Geometry 22 CHAPTER 11 pre -TEST Name ANSWERS

ɔase fill in the appropriate formulas:

~ any right PRISM 1) SA = $pH + 2B$ 2) V= BH

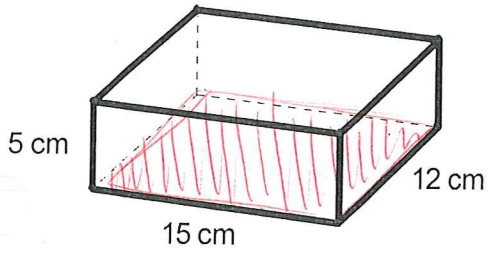
~ any CYLINDER 3) SA = $CH + 2B$ 4) V= BH

~ any PYRAMID 5) SA = $\frac{1}{2}pl + B$ 6) V= $\frac{BH}{3}$

~ any CONE 7) SA = $\frac{1}{2}Cl + B$ 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 = $630\ cm^2$



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

$H = 5$

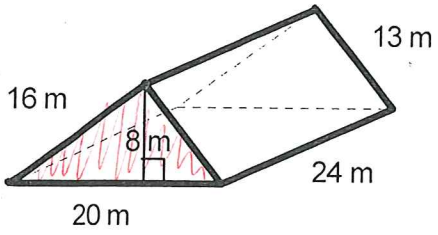
$p = 15+12+15+12 = 54$

$SA = pH + 2B$

$(54)(5) + 2(180)$

$270 + 360$

10) This is a triangular prism V = $104\ m^3$



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

$H = 24$

$V = BH$

$(80)(24)$

11) This is a Sphere V = $523.60\ m^3$

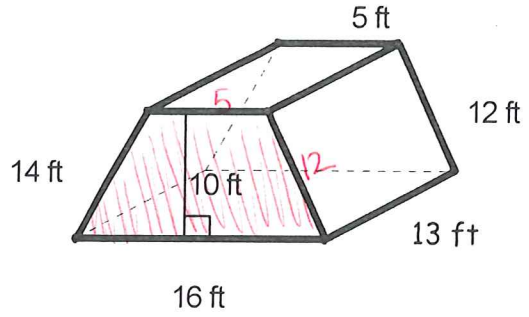
$r = 5$

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

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

12) This is a trapezoidal prism

SA = 821 ft²



$B = \frac{1}{2}h(b_1 + b_2)$

$\frac{1}{2}(10)(16+5)$

$5(21)$

105

$H = 13$

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

$SA = pH + 2B$

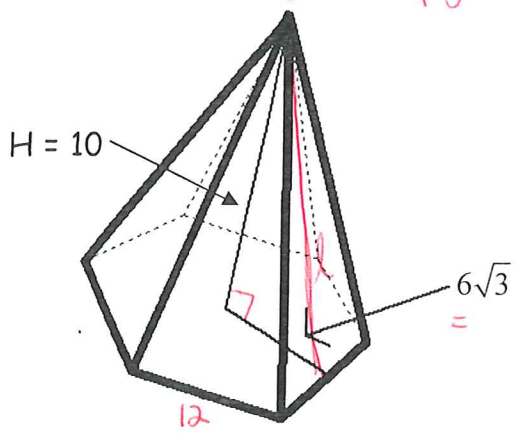
$(47)(13) + 2(105)$

$611 + 210$

821

13) This is a hexagonal pyramid

SA = 893.24



$B = \frac{1}{2}ap = \frac{1}{2}(6\sqrt{3})(72)$

$= 374.12$

$p = 72$

$H = 10$

$\ell \approx 14.42$

$\ell^2 = (6\sqrt{3})^2 + 10^2$

$108 + 100$

208

$SA = \frac{1}{2}p\ell + B$

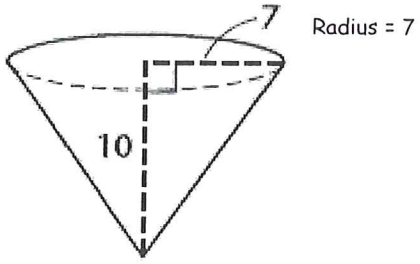
$\frac{1}{2}(72)(14.42) + 374.12$

$519.12 + 374.12$

893.24

14) This is a cone

SA = 615.75



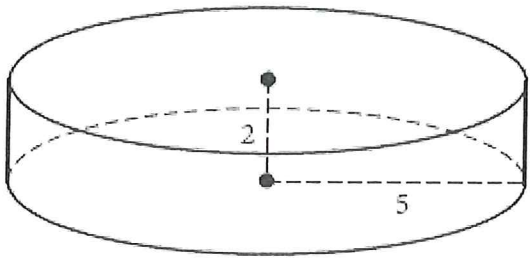
$SA = 4\pi r^2$

$4\pi(7^2)$

$4(49\pi) = 196\pi \approx$

15) This is a cylinder

V = $50\pi \approx$ 157.08



$B = \pi r^2$

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

$H = 2$

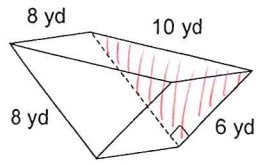
Geometry Name ANSWERS ID: 1

Volume of Prisms, Cylinders, Pyramids, Cones

Date _____ Period ____

Find the volume of each figure. Round your answers to the nearest hundredth, if necessary.

1)



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

$B = \frac{1}{2}(6)(8) = 24$

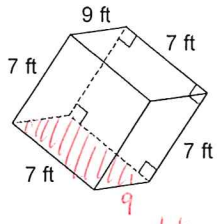
$H = 8$

$V = BH$

$(24)(8)$

$V = 192\ yd^3$

2)



$B = bh$

$B = (7)(9) = 63$

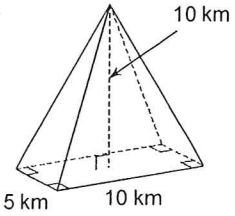
$H = 7$

$V = BH$

$V = (63)(7)$

$V = 441\ ft^3$

3)



$B = bh = (5)(10) = 50$

$H = 10$

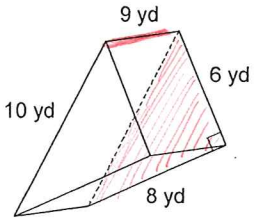
$V = \frac{BH}{3}$

$(50)(10)$

$V = \frac{500}{3}\ km^3$

$= 166.67$

4)



$B = \frac{1}{2}bh = \frac{1}{2}(6)(8)$

24

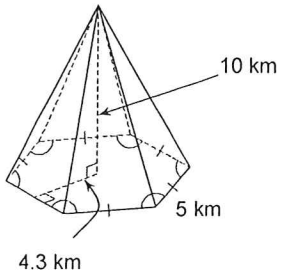
$H = 9$

$V = BH$

$(24)(9)$

$V = 216\ yd^3$

5)



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

$p = (5)(6) = 30$

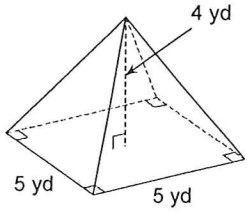
$H = 10$

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

$V = \frac{(64.5)(10)}{3}$

$V = 215\ km^3$

6)



$B = bh = (5)(5) = 25$

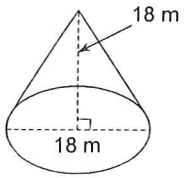
$H = 4$

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

$\frac{(25)(4)}{3}$

$V = 33.\overline{3}\ yd^3$

7)



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

$V = \frac{81\pi(18)}{3}$

$B = \pi r^2 = 81\pi$

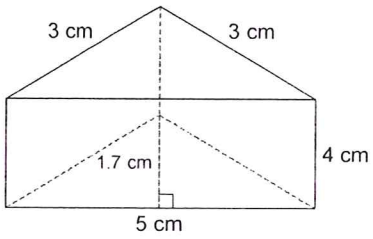
$r = 9$

$V = 486\pi \approx$

1526.81 m^3

$H = 18$

8)



$V = BH$

$V = (4.25)(4)$

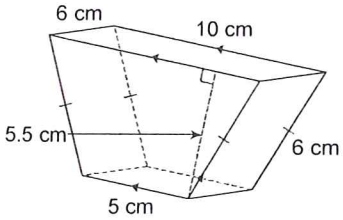
$B = \frac{1}{2}bh = (.5)(5)(1.7)$

4.25

$V = 17\ cm^3$

$H = 4$

9)



$V = BH$

$V = (41.25)(6)$

$V = 247.5\ cm^3$

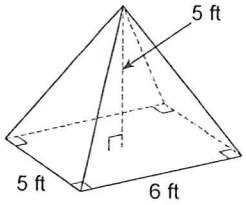
$B = \frac{1}{2}h(b_1 + b_2)$

$\frac{1}{2}(5.5)(5+10)$

$.5(5.5)(15) = 41.25$

$H = 6$

10)



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

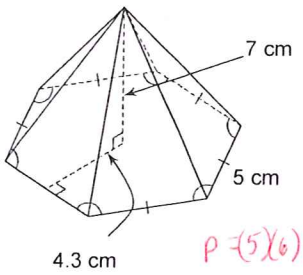
$V = \frac{(30)(5)}{3}$

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

$H = 5$

$V = 50\ ft^3$

11)



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

$V = \frac{(64.5)(7)}{3}$

$P = (5)(6) = 30$

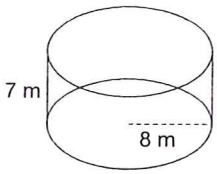
$B = \frac{1}{2}aP = \frac{1}{2}(4.3)(30)$

$= 64.5$

$V = 150.5\ cm^3$

$H = 7$

12)



$V = BH$

$V = (64\pi)(7)$

448π

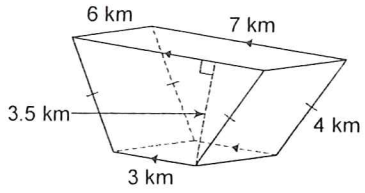
$\approx 1407.43\ m^3$

$B = \pi r^2 = \pi(8)^2 = 64\pi$

$r = 8$

$H = 7$

13)



$B = \frac{1}{2}h(b_1 + b_2)$

$\frac{1}{2}(3.5)(3+7)$

10

17.5

$H = 6$

$V = BH$

$(17.5)(6)$

$V = 105\ km^3$

G22 11.6 Surface Area and Volume of Spheres

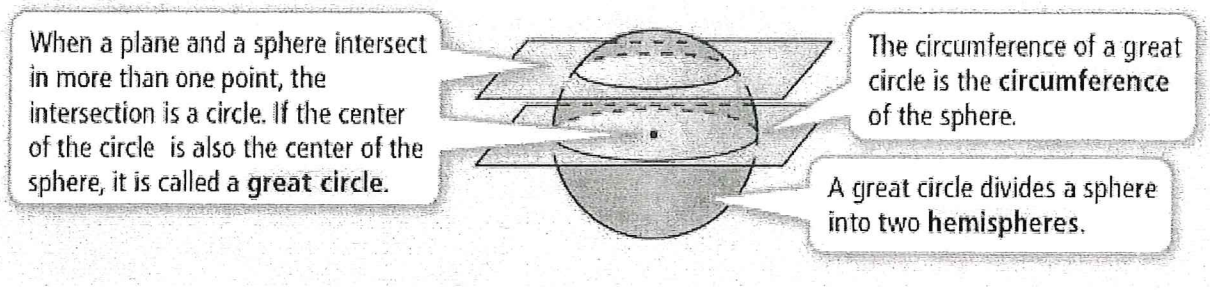
Name ANSWERS per_____

ective: *the students will be able to find the volume and surface area of a sphere.*

A **SPHERE** is the set of all points in space equidistant from a given point called the **center**.

A **radius** is a segment that has one endpoint at center and the other endpoint on sphere.

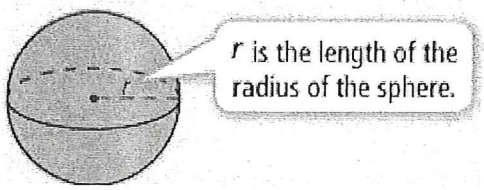
A **diameter** is a segment passing through the center with both endpoints on the sphere.



Surface Area & Volume of a Sphere

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

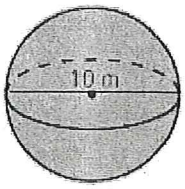
$$V = \frac{4}{3}\pi r^3$$



Try These:

1. What is the surface area and volume of the sphere in terms of π?

r = 5 SA = $4(\pi 5^2)$ = 100π V = $\frac{4\pi(5^3)}{3}$ = $\frac{500\pi}{3}$



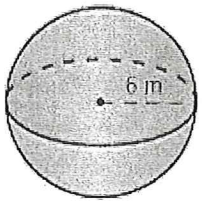
2. What is the surface area and volume of a sphere with a diameter of 14in? Give your answer in terms of π and rounded to the nearest inch.

r = 7 SA = $4(49\pi)$ = 196π = 615.75 → 616

V = $\frac{4\pi(7^3)}{3} = \frac{4(343\pi)}{3} = \frac{1372\pi}{3}$ = 1436.76 → 1437

3. What is the surface area and volume of the sphere in terms of π?

r = 6 SA = $4(36\pi)$ = 144π V = $\frac{4\pi(216)}{3}$ = 288π



4. What is the surface area of a melon with a circumference 18in? Round your answer to the nearest square inch.

$C = 18 = 2\pi r$

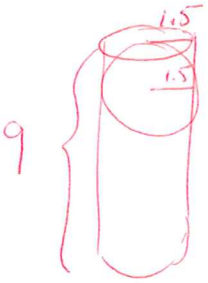
$\frac{18}{2\pi} = \frac{2\pi r}{2\pi}$

$r = 2.86$

$SA = 4\pi(2.86)^2$

$103.13 \approx \boxed{103\ in^2}$

5. Tennis balls with a 3 inch diameter are sold in cans of three. The can is a cylinder. Assume the balls touch the can on the sides, top and bottom. What is the volume of the space *not* occupied by the tennis balls? Round your answer to the nearest hundredth.



Cylinder

$V = BH$

$\pi r^2 H$

$\pi(1.5)^2(9)$

20.25π

3 balls

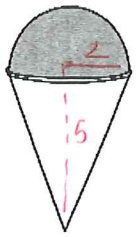
$V = \frac{4\pi r^3}{3}$ (3 balls)

$4\pi(1.5)^3$

13.5π

$6.75\pi \approx \boxed{21.21\ in^3}$

8. One hot day at a fair you buy yourself a snow cone. The height of the cone shaped container is 5 in and its radius is 2 in. The shaved ice is perfectly rounded on top forming a hemisphere.



What is the volume of the ice in your frozen treat? Round to the nearest hundredth.

cone

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

$\frac{\pi r^2 H}{3} = \frac{\pi(2^2)(5)}{3}$

$\frac{20\pi}{3}$

$\frac{40\pi}{6}$

½ sphere

$V = \frac{4\pi r^3}{3} \div 2$

$\frac{4\pi(2^3)}{6} = \frac{32\pi}{6}$

$+ \frac{32\pi}{6} = \frac{72\pi}{6} = 12\pi \approx \boxed{37.70\ in^3}$

HW pg 737 # 7-25 odd. AND pg 738-739 # 30, 46 – 50

G21 11.6 Surface Area and Volume of Spheres

Name ANS. per_____

'ective: the students will be able to find the volume and surface area of a sphere.

A **SPHERE** is the set of all points in space equidistant from a given point called the **center**.

A **radius** is a segment that has one endpoint at center and the other endpoint on sphere.

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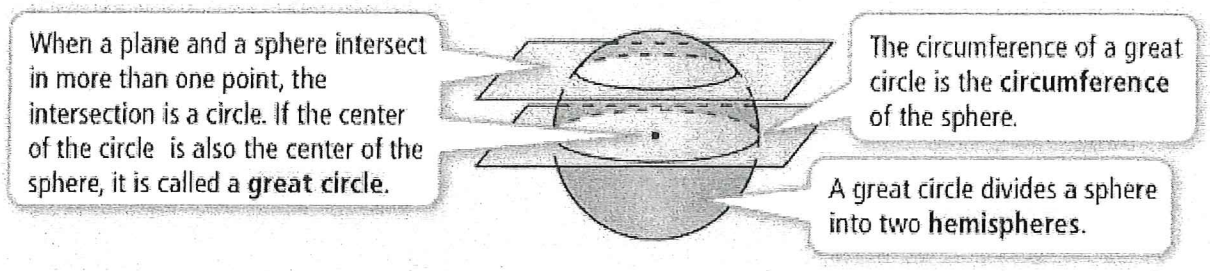
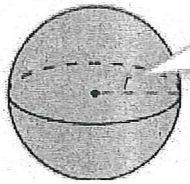


Surface Area & Volume of a Sphere

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

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



Try These:

1. What is the surface area and volume of the sphere in terms of π?

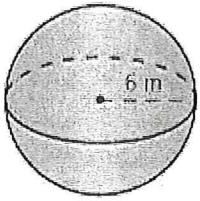
r = 5 $SA = 4\pi(25)$ 100π $V = \frac{500\pi}{3}$

2. What is the surface area and volume of a sphere with a diameter of 14in? Give your answer in terms of π and rounded to the nearest inch.

r = 7 $SA = 196\pi \approx 616\ in^2$ $V = \frac{1372\pi}{3} \approx 1437\ in^3$

3. What is the surface area and volume of the sphere in terms of π?

r = 6 $SA = 144\pi$ $V = 288\pi$ $\frac{4\pi(216)}{3}$



4. Earth's equator is about 24,902mi long. What is the approximate surface area of Earth? Round to the nearest thousand square miles.

$C = \frac{24902}{(2\pi)} = \frac{2\pi r}{2\pi}$

$3963.28_{mi} = r$

$SA = 4\pi r^2$

$62,830,239.1\,\pi$

$\approx 197,387,017.5\ mi^2$

$197,387,000\ mi^2$

5. What is the surface area of a melon with a circumference 18in? Round your answer to the nearest square inch.

$C = \frac{18}{2\pi} = \frac{2\pi r}{2\pi}$

$r = 2.86$

$SA = 4\pi(2.86)^2$

$103.13 \approx 103\ in^2$

6. The volume of a sphere is 5000m³. What is its surface area to the nearest square meter?

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

$\frac{3}{4} \cdot 5000 = \frac{4}{3}\pi r^3 \cdot \frac{3}{4}$

$\frac{3750}{\pi} = \frac{\pi r^3}{\pi}$

$\sqrt[3]{1193.66} = \sqrt[3]{r^3}$

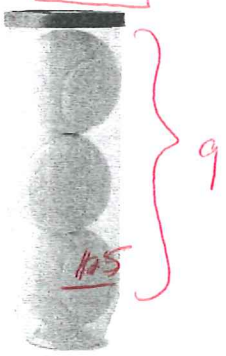
$r = 10.61_m$

$SA = 4\pi r^2$

$4\pi(10.61)^2$

$1414\ m^2$

7. Tennis balls with a 3 inch diameter are sold in cans of three. The can is a cylinder. Assume the balls touch the can on the sides, top and bottom. What is the volume of the space *not* occupied by the tennis balls? Round your answer to the nearest hundredth.



cylinder

$V = BH$

$\pi(1.5)^2(9)$

20.25π

3 balls

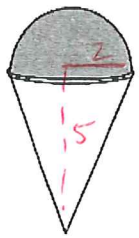
$V = \frac{4\pi r^3}{3} \cdot \frac{1}{2}$ (3 balls)

$4\pi(1.5)^3 = 13.5\pi$

subtract

$= 6.75\pi \approx 21.21\ in^3$

8. One hot day at a fair you buy yourself a snow cone. The height of the cone shaped container is 5 in and its radius is 2 in. The shaved ice is perfectly rounded on top forming a hemisphere.



a. What is the volume of the ice in your frozen treat? Round to the nearest hundredth.

b. If the ice melts at a rate of $2\ cm^3$ per minute, how long do you have to eat your treat before it all melts? Give your answer to the nearest minute.

cone $V = \frac{BH}{3} = \frac{\pi(2^2)(5)}{3} = \frac{20\pi}{3}$

½ sphere $V = \frac{4\pi r^3}{3} \cdot \frac{1}{2}$

$+ \quad \frac{4\pi(1.5)^3}{6} = \frac{32\pi}{6} = 12\pi$

$\approx 37.70\ in^3$

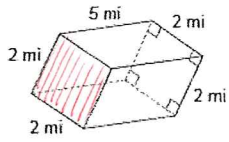
HW pg 737 # 7-25 odd. AND pg 738-739 # 30, 46 – 50

Geometry Name ANSWERS ID: 1

SURFACE AREA prisms, pyramids, cylinders, cones Date_____ Period____

Find the surface area and volume of each figure. Round your answers to the nearest hundredth, if necessary. REMEMBER to make your "LIST" first!!!

1)



$B = (2)(2) = 4$

$H = 5$

$P = 8$

$SA = pH + 2B$

$8(5) + 2(4)$

$40 + 8$

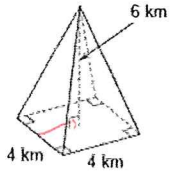
48 mi^2

$V = BH$

$(4)(5)$

20 mi^3

2)



$B = 16$

$P = 16$

$H = 6$

$\ell = 6.32$

$2^2 + 6^2 = \ell^2$

$4 + 36 = \ell^2$

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

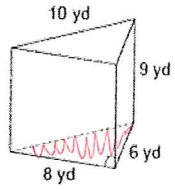
$\frac{1}{2}(16)(6.32) + 16$

66.60 km^2

$V = \frac{BH}{3} = \frac{(16)(6)}{3}$

32 km^3

3)



$B = \frac{1}{2}bh = \frac{1}{2}(8)(6)$

24

$H = 9$

$P = 24$

$SA = pH + 2B$

$(24)(9) + 2(24)$

$216 + 48$

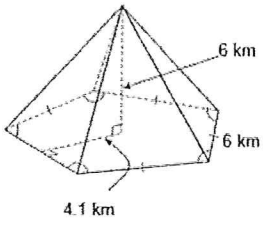
264 yd^2

$V = BH$

$(24)(9)$

216 yd^3

4)



$B = \frac{1}{2}(4.1)(30) = 61.5$

$H = 6$

$P = 30$

$\ell = 7.27$

$4.1^2 + 6^2 = \ell^2$

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

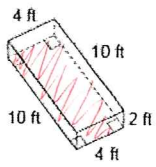
$\frac{1}{2}(30)(7.27) + 61.5$

170.31 km^2

$V = \frac{BH}{3} = \frac{(61.5)(6)}{3}$

123 km^3

5)



$B = 40$

$H = 2$

$P = 28$

$SA = pH + 2B$

$(28)(2) + 2(40)$

$56 + 80$

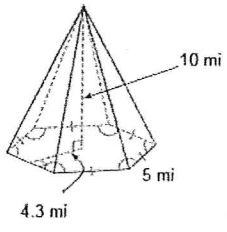
136 ft^2

$V = BH$

$(40)(2)$

80 ft^3

6)



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

64.5

$P = 30$

$H = 10$

$\ell = 10.89$

$4.3^2 + 10^2 = \ell^2$

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

$\frac{1}{2}(30)(10.89) + 64.5$

227.78 mi^2

$V = \frac{BH}{3} = \frac{(64.5)(10)}{3}$

215 mi^3

$B = \frac{1}{2}ap = \frac{1}{2}(6.2)(45) = 139.5$

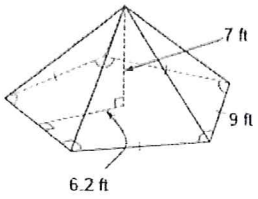
$H = 7$

$p = 45$

$\ell = 9.35$

$\ell^2 = 6.2^2 + 7^2$

7)



$SA = \frac{1}{2}p\ell + B$

$\frac{1}{2}(45)(9.35) + 139.5$

$349.875\ ft^2$

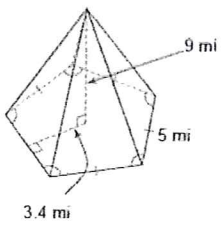
$V = \frac{BH}{3}$

$V = (139.5)(7)$

$976.5\ ft^3$

$\frac{976.5}{3} = 325.5\ ft^3$

8)



$p = 25$

$B = \frac{1}{2}(3.4)(25) = 42.5$

$H = 9$

$\ell = 9.62$

$\ell^2 = 3.4^2 + 9^2$

$SA = \frac{1}{2}p\ell + B$

$\frac{1}{2}(25)(9.62) + 42.5$

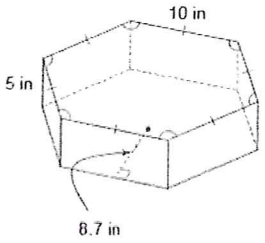
$162.75\ mi^2$

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

$V = \frac{(42.5)(9)}{3}$

$127.5\ mi^3$

9)



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

$\frac{1}{2}(8.7)(60) = 261$

$p = (10)(6) = 60$

$H = 5$

$SA = pH + 2B$

$(60)(5) + 2(261)$

$300 + 522$

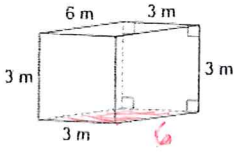
$822\ in^2$

$V = BH$

$V = (261)(5)$

$1305\ in^3$

10)



$B = 18$

$H = 3$

$p = 18$

$SA = pH + 2B$

$18(3) + 2(18)$

$54 + 36$

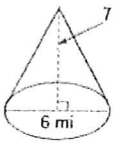
$90\ m^2$

$V = BH$

$(18)(3)$

$54\ m^3$

11)



$r = 3$

$B = 9\pi$

$C = 6\pi$

$H = 7$

$\ell = 7.62$

$\ell^2 = 3^2 + 7^2$

$9 + 49$

$\ell = 7.62$

$SA = \frac{1}{2}C\ell + B$

$\frac{1}{2}(6\pi)(7.62) + 9\pi$

31.857π

$100.1\ mi^2$

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

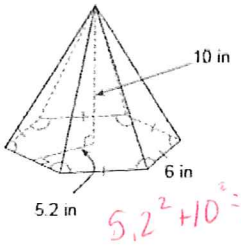
$V = \frac{(9\pi)(7)}{3}$

21π

$65.97\ mi^3$

≈ 66

12)



$5.2^2 + 10^2 = \ell^2$

$\ell = 11.27$

$SA = \frac{1}{2}p\ell + B$

$\frac{1}{2}(30)(11.27) + 78$

$247.05\ in^2$

$B = \frac{1}{2}ap = \frac{1}{2}(5.2)(30) = 78$

$p = 30$

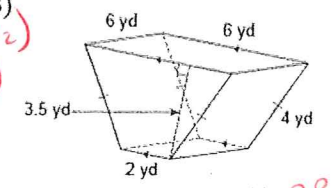
$H = 10$

$\ell = 11.27$

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

$\frac{(78)(10)}{3}$

$260\ in^3$

13) 

$B = \frac{1}{2}h(b_1+b_2)$

$\frac{1}{2}(3.5)(2+6)$

14

$H = 6$

$p = 2+6+4+4 = 16$

$V = (14)(6)$

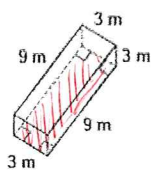
84 yd³

$SA = pH+2B$

$(16)(6)+2(14)$

$96+28$

124 yd²

14) 

$B = 27$

$H = 3$

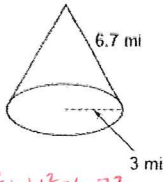
$p = 24$

$SA = (24)(3)+2(27)$

126 m²

$V = (27)(3)$

81 m³

15) 

$B = 9\pi$

$C = 6\pi$

$\ell = 6.7$

$H = 6$

$3^2+H^2 = 6.7^2$

$H = 6$

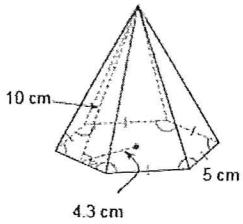
$SA = \frac{1}{2}C\ell + B$

$\frac{1}{2}(6\pi)(6.7)+9\pi$

29.1π

91.42 mi²

$V = \frac{BH}{3} = 18\pi =$ 56.55 mi³

16) 

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

$p = 30$

$\ell = 10$

$H = 9.03$

$4.3^2+H^2 = 10^2$

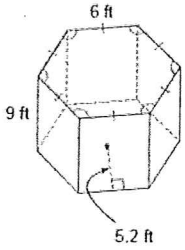
$SA = \frac{1}{2}p\ell + B$

$\frac{1}{2}(30)(10)+64.5$

214.5 cm²

$V = \frac{BH}{3} = \frac{(64.5)(9.03)}{3}$

194.145 cm³

17) 

$B = \frac{1}{2}(5.2)(36) = 93.6$

$p = 36$

$H = 9$

$SA = pH+2B$

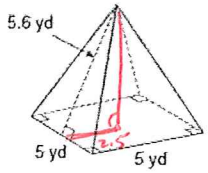
$(36)(9)+2(93.6)$

511.2 ft²

$V = BH$

$(93.6)(9)$

842.4 ft³

18) 

$B = 25$

$H = 5$

$\ell = 5.6$

$p = 20$

$H^2+2.5^2 = 5.6^2$

$H = 5$

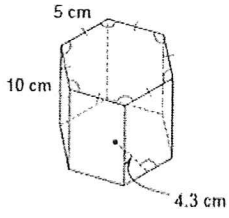
$SA = \frac{1}{2}p\ell + B$

$\frac{1}{2}(20)(5.6)+25$

81 yd²

$V = \frac{(25)(5)}{3}$

41.6 yd³

19) 

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

64.5

$H = 10$

$p = 30$

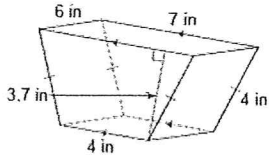
$SA = (30)(10)+2(64.5)$

$300+129$

429 cm²

$V = (64.5)(10)$

645 cm³

20) 

$B = \frac{1}{2}(3.7)(4+7)$

20.35

$H = 6$

$p = 4+7+4+4 = 19$

$SA = (19)(6)+2(20.35)$

$114+40.7$

154.7 in²

$V = (20.35)(6)$

122.1 in³

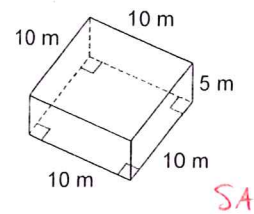
Geometry Name_____ ID: 1

Surface Area and Volume

Date_____ Period____

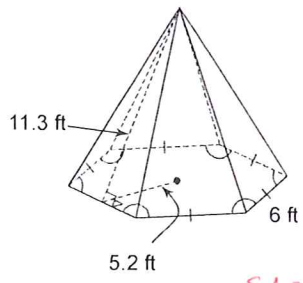
Find the surface area and volume of each figure. Start with the "List". You may need to do your work on a separate sheet of paper. Round your answers to the nearest hundredth, if necessary.

1)



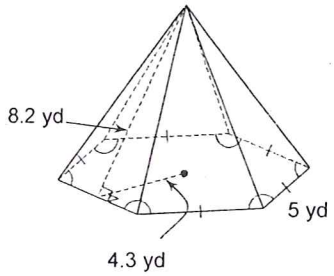
$B = 100$
$H = 5$
$P = 40$
$SA = (40)(5) + 200$
$400\ m^2$
$V = 500\ m^3$

2)



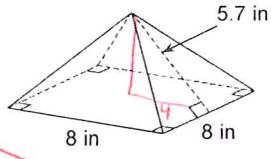
$B = \frac{1}{2}(5.2)(36) = 93.6$
$H = 10$
$5.2^2 + H^2 = 11.3^2$
$P = 36$
$\ell = 11.3$
$SA = \frac{1}{2}(36)(11.3) + 93.6$
$297\ ft^2$
$V = \frac{(93.6)(10)}{3}$
$312\ ft^3$

3)



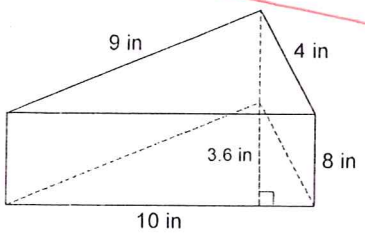
$B = \frac{1}{2}(4.3)(30) = 64.5$
$H \approx 7$
$P = 30$
$\ell = 8.2$
$SA = \frac{1}{2}(30)(8.2) + 64.5$
$187.5\ yd^2$
$V = \frac{64.5(7)}{3}$
$\approx 150\ yd^3$

4)



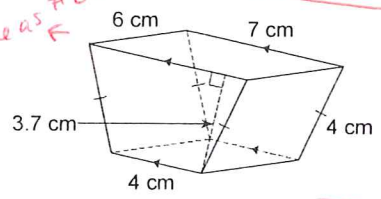
$B = 64$
$H = 4.1$
$H^2 + 4^2 = 5.7^2$
$P = 32$
$\ell = 5.7$
$SA = \frac{1}{2}(32)(5.7) + 64$
$155.2\ in^2$
$V = \frac{(64)(4.1)}{3}$
86.63

5)



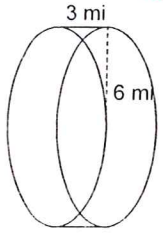
$B = \frac{1}{2}(10)(3.6)$
18
$H = 8$
$P = 10 + 9 + 4 = 23$
$SA = (23)(8) + 2(18)$
220
$V = (18)(8)$
144

6) (same as #20)



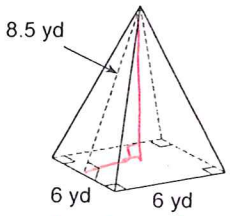
$B = \frac{1}{2}(3.7)(4+7)$
$H = 6$
$P = 19$
$SA = 154.7\ cm^2$
$V = 122.1\ cm^3$

7)



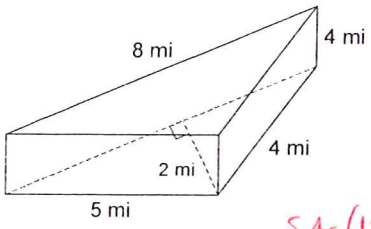
$B = 36\pi$
$H = 3$
$C = 12\pi$
$SA = (12\pi)(3) + 2(36\pi)$
108π
$V = (36\pi)(3)$
108π

8)



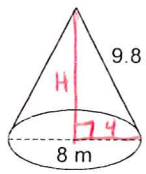
$B = 36$
$H \approx 8$
$P = 24$
$\ell = 8.5$
$3^2 + H^2 = 8.5^2$
$SA = \frac{1}{2}(24)(8.5) + 36$
$138\ yd^2$
$V = \frac{(36)(8)}{3}$
$= 96\ yd^3$

9)



$B = \frac{1}{2}(8)(2)$
8
$H = 4$
$P = 5 + 4 + 8 = 17$
$SA = (17)(4) + 2(8)$
$84\ mi^2$
$V = (8)(4)$
$32\ mi^3$

10)



$B = 16\pi$
$C = 8\pi$
$\ell = 9.8$
$H = 8.95$
$H^2 + 4^2 = 9.8^2$
$SA = \frac{1}{2}(8\pi)(9.8) + 16\pi$
$173.42\ m^2$
$V = \frac{(16\pi)(8.95)}{3}$
$149.96\ m^3$