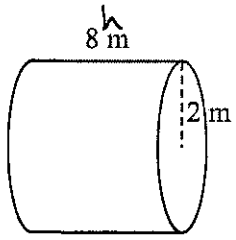
$V = B \cdot h = \left(\frac{1}{2}\cdot 3\cdot 1.5\sqrt{3}\right)(7) = 27.28\ in^3$

L.A.= $63\ in^2$

S.A.= $70.79\ in^2$

Vol = $27.28\ in^3$

3.



$LA = P_b \cdot h = 2\pi r h$
$= 2\pi(2)(8) = 32\pi = 100.53\ m^2$

$SA = LA + 2B = 100.53 + 2(\pi\cdot 2^2)$
$= 100.53 + 25.13 = 125.66\ m^2$

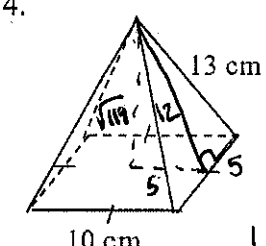
$V = B \cdot h = \pi r^2 h = \pi(2)^2\cdot 8 = 32\pi = 100.53\ m^3$

L.A.= $100.53\ m^2$

S.A.= $125.66\ m^2$

Vol = $100.53\ m^3$

4.



$LA = \frac{1}{2} P_b \cdot l = \frac{1}{2}(10+10+10+10)(12)$
$= 240\ cm^2$

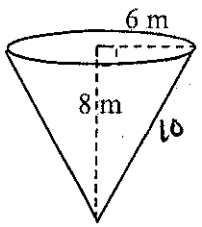
$SA = LA + B = 240 + (10\cdot 10) = 340\ cm^2$

$V = \frac{1}{3} B \cdot h = \frac{1}{3}(10\cdot 10)(\sqrt{119}) = 363.62\ cm^3$

L.A.= $240\ cm^2$

S.A.= $340\ cm^2$

Vol = $363.62\ cm^3$

5. 

$LA = \frac{1}{2} P_b \cdot l = \pi r l = \pi(6)(10)$

$= 60\pi = 188.50\ m^2$

$SA = LA + B = 60\pi + \pi(6)^2$

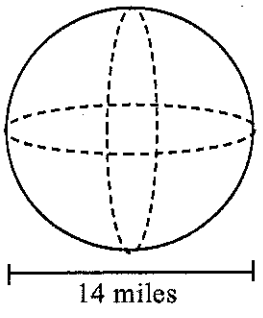
$= 60\pi + 36\pi = 96\pi = 301.59\ m^2$

$V = \frac{1}{3} B \cdot h = \frac{1}{3}\pi r^2 h = \frac{1}{3}\pi(6)^2(8) = 96\pi = 301.59\ m^3$

L.A.= $188.50\ m^2$

S.A.= $301.59\ m^2$

Vol = $301.59\ m^3$

6. 

$SA = 4\pi r^2 = 4\pi(7)^2 = 196\pi$

$= 615.75\ mi^2$

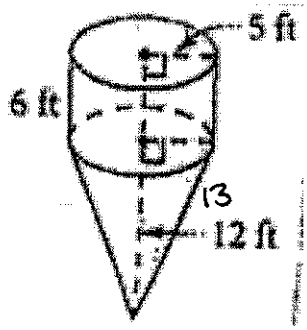
$V = \frac{4}{3}\pi r^3 = \frac{4}{3}\pi(7)^3 =$

$457\frac{1}{3}\pi = 1436.76\ mi^3$

S.A.= $615.75\ mi^2$

Vol = $1436.76\ mi^3$

Find the surface area of each figure. Round your answer to the nearest hundredth.

7. 

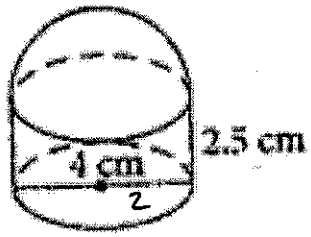
$LA_{CYL} = 2\pi(5)\cdot 6 = 60\pi$

$B = \pi(5)^2 = 25\pi$

$LA_{CONE} = \pi(5)(13) = 65\pi$

$SA = 60\pi + 25\pi + 65\pi$

$= 150\pi = \boxed{471.24\ ft^2}$

8. 

$SA_{SPHERE} = 4\pi(2)^2 = 16\pi$

$LA_{CYL} = 2\pi(2)(2.5) = 10\pi$

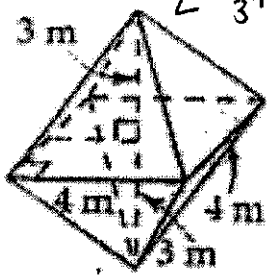
$B = \pi(2)^2 = 4\pi$

$SA_{TOTAL} = \frac{1}{2}(16\pi) + 10\pi + 4\pi$

$= 22\pi = \boxed{69.12\ cm^2}$

Find the volume of each figure. Round your answer to the nearest hundredth.

9. $2 \cdot \frac{1}{3} B \cdot h = 2 \cdot \frac{1}{3}(4 \cdot 4) \cdot 3$

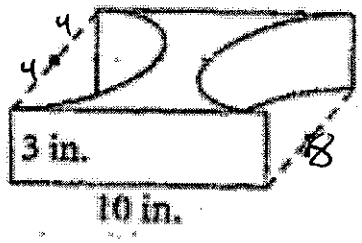


$= \boxed{32 m^3}$

10. $V_{PRISM} = B \cdot h = 10 \cdot 8 \cdot 3 = 240$

$V_{CYL} = B \cdot h = \pi (4)^2 \cdot 3$

$= 48\pi$



$V_{TOTAL} = 240 - 48\pi$

$= \boxed{89.20 in^3}$

11. You are helping Ms. Walczak put up wallpaper in the classroom. The floor is 16 ft by 20ft and the walls are 10 ft high. Find the area of the space you will cover with wallpaper.

Don't cover floor or ceiling - LA only

$LA = P_b \cdot h = (16+20+16+20) \cdot 10 = 72 \cdot 10 = \boxed{720 ft^2}$

12. If the wallpaper in #11 costs $2 per square ft, how much will it cost to wallpaper the classroom?

$720 \cdot 2 = \boxed{\$1440}$