

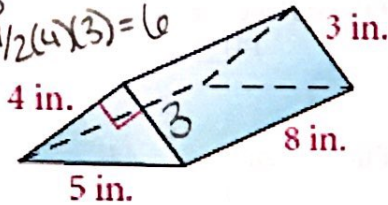
Chapter 12 Review

Name: Answer Key

For #1 - 5, find lateral area, surface area and volume of the figures below:
(Round to the nearest tenth if necessary.)

1) Right triangular prism

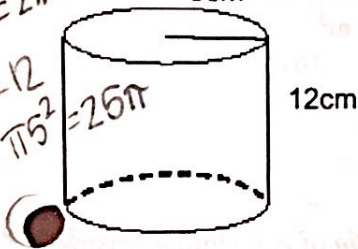
$P = 12$
 $h = 8$
 $B = \frac{1}{2}(4)(3) = 6$



1) L.A.: $\frac{12 \cdot 8}{1} = 96 \text{ in}^2$
S.A.: $96 + 2(6) = 108 \text{ in}^2$
Vol.: $\frac{6 \cdot 8}{1} = 48 \text{ in}^3$

2) Cylinder

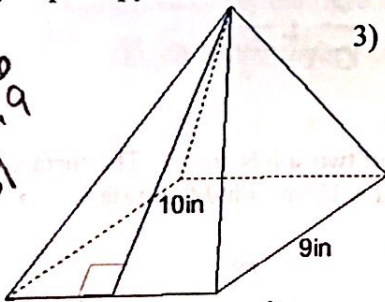
$P = 2\pi(5) = 10\pi$
 $r = 5$
 $h = 12$
 $B = \pi(5)^2 = 25\pi$



2) L.A.: $10\pi \cdot 12 = 376.8 \text{ cm}^2$
S.A.: $376.8 + 2(25\pi) = 533.8 \text{ cm}^2$
Vol.: $25\pi \cdot 12 = 942 \text{ cm}^3$

3) Square pyramid

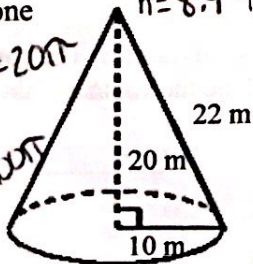
$P = 36$
 $h = 8.9$
 $B = 81$



3) L.A.: $\frac{1}{2}(36)(10) = 180 \text{ in}^2$
S.A.: $180 + 81 = 261 \text{ in}^2$
Vol.: $\frac{1}{3}(81)(8.9) = 240.3 \text{ in}^3$

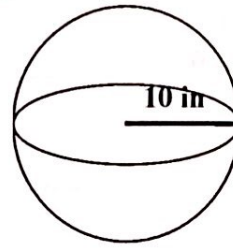
4) Cone

$P = 2\pi(10) = 20\pi$
 $h = 20$
 $B = \pi(10)^2 = 100\pi$
 $l = 22$



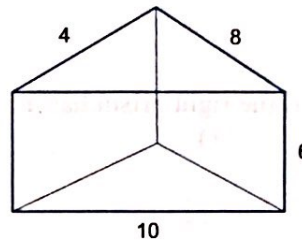
4) L.A.: $\frac{1}{2}(20\pi)(22) = 690.8 \text{ m}^2$
S.A.: $690.8 + 100\pi = 1009.8 \text{ m}^2$
Vol.: $\frac{1}{3}(100\pi)(20) = 2093.3 \text{ m}^3$

5) Sphere



5) S.A.: $4\pi(10)^2 = 1256 \text{ in}^2$
Vol.: $\frac{4}{3}\pi(10)^3 = 4188.7 \text{ in}^3$

6) For the triangular prism below, find the lateral area.



6) $22 \cdot 6 = 132$
 $P \cdot h$
 $P = 4 + 8 + 10 = 22$
 $h = 6$

7) Find the surface area of a right rectangular prism with a height of 8 inches, a length of 3 inches, and a width of 10 inches.

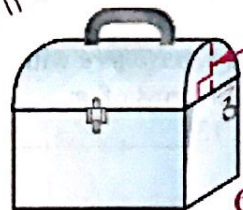


$P = 26$
 $h = 8$
 $B = 30$

7) $26 \cdot 8 + 2(30) = 208 \text{ in}^2$

8) For the composite figure below, find the total volume.

$B = \pi(3)^2 = 9\pi$



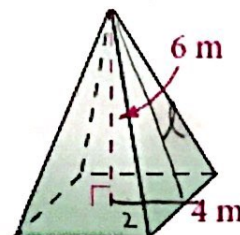
8) 501.3 in^3

$V(\text{top}) = \frac{1}{2}(9\pi)(10) = 141.3$

$V(\text{bottom}) = 60(6) = 360$

$141.3 + 360 = 501.3$

9) For the pyramid below, find the slant height.

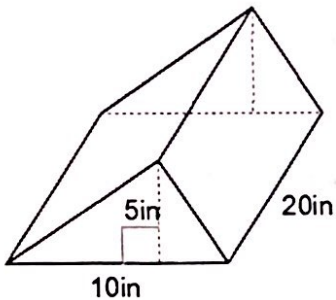


9) 6.3 m or $2\sqrt{10} \text{ m}$

$2^2 + 6^2 = l^2$
 $4 + 36 = l^2$
 $40 = l^2$
 $6.3 = l$
 $2\sqrt{10}$

10) Find the volume of the triangular prism.

(*hint: your base is a triangle)

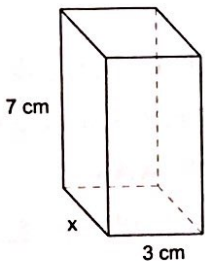


$$25 \cdot 20 = 500 \text{ in}^3$$

$$B = \frac{1}{2}(5)(10) = 25$$

$$h = 20$$

11) Find the value of x if the right prism has a volume of 84 cm^3



$$4 \text{ cm}$$

$$84 = 3 \times 7$$

$$84 = 21x$$

$$4 = x$$

12) Given the circumference of a sphere to be 25 cm, find the surface area.

$$C = 2\pi r$$

$$25 = 2\pi r$$

$$40 = r$$

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

$$201. \text{ cm}^2$$

13) Find the surface area of a hemisphere with radius of 6m. Leave answers in terms of π .

$$108\pi \text{ m}^2$$

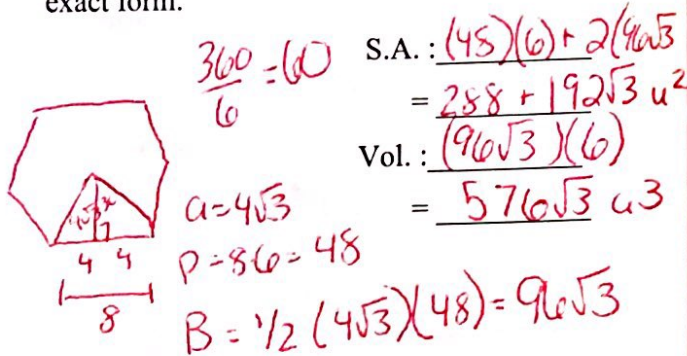
$$\frac{1}{2}(4\pi r^2) =$$

$$\frac{1}{2}(4\pi(6^2)) = 72\pi$$

add base

$$+ \frac{36\pi}{108\pi}$$

14) Find the volume and surface area of a regular hexagonal prism with base edges of 8 and a height of 6. Leave your answer in exact form.



$$\frac{360}{6} = 60$$

$$S.A. : (48)(6) + 2(96\sqrt{3})$$

$$= 288 + 192\sqrt{3} \text{ u}^2$$

$$Vol. : (96\sqrt{3})(6)$$

$$= 576\sqrt{3} \text{ u}^3$$

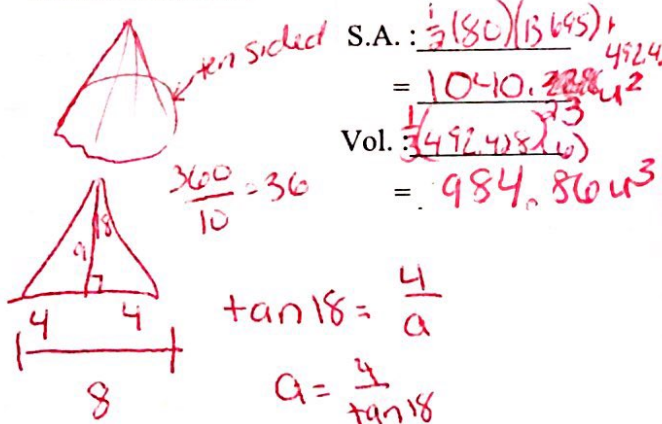
$$a = 4\sqrt{3}$$

$$P = 8(6) = 48$$

$$B = \frac{1}{2}(4\sqrt{3})(48) = 96\sqrt{3}$$

$$S.A. = Ph + 2B$$

15) Find the volume and surface area of a pyramid with a base that is a regular decagon with base edges of 8 and a height of 6. Round your answer to the nearest hundredth.



$$S.A. : \frac{1}{2}(80)(13.695) + 492.42$$

$$= 1040.228 + 492.42$$

$$Vol. : \frac{1}{3}(492.428)(6)$$

$$= 984.86 \text{ u}^3$$

$$\frac{360}{10} = 36$$

$$\tan 18 = \frac{4}{a}$$

$$a = \frac{4}{\tan 18}$$

$$a = 12.3107$$

$$12.3107^2 + 6^2 = l^2$$

$$l = 13.695$$

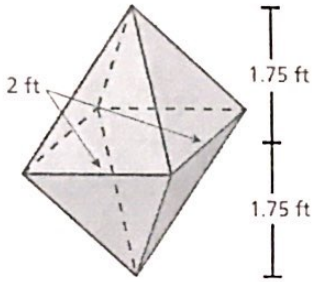
$$B = \frac{1}{2}(80)(12.3107)$$

$$B = 492.428$$

16) Find the volume and surface area of the solid below. Leave your answer in exact form. *Round to tenth*

S.A.: $LA + LA = \frac{1}{2}(8)(202) + \frac{1}{2}(8)(202)$
 $= 1604$

Vol.: $\frac{1}{3}Bh + \frac{1}{3}Bh = \frac{1}{3}(4)(1.75) + \frac{1}{3}(4)(1.75)$
 $= \frac{14}{3} \text{ ft}^3 \approx 4.7 \text{ ft}^3$



$B = 2 \cdot 2 = 4$

$P = 8$

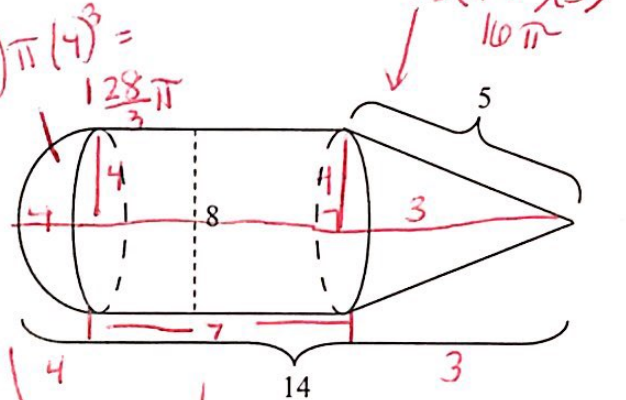


$1^2 + 1.75^2 = L^2$
 $1 + 3.0625 = L^2$

$\sqrt{4.0625} = L$
 $L = 2.02$

18) Find the total Volume of the solid. Leave in terms of π .

Vol.: $\frac{128}{3}\pi + 112\pi + 16\pi$
 $= \frac{800}{3}\pi \text{ u}^3$



$\frac{1}{3}(\pi 4^2)(3) = 16\pi$

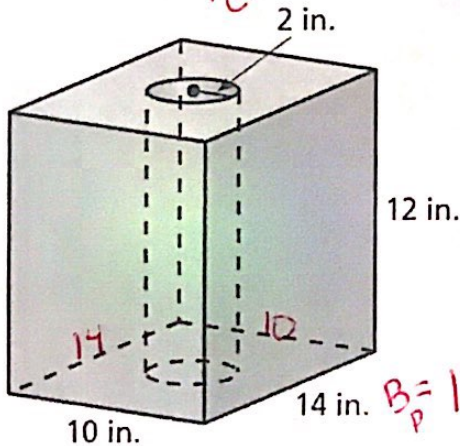
$\frac{128}{3}\pi$

17) Find the volume and surface area of the solid below. Leave your answer in exact form.

S.A.: $576 + 48\pi + 280 - 8\pi$
 $= 856 + 40\pi \text{ in}^2$

Vol.: $V_{\text{prism}} - V_{\text{cylinder}}$

$B_c = 4\pi$
 $P_c = 2\pi(2) = 4\pi$
 $= 1680 - 48\pi \text{ in}^3$



12 in.

10 in.

$B_p = 140$

$P = 48$

$L_{\text{prism}} + L_{\text{cylinder}} + 2B_{\text{prism}} - 2B_{\text{cylinder}}$

$p \cdot h + p \cdot h + 2B - 2B$
 $48(12) + 4\pi(12) + 2(140) - 2(4\pi)$
 $576 + 48\pi + 280 - 8\pi$
 $856 + 40\pi$

$V_{\text{prism}} - V_{\text{cylinder}}$

$B \cdot h - B \cdot h$
 $140(12) - 4\pi(12) = 1680 - 48\pi$