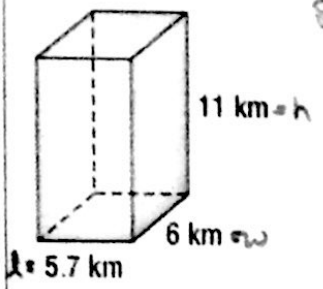
Name: Key Date: _____ Period: _____

Math 7 Unit 11 3D Review

Find the surface area of the figures below. Show all work, including formula. Use 3.14 for π. Round to the nearest tenth when necessary. Label your final answers with units.

1.



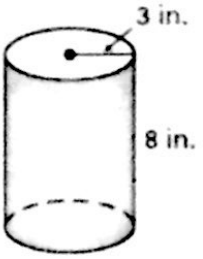
$SA = 2lw + 2wh + 2lh$

$= 2(5.7)(6) + 2(6)(11) + 2(5.7)(11)$

$= 68.4 + 132 + 125.4$

$= \boxed{325.8 \text{ km}^2}$

2.



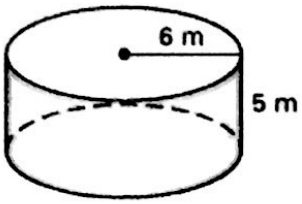
$SA = 2\pi r^2 + 2\pi rh$

$= 2(3.14)(3^2) + 2(3.14)(3)(8)$

$= 56.52 + 150.72$

$= \boxed{207.2 \text{ in}^2}$

3.



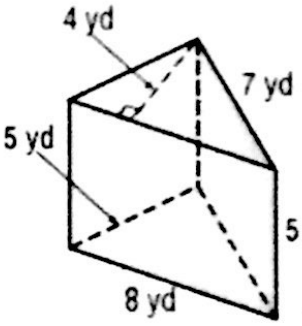
$SA = 2\pi r^2 + 2\pi rh$

$= 2(3.14)(6)^2 + 2(3.14)(6)(5)$

$= 226.08 + 188.4$

$= \boxed{414.5 \text{ m}^2}$

4.



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

$2 \cdot \Delta = \frac{1}{2}(8)(4) = 16 \cdot 2 = 32$

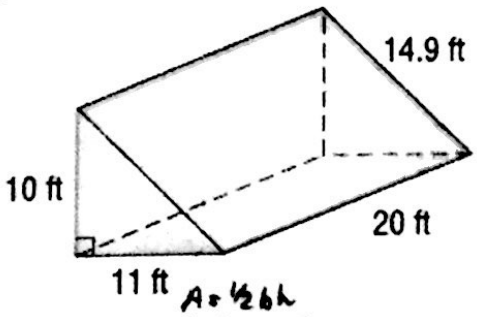
$\square = 8(5) = 40$ ($A = l \cdot w$)

$\square = 7(5) = 35$

$\square = 5(5) = 25$

$32 + 40 + 35 + 25 = \boxed{132 \text{ yd}^2}$

5.



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

$2 \cdot \Delta = \frac{1}{2}(10)(11) = 55 \cdot 2 = 110$

$\square = (11)(20) = 220$ ($A = lw$)

$\square = (14.9)(20) = 298$

$\square = (10)(20) = 200$

$110 + 220 + 298 + 200 = \boxed{828 \text{ ft}^2}$

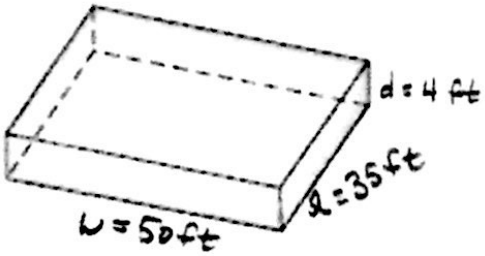
6. In this prism, the area of *each* hexagonal base is 41.5 cm^2. Each rectangle in the prism is congruent.

$\hexagon \cdot 2 = 41.5(2) = 83$

$\square \cdot 6 = 10(4) = 40(6) = 240$ ($A = lw$)

$240 + 83 = \boxed{323 \text{ cm}^2}$

. A pool that has a length of 50 feet and width of 35 feet will be painted. The depth of the pool is 4 feet throughout. If you are going to paint the bottom and sides of the pool, what is the total number of square feet to be painted?



$2wd + 2ld + wl$

$2(50)(4) + 2(35)(4) + 50(35)$

$400 + 280 + 1750$

2430 ft²

8. You want to paint two jewelry boxes. Both are rectangular prisms and are 15 inches long, 10 inches wide, and 4 inches tall. If paint costs $0.02 per square inch, what is the total cost to paint both boxes?

$2lw + 2wh + 2lh$

$2(15)(10) + 2(10)(4) + 2(15)(4)$

$300 + 80 + 120$

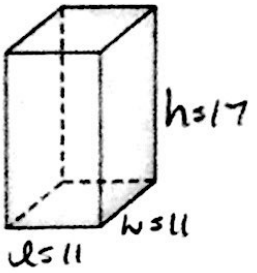
500

$500(2) = 1000 \text{ in}^2$

1000
× .02
2000
0000×
$20.00

$20.00

9. Find the surface area of a prism where the base is a square with sides of 11 meters and the height of the prism is 17 meters.



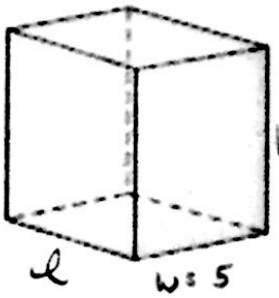
$2lw + 2wh + 2lh$

$2(11)(11) + 2(11)(17) + 2(11)(17)$

$242 + 374 + 374$

990 m²

10. In a rectangular prism, the height is 13 cm, the width is 5 cm, and the surface area is 644.8 cm². Find the length of the prism.



$SA = 2lw + 2wh + 2lh$

$644.8 = 2(l)(5) + 2(5)(13) + 2(l)(13)$

$644.8 = 10l + 130 + 26l$

$644.8 = 36l + 130$

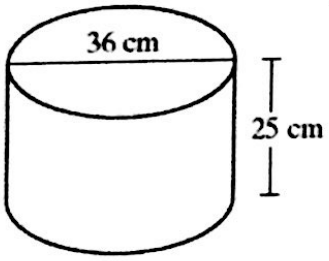
$-130.0 \quad -130$

$\frac{514.8}{36} = \frac{36l}{36}$

14.3 cm = l

11. Find the *lateral area* of the cylinder below.

$d = 36 \quad r = 18$



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

$2(3.14)(18)^2 + 2(3.14)(18)(25)$

$2034.72 + 2826$

4860.72 cm²

12. How much aluminum is needed to make a can with no top if the diameter of the can is 40 cm and the height is 65 cm?

$d = 40$
$r = 20$
$h = 65$

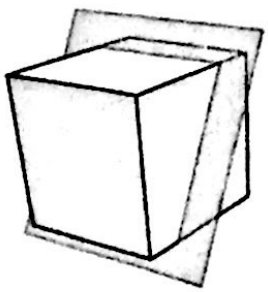
$SA = \pi r^2 + 2\pi rh$

$= 3.14(20)^2 + 2(3.14)(20)(65)$

$= 1256 + 8164$

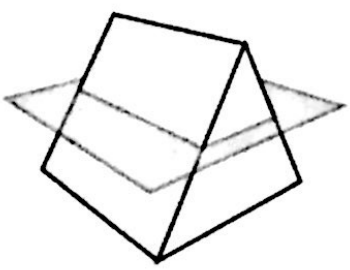
$=$ **9420 cm²**

13. What shape is the cross section?



rectangle

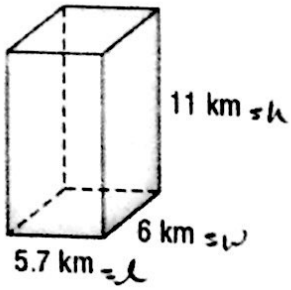
14. What shape is the cross section?



rectangle

Find the volume of the figures below. Show all work, including formula. Use 3.14 for π. Round to the nearest tenth when necessary. Label your final answers with units.

15.

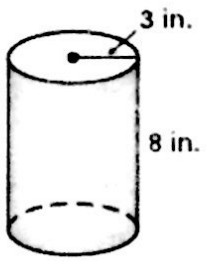


$V = lwh$

$V = (5.7)(6)(11)$

$V = \boxed{376.2 \text{ km}^3}$

16.



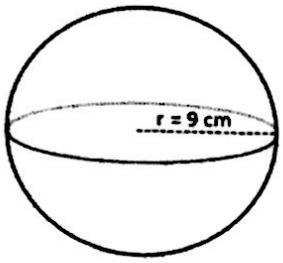
$V = Bh \quad B = \pi r^2$

$V = \pi r^2 h$

$V = (3.14)(3)^2(8)$

$V = \boxed{226.1 \text{ in}^3}$

17.

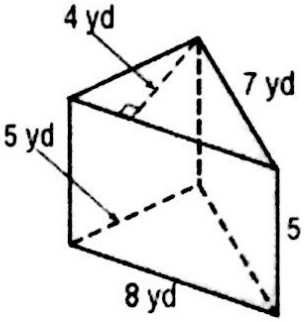


$V = \frac{4}{3}\pi r^3$

$V = \frac{4}{3}(3.14)(9)^3$

$V = \boxed{3052.1 \text{ cm}^3}$

18.



$V = Bh \quad B = \frac{1}{2}bh$

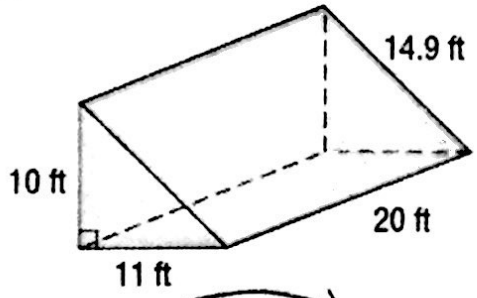
$= \frac{1}{2}(8)(4)$

$= 16$

$V = 16(8)$

$V = \boxed{80 \text{ yd}^3}$

19.

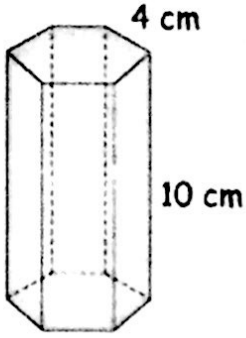


$V = Bh \quad B = \frac{1}{2}bh$

$V = 55(20) \quad = \frac{1}{2}(11)10$

$V = \boxed{1100 \text{ ft}^3} \quad = 55$

20. In this prism, the area of each hexagonal base is 41.5 cm2. Each rectangle in the prism is congruent.

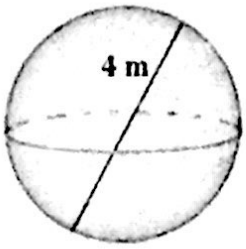


$V = Bh \quad B = 41.5$

$V = 41.5(10)$

$V = \boxed{415 \text{ cm}^3}$

21.



$d = 4 \quad r = 2$

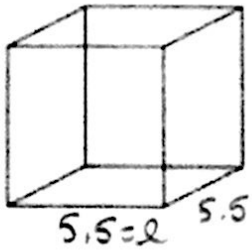
$V = \frac{4}{3}\pi r^3$

$V = \frac{4}{3}(3.14)(2)^3$

$V = \frac{4}{3}(3.14)(8)$

$V = \boxed{33.5 \text{ m}^3}$

22. The figure below is a cube.

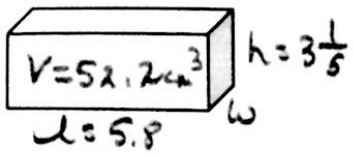


$V = lwh$

$V = (5.5)^3$

$V = \boxed{166.4 \text{ cm}^3}$

A rectangular prism with a volume of 52.2cm3 has a height of $3\frac{1}{5}$ cm, and a length of 5.8 cm. Find the width of the prism.



$V = lwh$

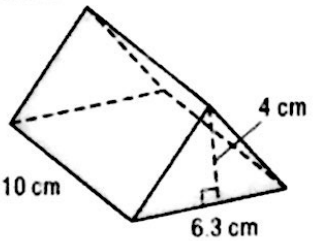
$52.2 = 5.8(w)(3.2)$

$\frac{52.2}{18.56} = \frac{18.56w}{18.56}$

$2.8125 = w$

$w = \boxed{2.8\text{cm}}$

24. The following triangular prism is a model of the pillow that Susie made in Life Skills. She only had enough stuffing to fill one-third of the pillow. How many more cubic centimeters of stuffing does Susie need to finish filling the pillow?



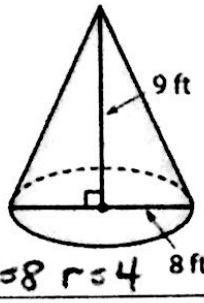
$V = Bh$ $\quad B = \frac{1}{2}bh$

$V = 12.6(10)$ $\quad = \frac{1}{2}(6.3)(4)$

$V = 126^3$ $\quad = 12.6$

$\frac{2}{3} \cdot \frac{126}{1} = \boxed{84\text{cm}^3}$

25.



$V = \frac{Bh}{3}$ $\quad B = \pi r^2$

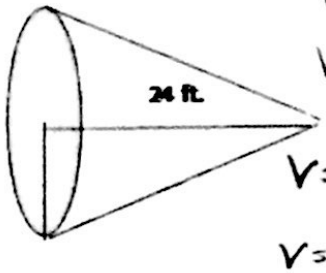
$V = \frac{50.24(9)}{3}$ $\quad = 3.14(4)^2$

$V = \frac{452.16}{3}$ $\quad = 50.24$

$V = 150.72$

$V = \boxed{150.7\text{ft}^3}$

26.



$V = \frac{Bh}{3}$ $\quad B = \pi r^2$

$V = \frac{254.34(24)}{3}$ $\quad = 3.14(9)^2$

$V = \frac{6104.16}{3}$ $\quad = 254.34$

$V = 2043.72$

$V = \boxed{2043.7\text{ft}^3}$

27. There are 231 cubic inches in one gallon. A cylindrical can has a diameter of 10 inches and a height of 15 inches. To the nearest tenth, how many gallons does the can hold?

d=10
r=5

$V = Bh$ $\quad B = \pi r^2$

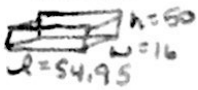
$V = 78.5(15)$ $\quad = (3.14)(5)^2$

$V = 1177.5\text{in}^3$ $\quad = 78.5$

$1177.5 \div 231 = 5.097$ gallons

$\boxed{5.1\text{ gallons}}$

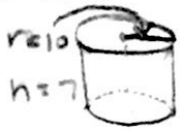
28. A water-filled aquarium in the shape of a rectangular prism has a length of 54.95 inches, a width of 16 inches, and a height of 50 inches. You use a cylindrical cup that has a radius of 10 inches and a height of 7 inches to fill up the aquarium. How many full cups are needed to completely fill the aquarium?



$V = lwh$

$= 54.95(16)(50)$

$V = 43{,}960$



$V = Bh$ $\quad B = \pi r^2$

$= 3.14(10)^2$

$= 314$

$V = 314(7)$

$V = 2198$

$43960 \div 2198 = \boxed{20\text{ cups}}$