

GEO 21 ☺ Extra Practice

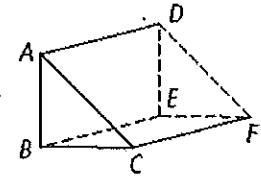
Chapter 11

Lesson 11-1

1. Look at the polyhedron at the right.

- How many vertices are there? List them 6 pts. A, B, C, D, E, F
- How many edges are there? List them 9 \overline{AB} , \overline{BC} , \overline{CA} , \overline{AD} , \overline{CF} , \overline{BE} , \overline{DE} , \overline{DP} , \overline{EF}
- How many faces are there? List them. 5

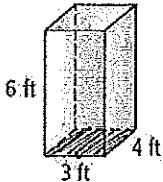
$$\triangle ABC, \triangle DEF, \square ADCF, \square FCBE, \square ADEB$$



Lessons 11-2 and 11-3

Find the (a) lateral area and (b) surface area and (c) volume of each figure. Leave your answers in terms of π or in simplest radical form.

6.



$$B = (3)(4) = 12$$

$$P = 3+4+3+4 = 14$$

$$H = 6$$

$$SA = PH + 2B$$

$$(14)(6) + 2(12)$$

$$84 + 24 =$$

$$108 = SA$$

$$84 = LA$$

9.

$$P = 12$$

$$B = \frac{1}{2}ap$$

$$\frac{1}{2}(\sqrt{3})(12)$$

$$6\sqrt{3}$$

$$H = 6$$

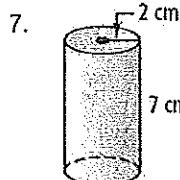
$$l^2 \Rightarrow l^2 = 6^2 + (6\sqrt{3})^2$$

$$l^2 = 36 + (36 \cdot 3)$$

$$36 + 108$$

$$l^2 = 144$$

$$l = 12$$



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

$$C = 4\pi$$

$$H = 7$$

$$SA = CH + 2B$$

$$(4\pi)(7) + 2(4\pi)$$

$$28\pi + 8\pi$$

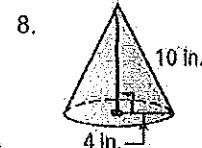
$$36\pi \text{ cm}^2$$

$$LA = 28\pi$$

$$V = BH$$

$$V = (4\pi)(7)$$

$$28\pi$$



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

$$16\pi$$

$$r = 4$$

$$l = 10$$

$$H = 2\sqrt{21}$$

$$4^2 + H^2 = 10^2$$

$$16 + H^2 = 100$$

$$H^2 = 84$$

$$H = 2\sqrt{21}$$

$$SA = \pi rl + \pi r^2$$

$$\pi(4)(10) + \pi(4^2)$$

$$40\pi + 16\pi$$

$$SA = 56\pi \text{ in}^2$$

$$LA = 40\pi \text{ in}^2$$

$$V = \frac{BH}{3} = \frac{(16\pi)(2\sqrt{21})}{3}$$

$$B = 64$$

$$P = 32$$

$$l = 7$$

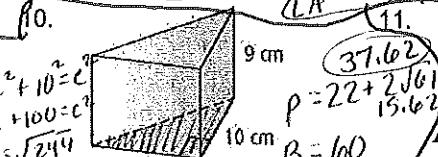
$$4^2 + H^2 = 7^2$$

$$16 + H^2 = 49$$

$$H^2 = 33$$

$$H = 5.74$$

10.



$$12^2 + 10^2 = c^2$$

$$144 + 100 = c^2$$

$$c = \sqrt{244}$$

$$2\sqrt{61}$$

$$SA = PH + 2B$$

$$(37.62)(9) + 2(60)$$

$$338.58 + 120$$

$$458.58 \text{ cm}^2$$

$$LA = 338.58$$

$$V = BH$$

$$(60)(9) = 540$$

$$540 \text{ cm}^3$$

$$SA = \frac{1}{2}pl + B$$

$$\frac{1}{2}(32)(7) + 64$$

$$112 + 64$$

$$176 \text{ cm}^2$$

$$LA = 112 \text{ cm}^2$$

$$V = \frac{BH}{3} = \frac{(64)(5.74)}{3}$$

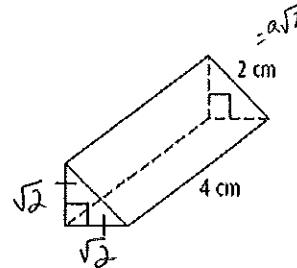
$$122.45 \text{ cm}^3$$

Extra Practice (continued)

Chapter 11

$$a = \frac{2}{\sqrt{2}} \cdot \frac{\sqrt{2}}{\sqrt{2}} = \frac{2\sqrt{2}}{2}$$

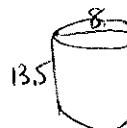
15. An optical instrument contains a triangular glass prism with the dimensions shown at the right. Find the lateral area and surface area of the prism. Round to the nearest tenth.



$$\begin{aligned} LA &= pH = (4.83)(4) (19.3) \\ SA &= pH + 2B \\ &19.31 + 2(1) \\ &\approx 21.31 \\ &\approx 21.3 \text{ cm}^2 \end{aligned}$$

$$\begin{aligned} B &= \frac{1}{2}(\sqrt{2})(\sqrt{2}) \\ &\frac{1}{2}(2) = 1 \\ H &= 4 \\ P &= \sqrt{2} + \sqrt{2} + 2 \\ &2\sqrt{2} + 2 \\ &4.83 \end{aligned}$$

16. A company packages salt in a cylindrical box that has a diameter of 8 cm and a height of 13.5 cm. Find the lateral area and surface area of the box. Round to the nearest tenth.



$$\begin{aligned} LA &= pH \\ &(8\pi)(13.5) \\ &108\pi \\ Label &= 339.29 \text{ cm}^2 \end{aligned}$$

$$\begin{aligned} C &= 8\pi \\ B &= 16\pi \\ H &= 13.5 \\ V &= BH \\ &(16\pi)(13.5) \\ &216\pi \\ &(678.58 \text{ cm}^3 \text{ of salt}) \end{aligned}$$

Extra Practice (continued)

Chapter 11

26. A greenhouse has the dimensions shown in the figure. What is the volume of the greenhouse? Round to the nearest cubic foot.



$$\begin{aligned} r &= 3.75 \\ V &= BH \\ &V = 485.97 \\ &486.0 \end{aligned}$$

27. Find the volume of a can of chicken broth that has a diameter of 7.5 cm and a height of 11 cm. Round to the nearest tenth.

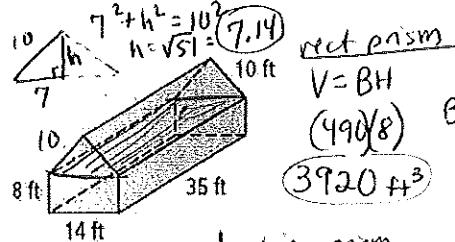
$$B = \pi(3.75)^2$$

$$14.0625\pi$$

$$B = 44.18$$

$$H = 11$$

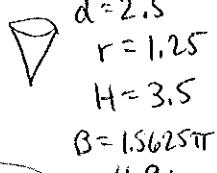
$$5669.65 \approx 5670 \text{ ft}^3$$



$$\begin{aligned} V &= BH \\ &(490)(8) \\ &3920 \text{ ft}^3 \end{aligned}$$

$$\begin{aligned} B &= (1/4)(35) \\ &490 \\ H &= 8 \end{aligned}$$

28. A paper drinking cup is a cone that has a diameter of $2\frac{1}{2}$ in. and a height of $3\frac{1}{2}$ in. How many cubic inches of water does the cup hold when it is full to the brim? Round to the nearest tenth.



$$V = \frac{BH}{3} = \frac{(4.91)(3.5)}{3}$$

$$5.7 \text{ in}^3$$

Lesson 11-6

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

$$SA = 4\pi r^2$$

$$4.91$$

Find the volume and surface area of a sphere with the given radius or diameter. Give each answer in terms of π and rounded to the nearest whole number.

$$30. r = 5 \text{ cm}$$

$$V = \frac{4\pi(5^3)}{3} = \frac{500\pi}{3} \approx 524$$

$$SA = 4\pi(5)^2 = 100\pi \approx 314$$

$$31. r = 3 \text{ ft}$$

$$V = \frac{4\pi(3^3)}{3} = 36\pi \approx 113$$

$$SA = 4\pi(3)^2 = 36\pi \approx 113$$

$$32. d = 8 \text{ in.}$$

$$r = 4$$

$$V = \frac{4\pi(4)^3}{3} = \frac{256\pi}{3} \approx 268$$

$$SA = 4\pi(4)^2 = 64\pi \approx 201$$

$$33. d = 2 \text{ ft } r = 1$$

$$V = \frac{4\pi(1)^3}{3} = \frac{4\pi}{3} \approx 4$$

$$SA = 4\pi(1)^2 = 4\pi \approx 13$$

$$34. r = 0.5 \text{ in.}$$

$$V = \frac{4\pi(0.5)^3}{3} = \frac{5\pi}{3} \approx 5.2$$

$$SA = 4\pi(0.5)^2 = \pi \approx 3$$

$$35. d = 9 \text{ in. } r = 4.5$$

$$V = \frac{4\pi(4.5)^3}{3} = 121.5\pi \approx 382$$

$$SA = 4\pi(4.5)^2 = 81\pi \approx 254$$

The surface area of each sphere is given. Find the volume of each sphere in terms of π .

$$36. \frac{64\pi m^2}{4\pi} = \frac{4\pi r^2}{4\pi}$$

$$16 = r^2$$

$$(r = 4)$$

$$37. \frac{16\pi \text{ in.}^2}{4\pi} = \frac{4\pi r^2}{4\pi}$$

$$4 = r^2$$

$$(r = 2)$$

$$38. \frac{49\pi \text{ ft}^2}{4\pi} = \frac{4\pi r^2}{4\pi}$$

$$12.25 = r^2$$

$$(3.5 = r)$$

$$\text{or } r = \frac{7}{2}$$

39. A spherical beach ball has a diameter of 1.75 ft when it is full of air. What is the surface area of the beach ball, and how many cubic feet of air does it contain? Round to the nearest hundredth.

$$r = .875$$

$$SA = 4\pi r^2$$

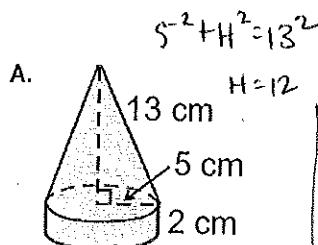
$$4\pi (.875)^2$$

$$(9.62 \text{ ft}^2)$$

$$V = \frac{4\pi r^3}{3} = \frac{4\pi (.875)^3}{3}$$

$$(2.81 \text{ ft}^3)$$

Find the surface area and volume of the following composite figures;



Cylinder

$$B = 2\pi r$$

$$H = 2$$

$$C = 10\pi$$

$$Vol. = BH + \frac{BH}{3}$$

$$(2\pi r)(2) + \frac{(2\pi r)(12)}{3}$$

$$50\pi + 100\pi = 150\pi \approx 471.2$$

$$SA = (\pi r^2 + 2\pi rh) + (\pi rl) =$$

$$(\pi(5^2) + 2\pi(5)(12)) + \pi(5)(13) = 45\pi + 65\pi$$

$$110\pi \approx 345.6$$

11. The circumference of a standard baseball is about 9 in. About how many square in. of horsehide are required to

cover 100 baseballs, to the nearest whole number?

$$C = 9 = 2\pi r$$

$$r = \frac{9}{2\pi} = 1.43$$

$$SA = 4\pi r^2$$

$$4\pi (1.43)^2$$

$$25.78$$

$$\times \frac{100}{25.78} \approx$$

$$2578 \text{ in}^2$$

12. The radius of Earth is approximately 4000 mi, and the radius of its core, which is a sphere of molten metals, is about 800 mi. What is the volume of Earth that lies outside the core to the nearest billion mi³?

$$r = 4000$$

$$V_{\text{Earth}} = \frac{4\pi r^3}{3}$$

$$\frac{4\pi (4000)^3}{3}$$

$$V_{\text{core}} = \frac{4\pi r^3}{3}$$

$$\frac{4\pi (800)^3}{3}$$

$$8.465 \times 10^{10}$$



13. Concrete can be purchased by the cubic yard. How much will it cost to pour a rectangular slab 18 feet by 18 feet by 4 inches for a patio if the concrete costs \$41.00 per cubic yard?

$$18^2 = 216 \text{ ft}^2$$

$$B = 216 \cdot 216$$

$$B = 46656$$

$$H = 4$$

$$V = 46656 \cdot 4$$

$$V = 186624$$

$$1 \text{ cu yd} = 36'' \times 36'' \times 36''$$

$$46656 \text{ cu in}$$

$$(186624) / (4 \times 4) = 1164$$

14. Janine wants to paint just the lateral surface of a cylindrical pottery vase that has a height of 45 cm and a diameter of 14 cm. To the nearest whole number, find the number of square centimeters she will need to paint.

$$LA = CH$$

$$C = 14\pi$$

$$H = 45$$

$$630\pi$$

$$1979$$

15. Janine made a cylindrical vase in which the sum of the lateral area and area of one base was about 3000π square centimeters. The vase had a height of 35 centimeters. Find the radius of the vase.

$$LA = CH$$

$$LA + B = 3000\pi$$

$$CH + B = 3000\pi$$

$$C(35) + B = 3000\pi$$

$$2\pi r(35) + \pi r^2 = \frac{3000\pi}{\pi} \Rightarrow 70r + r^2 = 3000$$

$$r^2 + 70r - 3000 = 0$$

$$(r-30)(r+100) = 0$$

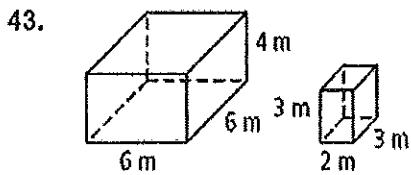
$$r = 30$$

Lesson 11-7

Copy and complete the table for three similar solids.

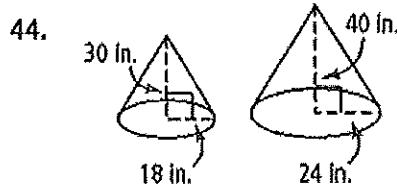
	Similarity Ratio	Ratio of Surface Areas	Ratio of Volumes
40.	2:3	4:9	8:27
41.	5:8	25:64	125:512
42.	3:4	9:16	27:64

Are the two figures similar? If so, give the scale factor.



$$\begin{matrix} 6:2 \\ 6:3 \\ 3:4 \end{matrix}$$

(NO)



$$\begin{matrix} 30:40 \Rightarrow 3:4 \\ 18:24 \Rightarrow 3:4 \end{matrix}$$

yes

The surface areas of two similar figures are given. The volume of the larger figure is given. Find the volume of the smaller figure.

45. S.A. = 160 ft^2

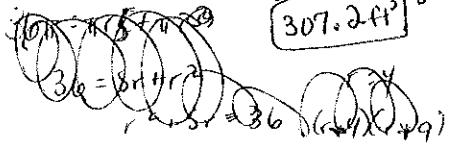
S.A. = 250 ft^2

$$V = 600 \text{ ft}^3$$

$$\frac{64}{125} = \frac{X}{600}$$

$$X = \frac{600}{125} \cdot 64$$

$$X = 307.2 \text{ ft}^3$$



46. S.A. = 121 cm^2

S.A. = 196 cm^2

$$V = 343 \text{ cm}^3$$

$$\frac{1331}{2744} = \frac{X}{343}$$

$$X = \frac{343}{2744} \cdot 1331$$

$$X = 166.375 \text{ cm}^3$$

47. S.A. = 4 yd^2

S.A. = 4.5 yd^2

$$V = 8 \text{ yd}^3$$

$$\frac{2}{\sqrt{4.5}} = \frac{4}{4.5}$$

$$\frac{4}{4.5} = \frac{8}{9.546}$$

$$\begin{array}{c|c|c} L & A & V \\ \hline 2 & \frac{4}{4.5} & \frac{8}{9.546} \\ \hline \sqrt{4.5} & 8 & 9.546 \\ \hline 2 & 8 & 9.546 \\ \hline 3 & 12 & 18 \\ \hline 4 & 16 & 32 \\ \hline 5 & 20 & 50 \\ \hline 6 & 24 & 72 \\ \hline 7 & 28 & 98 \\ \hline 8 & 32 & 128 \\ \hline 9 & 36 & 162 \\ \hline 10 & 40 & 200 \\ \hline 11 & 44 & 242 \\ \hline 12 & 48 & 288 \\ \hline 13 & 52 & 338 \\ \hline 14 & 56 & 392 \\ \hline 15 & 60 & 450 \\ \hline 16 & 64 & 512 \\ \hline 17 & 68 & 582 \\ \hline 18 & 72 & 656 \\ \hline 19 & 76 & 736 \\ \hline 20 & 80 & 820 \\ \hline 21 & 84 & 910 \\ \hline 22 & 88 & 1004 \\ \hline 23 & 92 & 1102 \\ \hline 24 & 96 & 1204 \\ \hline 25 & 100 & 1312 \\ \hline 26 & 104 & 1428 \\ \hline 27 & 108 & 1548 \\ \hline 28 & 112 & 1672 \\ \hline 29 & 116 & 1800 \\ \hline 30 & 120 & 1932 \\ \hline 31 & 124 & 2068 \\ \hline 32 & 128 & 2208 \\ \hline 33 & 132 & 2352 \\ \hline 34 & 136 & 2500 \\ \hline 35 & 140 & 2652 \\ \hline 36 & 144 & 2808 \\ \hline 37 & 148 & 2968 \\ \hline 38 & 152 & 3132 \\ \hline 39 & 156 & 3300 \\ \hline 40 & 160 & 3472 \\ \hline 41 & 164 & 3648 \\ \hline 42 & 168 & 3824 \\ \hline 43 & 172 & 4000 \\ \hline 44 & 176 & 4176 \\ \hline 45 & 180 & 4352 \\ \hline 46 & 184 & 4532 \\ \hline 47 & 188 & 4712 \\ \hline 48 & 192 & 4892 \\ \hline 49 & 196 & 5072 \\ \hline 50 & 200 & 5252 \\ \hline 51 & 204 & 5432 \\ \hline 52 & 208 & 5612 \\ \hline 53 & 212 & 5792 \\ \hline 54 & 216 & 5972 \\ \hline 55 & 220 & 6152 \\ \hline 56 & 224 & 6332 \\ \hline 57 & 228 & 6512 \\ \hline 58 & 232 & 6692 \\ \hline 59 & 236 & 6872 \\ \hline 60 & 240 & 7052 \\ \hline 61 & 244 & 7232 \\ \hline 62 & 248 & 7412 \\ \hline 63 & 252 & 7592 \\ \hline 64 & 256 & 7772 \\ \hline 65 & 260 & 7952 \\ \hline 66 & 264 & 8132 \\ \hline 67 & 268 & 8312 \\ \hline 68 & 272 & 8492 \\ \hline 69 & 276 & 8672 \\ \hline 70 & 280 & 8852 \\ \hline 71 & 284 & 9032 \\ \hline 72 & 288 & 9212 \\ \hline 73 & 292 & 9392 \\ \hline 74 & 296 & 9572 \\ \hline 75 & 300 & 9752 \\ \hline 76 & 304 & 9932 \\ \hline 77 & 308 & 10112 \\ \hline 78 & 312 & 10292 \\ \hline 79 & 316 & 10472 \\ \hline 80 & 320 & 10652 \\ \hline 81 & 324 & 10832 \\ \hline 82 & 328 & 11012 \\ \hline 83 & 332 & 11192 \\ \hline 84 & 336 & 11372 \\ \hline 85 & 340 & 11552 \\ \hline 86 & 344 & 11732 \\ \hline 87 & 348 & 11912 \\ \hline 88 & 352 & 12092 \\ \hline 89 & 356 & 12272 \\ \hline 90 & 360 & 12452 \\ \hline 91 & 364 & 12632 \\ \hline 92 & 368 & 12812 \\ \hline 93 & 372 & 13002 \\ \hline 94 & 376 & 13192 \\ \hline 95 & 380 & 13382 \\ \hline 96 & 384 & 13572 \\ \hline 97 & 388 & 13762 \\ \hline 98 & 392 & 13952 \\ \hline 99 & 396 & 14142 \\ \hline 100 & 400 & 14332 \\ \hline 101 & 404 & 14522 \\ \hline 102 & 408 & 14712 \\ \hline 103 & 412 & 14902 \\ \hline 104 & 416 & 15092 \\ \hline 105 & 420 & 15282 \\ \hline 106 & 424 & 15472 \\ \hline 107 & 428 & 15662 \\ \hline 108 & 432 & 15852 \\ \hline 109 & 436 & 16042 \\ \hline 110 & 440 & 16232 \\ \hline 111 & 444 & 16422 \\ \hline 112 & 448 & 16612 \\ \hline 113 & 452 & 16802 \\ \hline 114 & 456 & 17002 \\ \hline 115 & 460 & 17192 \\ \hline 116 & 464 & 17382 \\ \hline 117 & 468 & 17572 \\ \hline 118 & 472 & 17762 \\ \hline 119 & 476 & 17952 \\ \hline 120 & 480 & 18142 \\ \hline 121 & 484 & 18332 \\ \hline 122 & 488 & 18522 \\ \hline 123 & 492 & 18712 \\ \hline 124 & 496 & 18902 \\ \hline 125 & 500 & 19092 \\ \hline 126 & 504 & 19282 \\ \hline 127 & 508 & 19472 \\ \hline 128 & 512 & 19662 \\ \hline 129 & 516 & 19852 \\ \hline 130 & 520 & 20042 \\ \hline 131 & 524 & 20232 \\ \hline 132 & 528 & 20422 \\ \hline 133 & 532 & 20612 \\ \hline 134 & 536 & 20802 \\ \hline 135 & 540 & 21092 \\ \hline 136 & 544 & 21282 \\ \hline 137 & 548 & 21472 \\ \hline 138 & 552 & 21662 \\ \hline 139 & 556 & 21852 \\ \hline 140 & 560 & 22042 \\ \hline 141 & 564 & 22232 \\ \hline 142 & 568 & 22422 \\ \hline 143 & 572 & 22612 \\ \hline 144 & 576 & 22802 \\ \hline 145 & 580 & 23002 \\ \hline 146 & 584 & 23192 \\ \hline 147 & 588 & 23382 \\ \hline 148 & 592 & 23572 \\ \hline 149 & 596 & 23762 \\ \hline 150 & 600 & 23952 \\ \hline 151 & 604 & 24142 \\ \hline 152 & 608 & 24332 \\ \hline 153 & 612 & 24522 \\ \hline 154 & 616 & 24712 \\ \hline 155 & 620 & 24902 \\ \hline 156 & 624 & 25092 \\ \hline 157 & 628 & 25282 \\ \hline 158 & 632 & 25472 \\ \hline 159 & 636 & 25662 \\ \hline 160 & 640 & 25852 \\ \hline 161 & 644 & 26042 \\ \hline 162 & 648 & 26232 \\ \hline 163 & 652 & 26422 \\ \hline 164 & 656 & 26612 \\ \hline 165 & 660 & 26802 \\ \hline 166 & 664 & 27002 \\ \hline 167 & 668 & 27192 \\ \hline 168 & 672 & 27382 \\ \hline 169 & 676 & 27572 \\ \hline 170 & 680 & 27762 \\ \hline 171 & 684 & 27952 \\ \hline 172 & 688 & 28142 \\ \hline 173 & 692 & 28332 \\ \hline 174 & 696 & 28522 \\ \hline 175 & 700 & 28712 \\ \hline 176 & 704 & 28902 \\ \hline 177 & 708 & 29092 \\ \hline 178 & 712 & 29282 \\ \hline 179 & 716 & 29472 \\ \hline 180 & 720 & 29662 \\ \hline 181 & 724 & 29852 \\ \hline 182 & 728 & 30042 \\ \hline 183 & 732 & 30232 \\ \hline 184 & 736 & 30422 \\ \hline 185 & 740 & 30612 \\ \hline 186 & 744 & 30802 \\ \hline 187 & 748 & 31092 \\ \hline 188 & 752 & 31282 \\ \hline 189 & 756 & 31472 \\ \hline 190 & 760 & 31662 \\ \hline 191 & 764 & 31852 \\ \hline 192 & 768 & 32042 \\ \hline 193 & 772 & 32232 \\ \hline 194 & 776 & 32422 \\ \hline 195 & 780 & 32612 \\ \hline 196 & 784 & 32802 \\ \hline 197 & 788 & 33092 \\ \hline 198 & 792 & 33282 \\ \hline 199 & 796 & 33472 \\ \hline 200 & 800 & 33662 \\ \hline 201 & 804 & 33852 \\ \hline 202 & 808 & 34042 \\ \hline 203 & 812 & 34232 \\ \hline 204 & 816 & 34422 \\ \hline 205 & 820 & 34612 \\ \hline 206 & 824 & 34802 \\ \hline 207 & 828 & 35092 \\ \hline 208 & 832 & 35282 \\ \hline 209 & 836 & 35472 \\ \hline 210 & 840 & 35662 \\ \hline 211 & 844 & 35852 \\ \hline 212 & 848 & 36042 \\ \hline 213 & 852 & 36232 \\ \hline 214 & 856 & 36422 \\ \hline 215 & 860 & 36612 \\ \hline 216 & 864 & 36802 \\ \hline 217 & 868 & 37092 \\ \hline 218 & 872 & 37282 \\ \hline 219 & 876 & 37472 \\ \hline 220 & 880 & 37662 \\ \hline 221 & 884 & 37852 \\ \hline 222 & 888 & 38042 \\ \hline 223 & 892 & 38232 \\ \hline 224 & 896 & 38422 \\ \hline 225 & 900 & 38612 \\ \hline 226 & 904 & 38802 \\ \hline 227 & 908 & 39092 \\ \hline 228 & 912 & 39282 \\ \hline 229 & 916 & 39472 \\ \hline 230 & 920 & 39662 \\ \hline 231 & 924 & 39852 \\ \hline 232 & 928 & 40042 \\ \hline 233 & 932 & 40232 \\ \hline 234 & 936 & 40422 \\ \hline 235 & 940 & 40612 \\ \hline 236 & 944 & 40802 \\ \hline 237 & 948 & 41092 \\ \hline 238 & 952 & 41282 \\ \hline 239 & 956 & 41472 \\ \hline 240 & 960 & 41662 \\ \hline 241 & 964 & 41852 \\ \hline 242 & 968 & 42042 \\ \hline 243 & 972 & 42232 \\ \hline 244 & 976 & 42422 \\ \hline 245 & 980 & 42612 \\ \hline 246 & 984 & 42802 \\ \hline 247 & 988 & 43092 \\ \hline 248 & 992 & 43282 \\ \hline 249 & 996 & 43472 \\ \hline 250 & 1000 & 43662 \\ \hline 251 & 1004 & 43852 \\ \hline 252 & 1008 & 44042 \\ \hline 253 & 1012 & 44232 \\ \hline 254 & 1016 & 44422 \\ \hline 255 & 1020 & 44612 \\ \hline 256 & 1024 & 44802 \\ \hline 257 & 1028 & 45092 \\ \hline 258 & 1032 & 45282 \\ \hline 259 & 1036 & 45472 \\ \hline 260 & 1040 & 45662 \\ \hline 261 & 1044 & 45852 \\ \hline 262 & 1048 & 46042 \\ \hline 263 & 1052 & 46232 \\ \hline 264 & 1056 & 46422 \\ \hline 265 & 1060 & 46612 \\ \hline 266 & 1064 & 46802 \\ \hline 267 & 1068 & 47092 \\ \hline 268 & 1072 & 47282 \\ \hline 269 & 1076 & 47472 \\ \hline 270 & 1080 & 47662 \\ \hline 271 & 1084 & 47852 \\ \hline 272 & 1088 & 48042 \\ \hline 273 & 1092 & 48232 \\ \hline 274 & 1096 & 48422 \\ \hline 275 & 1100 & 48612 \\ \hline 276 & 1104 & 48802 \\ \hline 277 & 1108 & 49092 \\ \hline 278 & 1112 & 49282 \\ \hline 279 & 1116 & 49472 \\ \hline 280 & 1120 & 49662 \\ \hline 281 & 1124 & 49852 \\ \hline 282 & 1128 & 50042 \\ \hline 283 & 1132 & 50232 \\ \hline 284 & 1136 & 50422 \\ \hline 285 & 1140 & 50612 \\ \hline 286 & 1144 & 50802 \\ \hline 287 & 1148 & 51092 \\ \hline 288 & 1152 & 51282 \\ \hline 289 & 1156 & 51472 \\ \hline 290 & 1160 & 51662 \\ \hline 291 & 1164 & 51852 \\ \hline 292 & 1168 & 52042 \\ \hline 293 & 1172 & 52232 \\ \hline 294 & 1176 & 52422 \\ \hline 295 & 1180 & 52612 \\ \hline 296 & 1184 & 52802 \\ \hline 297 & 1188 & 53092 \\ \hline 298 & 1192 & 53282 \\ \hline 299 & 1196 & 53472 \\ \hline 300 & 1200 & 53662 \\ \hline 301 & 1204 & 53852 \\ \hline 302 & 1208 & 54042 \\ \hline 303 & 1212 & 54232 \\ \hline 304 & 1216 & 54422 \\ \hline 305 & 1220 & 54612 \\ \hline 306 & 1224 & 54802 \\ \hline 307 & 1228 & 55092 \\ \hline 308 & 1232 & 55282 \\ \hline 309 & 1236 & 55472 \\ \hline 310 & 1240 & 55662 \\ \hline 311 & 1244 & 55852 \\ \hline 312 & 1248 & 56042 \\ \hline 313 & 1252 & 56232 \\ \hline 314 & 1256 & 56422 \\ \hline 315 & 1260 & 56612 \\ \hline 316 & 1264 & 56802 \\ \hline 317 & 1268 & 57092 \\ \hline 318 & 1272 & 57282 \\ \hline 319 & 1276 & 57472 \\ \hline 320 & 1280 & 57662 \\ \hline 321 & 1284 & 57852 \\ \hline 322 & 1288 & 58042 \\ \hline 323 & 1292 & 58232 \\ \hline 324 & 1296 & 58422 \\ \hline 325 & 1300 & 58612 \\ \hline 326 & 1304 & 58802 \\ \hline 327 & 1308 & 59092 \\ \hline 328 & 1312 & 59282 \\ \hline 329 & 1316 & 59472 \\ \hline 330 & 1320 & 59662 \\ \hline 331 & 1324 & 59852 \\ \hline 332 & 1328 & 60042 \\ \hline 333 & 1332 & 60232 \\ \hline 334 & 1336 & 60422 \\ \hline 335 & 1340 & 60612 \\ \hline 336 & 1344 & 60802 \\ \hline 337 & 1348 & 61092 \\ \hline 338 & 1352 & 61282 \\ \hline 339 & 1356 & 61472 \\ \hline 340 & 1360 & 61662 \\ \hline 341 & 1364 & 61852 \\ \hline 342 & 1368 & 62042 \\ \hline 343 & 1372 & 62232 \\ \hline 344 & 1376 & 62422 \\ \hline 345 & 1380 & 62612 \\ \hline 346 & 1384 & 62802 \\ \hline 347 & 1388 & 63092 \\ \hline 348 & 1392 & 63282 \\ \hline 349 & 1396 & 63472 \\ \hline 350 & 1400 & 63662 \\ \hline 351 & 1404 & 63852 \\ \hline 352 & 1408 & 64042 \\ \hline 353 & 1412 & 64232 \\ \hline 354 & 1416 & 64422 \\ \hline 355 & 1420 & 64612 \\ \hline 356 & 1424 & 64802 \\ \hline 357 & 1428 & 65092 \\ \hline 358 & 1432 & 65282 \\ \hline 359 & 1436 & 65472 \\ \hline 360 & 1440 & 65662 \\ \hline 361 & 1444 & 65852 \\ \hline 362 & 1448 & 66042 \\ \hline 363 & 1452 & 66232 \\ \hline 36$$

13. Concrete can be purchased by the cubic yard. How much will it cost to pour a rectangular slab 18 feet by 18 feet by 4 inches for a patio if the concrete costs \$41.00 per cubic yard?

14. Janine wants to paint just the lateral surface of a cylindrical pottery vase that has a height of 45 cm and a diameter of 14 cm. To the nearest whole number, find the number of square centimeters she will need to paint.

$$LA = CH$$

$$(14\pi)(45)$$

$$(130\pi)$$

$$C = 14\pi$$

$$H = 45$$

15. Janine made a cylindrical vase in which the sum of the lateral area and area of one base was about 3000π square centimeters. The vase had a height of 35 centimeters. Find the radius of the vase.

$$LA + B = 3000\pi$$

$$CH + B = 3000\pi$$

$$C(35) + B = 3000\pi$$

$$2\pi r(35) + \pi r^2 = 3000\pi$$

$$LA = CH$$

$$70r + r^2 = 3000$$

$$r^2 + 70r - 3000 = 0$$

$$(r-30)(r+100) = 0$$

$$r = 30$$

16. The surface area of a right cone is $24\pi \text{ cm}^2$, the slant height is 5 cm. Find the radius.

$$SA = \frac{1}{2}Cl + B$$

$$24\pi = \frac{1}{2}(2\pi r)(5) + \pi r^2$$

$$r^2 + 5r - 24 = 0$$

$$(r-3)(r+8) = 0$$

$$r = 3$$

17. The surface area of a cylinder is $120\pi \text{ ft}^2$, the radius is 4 ft. Find the height.

$$SA = CH + 2B$$

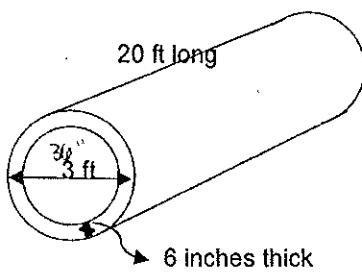
$$120\pi = 2\pi(4)H + 2(\pi)(4^2)$$

$$60 = 4H + 16$$

$$\frac{16}{44} = 4H$$

$$H = 11$$

18. There is a concrete water pipe that is a cylinder and runs underground. The pipe is 20 feet long and has a total diameter of 3 feet. If the concrete is 6 inches thick, then what is the diameter of the opening in the pipe? 2 ft (2.4")



Find number of cubic feet of concrete used to make this pipe _____

Find the surface area of the pipe _____

$$SA = 9288\pi$$

$$\text{subtract } 288\pi$$

$$2(144\pi)$$

$$9000\pi$$

$$\text{1g. cylinder}$$

$$r = 18"$$

$$C = 36\pi$$

$$B = 324\pi$$

$$H = 240"$$

$$V = (324\pi)(240)$$

$$77760\pi$$

$$SA = CH + 2B$$

$$8640\pi + 648\pi = 9288\pi$$

$$\text{s.m. cylinder}$$

$$r = 12"$$

$$C = 24\pi$$

$$B = 144\pi$$

$$H = 240"$$

$$V = (144\pi)(240)$$

$$34560\pi$$

$$LA = CH$$

$$(24\pi)(240)$$

$$5760\pi$$

$$+ 9000\pi$$

$$14,760\pi \text{ ft}^3$$

$$43,200\pi \text{ in}^3$$

wrong
area there

(

(

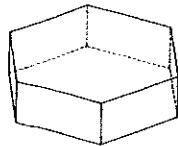
(

Surface Area and Volume

Date _____ Period _____

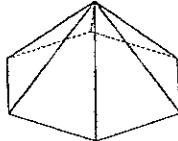
Name each figure.

1)



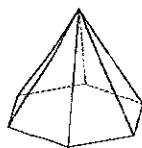
Hexagonal prism

2)



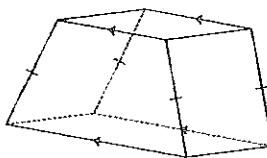
Hexagonal pyramid

3)



Hexagonal pyramid

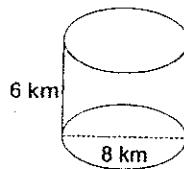
4)



trapezoidal prism

Find the lateral area and surface area of each figure. Round your answers to the nearest whole, if necessary.

5)



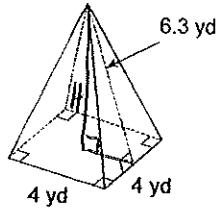
$$r = 4$$

$$C = 8\pi$$

$$H = 6$$

$$B = 16\pi$$

6)



$$P = 16$$

$$H = 5.97$$

$$l = 6.3$$

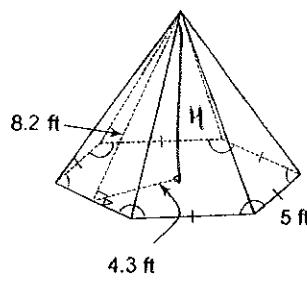
$$B = 16$$

$$H^2 + l^2 = 6.3^2$$

$$H^2 = 35.69$$

$$H = 5.97$$

7)



$$P = 30$$

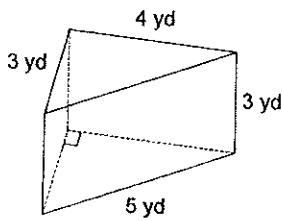
$$H = 6.98$$

$$l = 8.2$$

$$B = \frac{1}{2}(4.3)(30)$$

$$64.5$$

8)

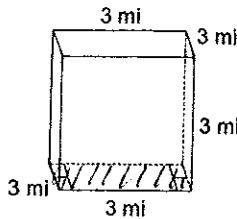


$$B = \frac{1}{2}(3)(4) = 6$$

$$P = 12$$

$$H = 3$$

9)

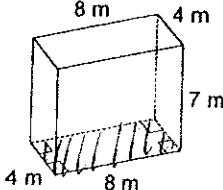


$$B = 9$$

$$P = 12$$

$$H = 3$$

10)

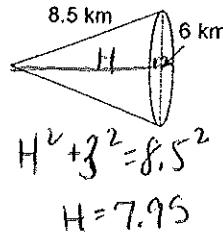


$$B = 32$$

$$H = 7$$

$$P = 24$$

11)



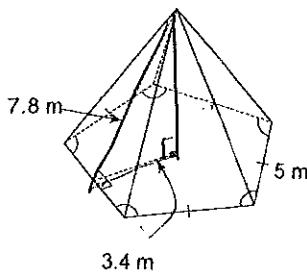
$$C = 6\pi$$

$$H = 7.95$$

$$\ell = 8.5$$

$$B = 9\pi$$

12)



$$\ell = 7.8$$

$$P = 25$$

$$B = \frac{1}{2}(3.4)(2.5)$$

$$42.5$$

$$H = 7.02$$

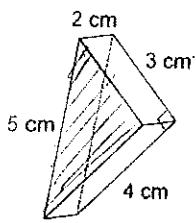
$$H^2 + 3.4^2 = 7.8^2$$

Answers to Surface Area and Volume (ID: 2)

- 1) hexagonal prism
5) 157 km²; 251 km²
9) 36 in²; 54 in²
13) 24 cm²; 36 cm²
- 2) hexagonal pyramid
6) 50 yd²; 66 yd³
10) 168 m²; 232 m³
14) 140 cm²; 196 cm³
- 3) hexagonal pyramid
7) 123 ft²; 188 ft³
11) 80 m²; 108 m³
15) 180 ft²; 309 ft³
- 4) trapezoid
8) 36 yd²; 46
12) 98 m²; 140 m³
16) 37.7 ft²; 43.98 ft³

Find the lateral area and surface area of each figure. Round your answers to the nearest hundredth, if necessary.

13)

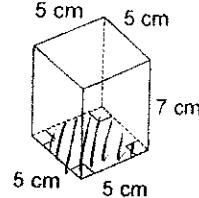


$$P = 12$$

$$B = \frac{1}{2}(3)(4) = 6$$

$$H = 2$$

14)

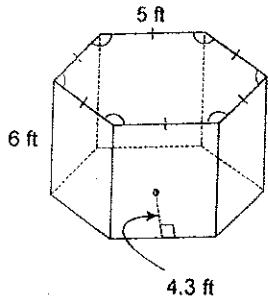


$$P = 20$$

$$H = 7$$

$$B = 25$$

15)

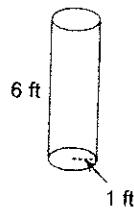


$$P = 30$$

$$B = \frac{1}{2}(4.3)(30) = 64.5$$

$$H = 6$$

16)



$$C = 2\pi$$

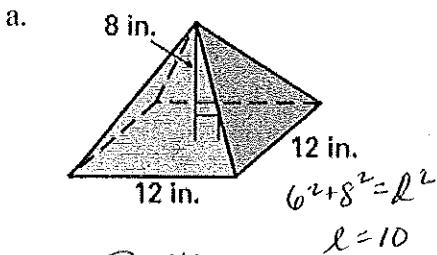
$$H = 6$$

$$B = \pi$$

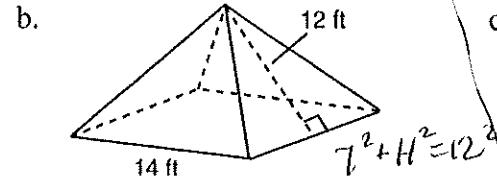
Name _____ Period _____ Date _____

Geometry 2: Surface Area and Volume of Pyramids and Cones Practice

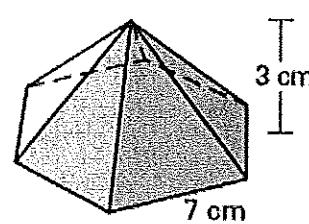
Find the surface area and volume of the figures below. MAKE your "LIST" for each!!! All pyramids are Regular.



$P = 48$
 $B = 144$
 $H = 8$
 $l = 10$
 $SA = \frac{1}{2} Pl + B$
 $(5)(48)(10) + 144$
 $240 + 144$
 384 in.^2

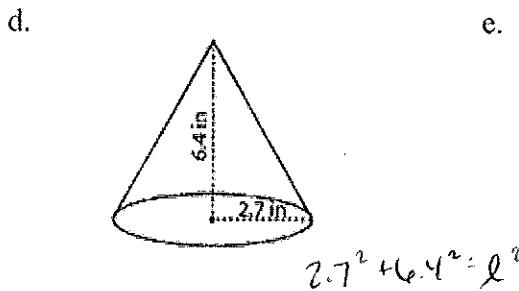


$P = 56$
 $B = 196$
 $H = 9.75$
 $l = 12$
 $SA = \frac{1}{2} Pl + B$
 $\frac{1}{2}(56)(12) + 196$
 $336 + 196$
 532 ft^2
 $V = \frac{BH}{3}$
 $\frac{(196)(9.75)}{3}$
 637 ft^3



$P = 42$
 $H = 3$
 $B = \frac{1}{2}ap = \frac{1}{2}(3\sqrt{3})(42)$
 $l = 6.76$
 $3.5^2 + 3^2 = l^2$
 $= 73.5\sqrt{3}$
 ≈ 127.31

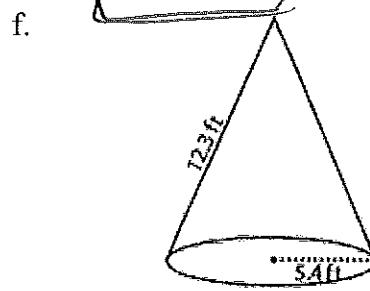
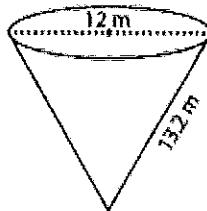
$SA = \frac{1}{2} Pl + B$
 $\frac{1}{2}(42)(4.6) + 127.31$
 $SA = 269.35$
 $V = \frac{(127.31)(3)}{3}$
 $V = 127.31$



$C = 5.4\pi$
 $H = 6.4$
 $B = 7.29\pi$
 $l = 6.95$

$SA = \frac{1}{2} Pl + B$
 $V = \frac{BH}{3} = \frac{(7.29\pi)(6.4)}{3}$

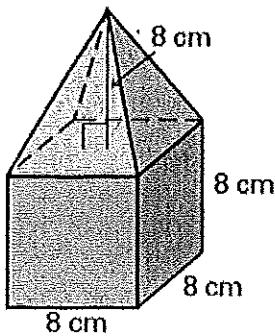
$\frac{1}{2}(5.4\pi)(6.95) + 7.29\pi$
 $18.765\pi + 7.29\pi$
 $26.055\pi \approx 81.85$



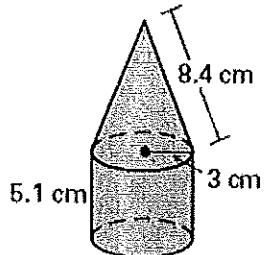
$r = 5.4$
 $H = 15.2$
 $C = 10.8\pi$
 $B = 29.16\pi$
 $H = 11.05$
 $l = 12.3$

$SA = \frac{1}{2} Cl + B$
 $66.42\pi + 29.16$
 95.58π
 300.27
 $V = 107.4\pi$
 337.43

7. Find the Surface Area and Volume for the following solid.



7. Find the surface area and volume of the solid below. Round your answer to the nearest hundredth.



8. The Volume of a regular pyramid is 96 cubic inches. The area of the base of the pyramid is 36 square units. What is the height of the pyramid?

9. A regular pyramid has a square base. If the sides of the square are 6 m and the height of the pyramid is 4m, find the slant height. Find the surface area.

12. The surface area of a right cone is $70\pi \text{ in}^2$. If the radius is 5 in, find the slant height.

Please fill in the appropriate formulas:

~ any right PRISM

1) $SA = PH + 2B$

2) $V = BH$

~ any CYLINDER

3) $SA = CH + 2B$

4) $V = BH$

~ any PYRAMID

5) $SA = \frac{1}{2} pl + B$

6) $V = \frac{BH}{3}$

~ any CONE

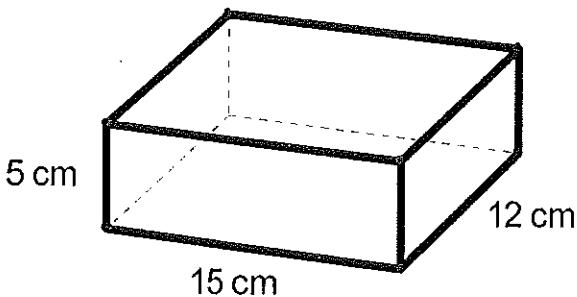
7) $SA = \frac{1}{2} cl + B$
(or $\pi rl + \pi r^2$)

8) $V = \frac{BH}{3}$

For each figure, name the figure; write out the correct formula to use, then make the LIST...

9) This is a rectangular prism

$SA = PH + 2B$



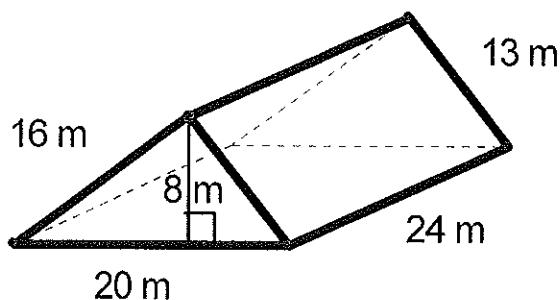
$B = (15)(12) = 180$

$H = 5$

$P = 54$

10) This is a triangular prism

$V = BH$

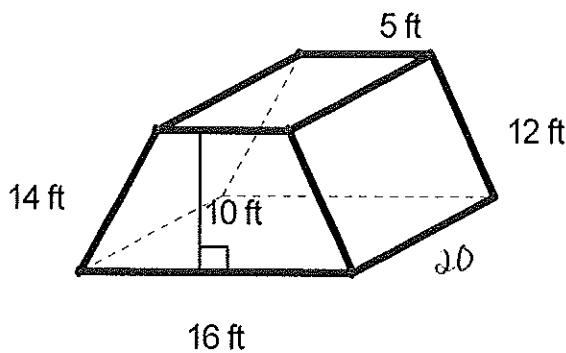


$B = \frac{1}{2}bh$

$\frac{1}{2}(20)(8) = 80$

$H = 16$

- 11) This is a trapezoidal prism



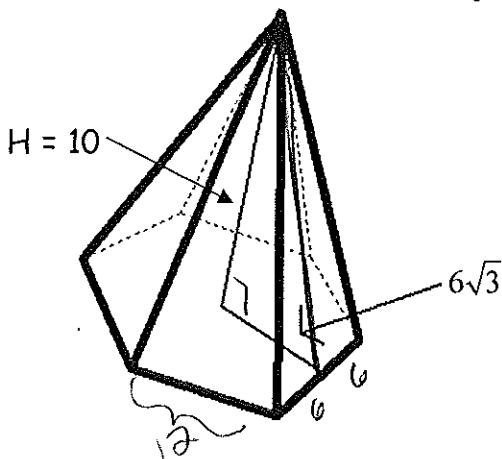
$$LA = PH$$

$$P = 14 + 5 + 16 + 12 = 47$$

$$H = 20$$

$$\begin{aligned} B &= \frac{1}{2}(10)(16+5) \\ &= 105 \end{aligned}$$

- 12) This is a hexagonal pyramid



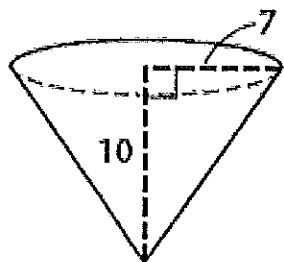
$$\begin{aligned} (\ell\sqrt{3})^2 + 10^2 &= l^2 \\ 36 + 100 &= 208 = l^2 \end{aligned}$$

$$P = 72$$

$$l = 14.42$$

$$\begin{aligned} B &= \frac{1}{2}ap \\ &= \frac{1}{2}(6\sqrt{3}) \end{aligned}$$

- 13) This is a Cone



$$\begin{aligned} 7^2 + 10^2 &= l^2 \\ 49 + 100 &= l^2 \\ l &= \sqrt{149} \end{aligned}$$

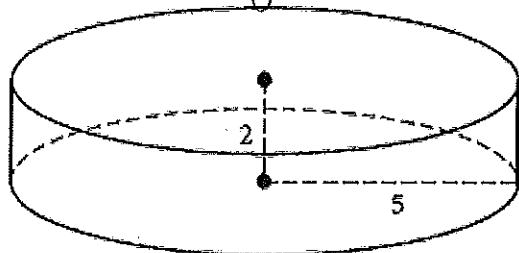
$$LA = \frac{1}{2}Cl \quad \text{or } \pi r l$$

$$C = 14\pi$$

$$l = 12.21$$

$$r = 7$$

- 14) This is a cylinder



$$\begin{aligned} B &= \pi r^2 \\ &= 25\pi \end{aligned}$$

$$H = 2$$

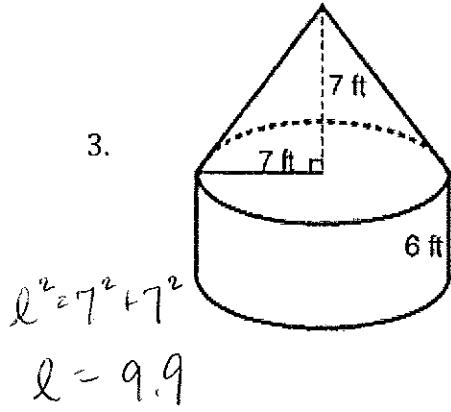
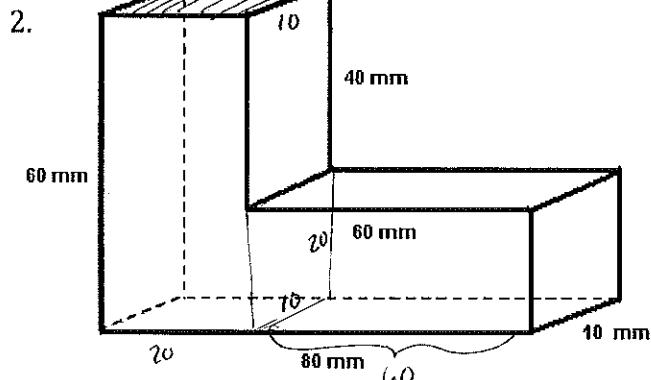
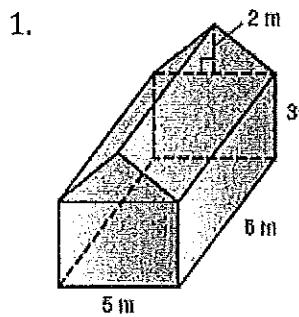
$$V = BH$$

Chapter 11 - Composite Space Figures – 3-dimensional figures that are combinations of two or more simpler figures.

***VOLUME** – to find volume of the composite figure, just find the volume of EACH part separately, then **ADD** the volumes together!! (sometimes you will need to **Subtract** volume if there is a hole!)

****SURFACE AREA** – to find surface area of the composite figure, just find the surface area of EACH part separately, add them together, then consider whether you need to **SUBTRACT** out any faces that are NOT included in the surface!!!

Make your “list” for each section of the solid FIRST!



$$l^2 = 7^2 + 7^2 \\ l = 9.9$$

Rect. Prism

$$B = 5(6) = 30$$

$$H = 3$$

$$P = 22$$

$$V = BH = (30)(3) = 90$$

$$SA = PH + 2B$$

$$(22)(3) + 2(30)$$

$$66 + 60$$

$$126 \text{ m}^2$$

$$= \frac{30}{96}$$

$$V = 90 + 30 \\ 120 \text{ m}^3$$

$$SA = 96 + 2(6.21)$$

$$122.21 \text{ m}^2$$

cylinder

$$C = 14\pi$$

$$H = 6$$

$$B = 49\pi$$

$$V = BH = 49\pi(6)$$

$$294\pi$$

$$SA = PH + 2B$$

$$14\pi(6) + 2(49\pi)$$

$$84\pi + 98\pi$$

$$182\pi - 49\pi = 133\pi$$

Triangular Prism

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

$$H = 6$$

$$P = \sqrt{25+11.4^2} = 11.4$$

$$V = BH = (5)(6) = 30$$

$$SA = PH + 2B$$

$$(11.4)(6) + 2(5)$$

$$46.21 + 10 = \frac{56.21}{-30} \\ 26.21$$

Tall Rect. Prism

$$B = (10)(20) = 200$$

$$H = 60$$

$$P = 60$$

$$V = (200)(60) = 12000 \text{ mm}^3$$

$$SA = PH + 2B$$

$$(60)(60) + 2(200)$$

$$3600 + 400$$

$$\frac{4000}{-200} \\ 3800$$

$$V = 24000$$

$$SA = 7600$$

Long Rect. Prism

$$B = 10(10) = 100$$

$$H = 20$$

$$P = 140$$

$$V = BH = (100)(20) = \frac{2000}{12000}$$

$$SA = PH + 2B$$

$$(140)(20) + 2(100)$$

$$2800 + 1200$$

$$\frac{4000}{-200} \\ 3800$$

cone

$$C = 14\pi$$

$$H = 7$$

$$B = 49\pi$$

$$V = 294\pi + 114.3\pi$$

$$408.3\pi$$

$$\approx 1282.7 \text{ ft}^3$$

$$V = \frac{BH}{3} = \frac{(49\pi)(7)}{3} = \frac{343\pi}{3} = 114.3\pi$$

$$SA = 202.3\pi$$

$$\approx 635.54 \text{ ft}^2$$

$$SA = \frac{1}{2}Cl + B$$

$$\frac{1}{2}(14\pi)(9.9) = 69.3\pi$$

4. What are the approximate surface area and volume of this aquarium? Round to the nearest whole number.

Rectangular prism

$$V = (864)(24)$$

$$20,736$$

$$B = 864$$

$$H = 24$$

$$P = 120$$

Cylinder ($\frac{1}{2}$)

$$B = 144\pi / 2 = 72\pi$$

$$C = 24\pi = 12\pi$$

$$H = 24$$

$$V = 72\pi(24)$$

$$1728\pi$$

$$\approx 54,281.67$$

$$SA = PH + 2B$$

$$(120)(24) + 2(864)$$

$$2880 + 1728$$

$$4608$$

$$- 576$$

$$\underline{4032}$$

(Subtract
24x84 since)

$$SA = \frac{CH + 2B}{2}$$

$$24\pi(24) + 2(144\pi)$$

$$576\pi + 288\pi$$

$$\frac{864\pi}{2} \text{ (half cylinder)}$$

$$432\pi \approx 1357.17$$

$$36$$

$$24 \text{ in.}$$

$$24 \text{ in.}$$

$$48 \text{ in.}$$

$$V = 26,164.67 \text{ in}^3$$

$$84 =$$

$$5389.17 \text{ in}^2$$

5. What are the approximate surface area and volume of this lunch box? Round to the nearest whole number.

Rect. prism

$$B = 60$$

$$H = 6$$

$$P = 32$$

$$V = 60(6) = 360$$

$SA = PH + B$ (only 1 base showing)

$$(32)(6) + 60$$

$$192 + 60$$

$$\underline{252}$$

$\frac{1}{2}$ cylinder

$$C = 6\pi$$

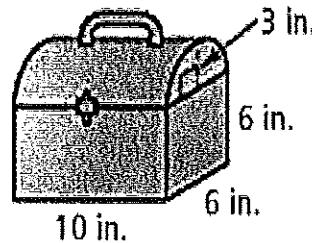
$$H = 10$$

$$B = 9\pi$$

$$V = BH = 90\pi \text{ (full cylinder)}$$

$$\frac{1}{2} \text{ cylinder} = \frac{90\pi}{2} = 45\pi \approx 141.37$$

$$V = 501.37 \text{ in}^3$$



6. A lab technician made a 14 cm diameter hole through the middle of a cylinder that has a diameter of 20 cm and a height of 18 cm. What are the approximate surface area and volume of the finished cylinder? Round to the nearest whole number.

lg cylinder

$$C = 20\pi$$

$$H = 18$$

$$B = 100\pi$$

$$V = 1800\pi \approx 5654.87$$

sm. cylinder hole

$$C = 14\pi$$

$$H = 18$$

$$B = 49\pi$$

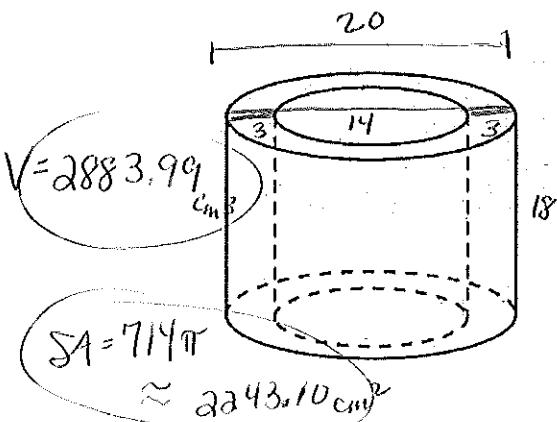
$$V = (49\pi)(18)$$

$$882\pi = 2770.88$$

$$LA = CH$$

$$(14\pi)(18)$$

$$252\pi$$



Name _____

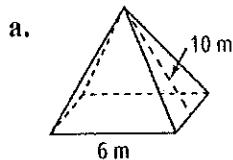
ANSWERS

Period _____ Date _____

Geometry 2: 11.3, 11.5 and 11.6

Be sure to SHOW ALL WORK including your list!

1. Find the lateral area of each pyramid to the nearest whole number.



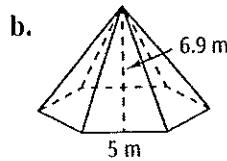
$$P = 24$$

$$l = 10$$

$$LA = \frac{1}{2} P l$$

$$\frac{1}{2}(24)(10)$$

$$120 \text{ m}^2$$



$$P = 30$$

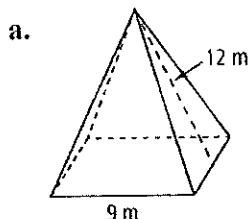
$$l = 6.9$$

$$LA = \frac{1}{2} P l$$

$$\frac{1}{2}(30)(6.9)$$

$$103.5 \text{ m}^2$$

2. Find the surface area of each pyramid to the nearest whole number.



$$P = 36$$

$$l = 12$$

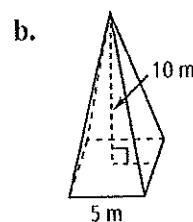
$$B = 81$$

$$SA = \frac{1}{2} P l + B$$

$$\frac{1}{2}(36)(12) + 81$$

$$216 + 81$$

$$297 \text{ m}^2$$



$$P = 20$$

$$l = 10.31$$

$$2.5^2 + 10^2 = l^2$$

$$6.25 + 100 = l^2$$

$$B = 25$$

$$l = 10.31$$

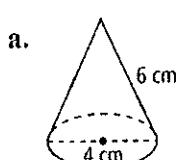
$$SA = \frac{1}{2} P l + B$$

$$(5)(20)(10.31) + 25$$

$$103.1 + 25$$

$$128.1 \approx 128 \text{ m}^2$$

3. Find the lateral area of each cone to the nearest whole number.



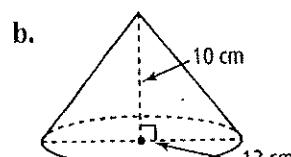
$$C = 4\pi$$

$$l = 6$$

$$LA = \frac{1}{2} C l$$

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

$$12\pi \approx 38 \text{ cm}^2$$



$$LA = \frac{1}{2} C l$$

$$\frac{1}{2}(13\pi)(11.93)$$

$$77.52\pi$$

$$\approx 244 \text{ cm}^2$$

$$C = 13\pi$$

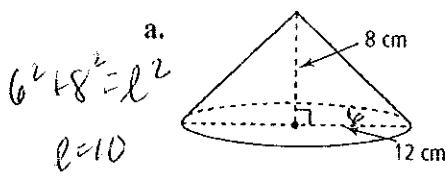
$$l = 11.93$$

$$6.5^2 + 10^2 = l^2$$

$$42.25 + 100 = l^2$$

$$l = 11.93$$

4. Find the surface area of each cone in terms of π .

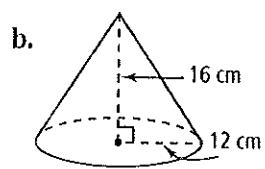


$$SA = \frac{1}{2}Cl + B$$

$$\frac{1}{2}(12\pi)(10) + 36\pi$$

$$60\pi + 36\pi$$

$$96\pi \text{ cm}^2$$



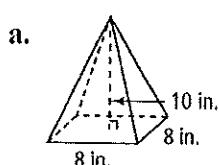
$$SA = \frac{1}{2}Cl + B$$

$$\frac{1}{2}(24\pi)(20) + 144\pi$$

$$240\pi + 144\pi$$

$$384\pi \text{ cm}^2$$

5. Find the volume of each square pyramid. Round to the nearest tenth if necessary.

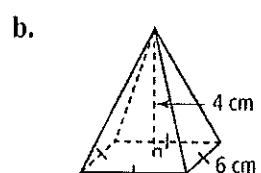


$$V = \frac{BH}{3}$$

$$B = 64$$

$$H = 10$$

$$V = \frac{(64)(10)}{3} = \frac{640}{3} = 213.3 \text{ in}^3$$



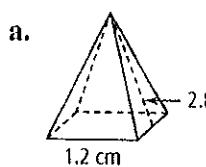
$$V = \frac{BH}{3}$$

$$B = 36$$

$$H = 4$$

$$\frac{(36)(4)}{3} = \frac{144}{3} = 48 \text{ cm}^3$$

6. Find the volume of each square pyramid, given its slant height. Round to the nearest tenth.



$$V = \frac{BH}{3}$$

$$B = 1.44$$

$$H = 2.73$$

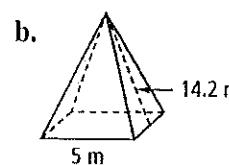
$$6^2 + H^2 = 2.8^2$$

$$H^2 = 7.48$$

$$H = 2.73$$

$$V = \frac{(1.44)(2.73)}{3}$$

$$V = 1.31 \approx 1.3 \text{ cm}^3$$



$$B = 25$$

$$H = 13.98$$

$$2.5^2 + H^2 = 14.2^2$$

$$H^2 = 195.39$$

$$H = 13.98$$

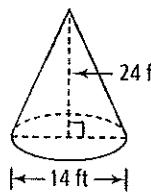
$$V = \frac{BH}{3}$$

$$(25)(13.98)$$

$$V = 116.48 \text{ m}^3$$

8. Find the volume of each cone in terms of π and also rounded as indicated.

a. nearest cubic foot



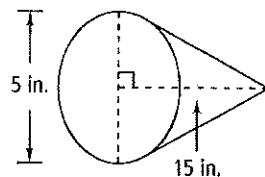
$$B = 49\pi$$

$$H = 24$$

$$V = \frac{BH}{3} = \frac{(49\pi)(24)}{3}$$

$$\begin{aligned} 392\pi &\approx 1231.5 \\ 1231\text{ ft}^3 & \end{aligned}$$

b. nearest cubic inch



$$B = 6.25\pi$$

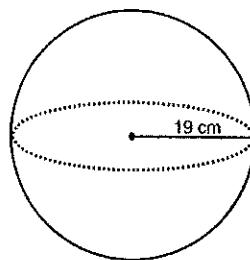
$$H = 15$$

$$V = \frac{BH}{3} = \frac{(6.25\pi)(15)}{3}$$

$$\begin{aligned} 31.25\pi &\approx 98 \\ 98\text{ in}^3 & \end{aligned}$$

9. Find the surface area and volume. Write answer in terms of π AND to the nearest hundredth.

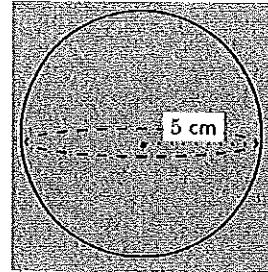
a.



$$SA =$$

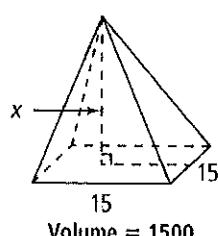
$$V =$$

b.



17. Find the value of x in each figure. Leave answers in simplest radical form. The diagrams are not to scale.

a.



$$B = 225$$

$$H = x$$

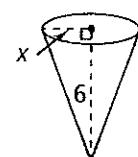
$$V = \frac{BH}{3}$$

$$1500 = \frac{225x}{3}$$

$$1500 = 75x$$

$$x = 20$$

b.



$$V = \frac{BH}{3}$$

$$\text{Volume} = 8\pi$$

$$B = x^2\pi$$

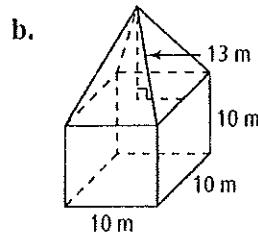
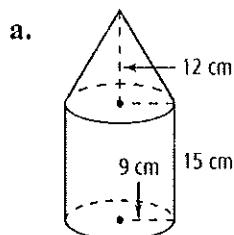
$$H = 6$$

$$(3) \quad 8\pi = \frac{6x^2\pi}{3} \quad (3)$$

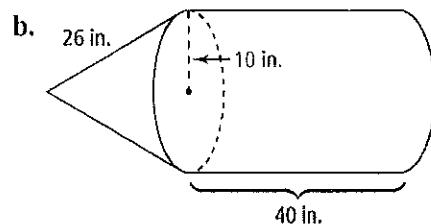
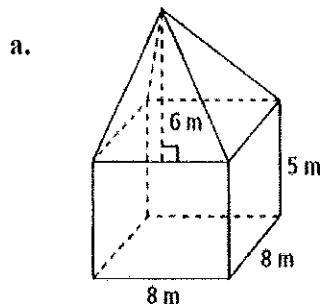
$$\frac{24\pi}{6} = \frac{6x^2\pi}{3}$$

$$\frac{4\pi}{1} = \frac{x^2\pi}{1} \quad X = 2$$

18. Find the exact volume of each figure, then round to the nearest whole number.



19. Find the exact surface area of each figure, then to the nearest whole number in part b.



CH + 2B