UNIT 12 PRACTICE Name Key

You may use CALCULATORS and your GEOMETRY FORMULA CHART!

1. The surface areas of two similar cones are 121 ft² and 36 ft².

   a. What is the ratio of the lateral areas?

   $\frac{121}{36}$

   b. What is the similarity ratio of the large cone to the small cone?

   $\frac{11}{6}$

   c. What is the ratio of their radii?

   $\frac{11}{6}$

   d. What is the ratio of their volumes?

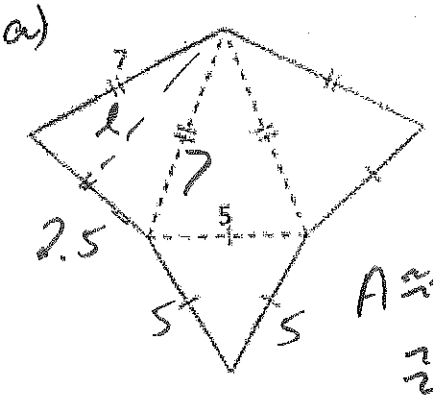
   $\frac{1331}{216}$

$\frac{a}{b} = \frac{11}{6}$

$\frac{a^3}{6^3} = \frac{1331}{216}$

2. For the following nets, name the figure that would be formed and find its surface area.

a)



$A \approx \frac{1}{2}(5)(4.3)$

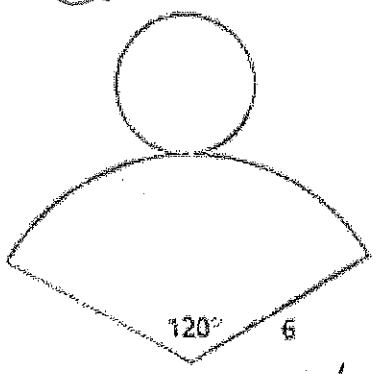
≈ 10.8

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

$\approx \frac{1}{2}(15)(6.5) + 10.8$

≈ 59.8

b) Cone



– no need to do anything else

~~$\frac{1}{3}Bh$~~

~~$\frac{1}{3}(10.8)(\quad)$~~

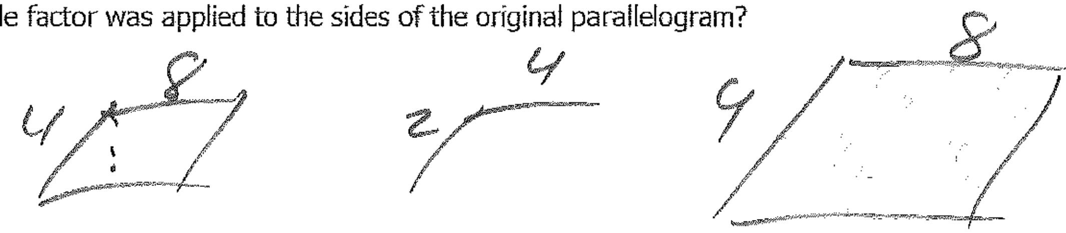
3. A parallelogram has sides of 4 cm and 8 cm. After being dilated, the resulting image has an area of 8 cm^2. What scale factor was applied to the sides of the original parallelogram?

A 2

B $\frac{1}{2}$

C 4

D $\frac{1}{4}$



4. Leo is painting the walls of his bedroom. His bedroom measures 10 feet by 14 feet and is 8 feet tall. He will not paint the 6 foot by 2 foot door or his 3 foot by 4 foot window. How many square feet will Leo paint?

A 360 ft^2

B 384 ft^2

C 408 ft^2

D 1,096 ft^2

Ph = (48)(8)

384 − 12 − 12

5. A spherical balloon holds approximately 3,053.63 cm^3 of air when it is full. What is the radius of the balloon when it is full?

$3053.63 = \frac{4}{3}\pi r^3$

9 ≈ r cm

6. The height of a cylinder is 18 inches. The area of the base of the cylinder is 20 inches. Which of the following expressions could be used to find the volume of the cylinder?

A 20 / 18

B 18 / 20

C 18 × 20

D $\pi(20)^2(18)$

V = Bh

7. The base area of a cylindrical can is 75 cm^2. The volume of the can is 1,125 cm^3. What is the height of the can?

A 8.4 cm

B 10.5 cm

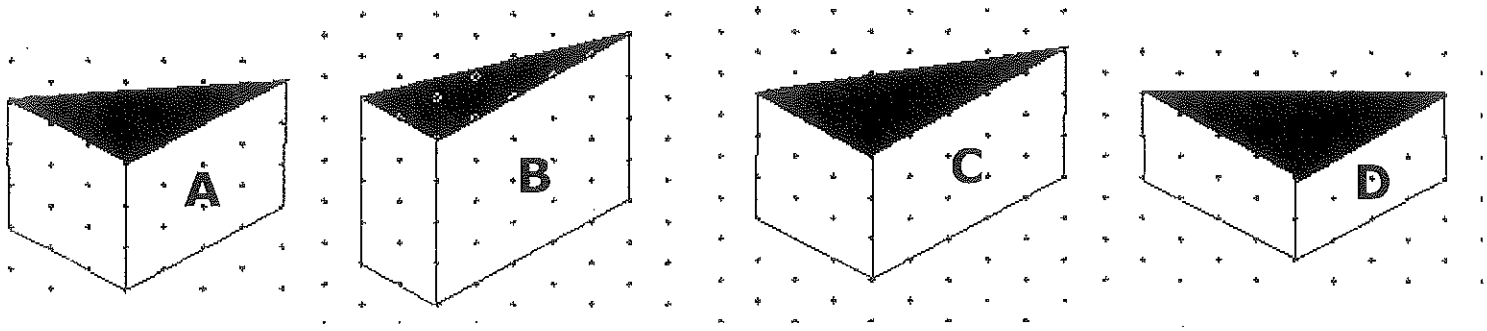
C 12 cm

D 15 cm

Name: _____ Period: _____ Bernhard GT GEOMETRY – SURFACE AREA AND VOLUME

_____ 5) Which figure accurately represents the triangular prism described below?

3 units high, with bases that are right triangles with legs 3 units and 5 units long



9. A sphere has a volume of 1200π cm^3. Find the surface area of the sphere.

$900 = r^3$

$9.6 = r$

$SA = 4\pi r^2$

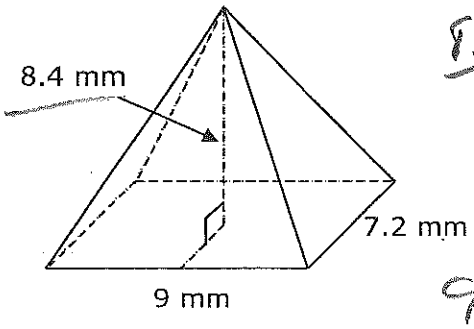
$= 4\pi(9.6)^2$

$\approx 1158.1 \text{ cm}^2$

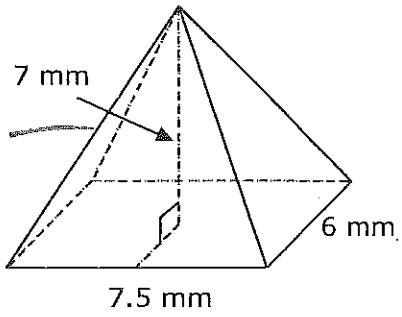
10. a). Determine whether the pair of solids are:

Similar Congruent Neither

b). Show all your work to justify your answer.
(Figures are not necessarily drawn to scale)



$\frac{8.4}{7} = 1.2$



$\frac{9}{7.5} = 1.2$ $\frac{7.2}{6} = 1.2$

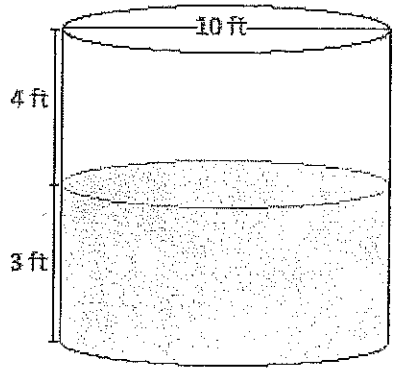
18. Two similar octagonal prisms have volumes of 64 cm^3 and 216 cm^3. The smaller prism has a surface area of 90 cm^2. What is the surface area of the larger prism?

$\frac{a^3}{b^3} = \frac{64}{216}$ $\frac{a^2}{b^2} = \frac{4}{9}$ $\frac{a}{b} = \frac{4}{6} = \frac{2}{3}$

$\frac{4}{9} = \frac{90}{x}$

$x = 202.5 \text{ cm}^2$

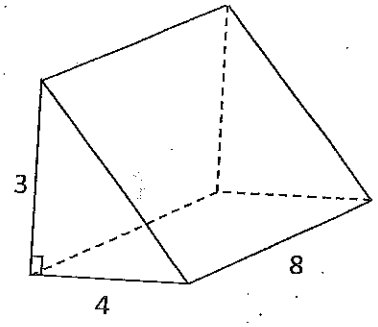
12 A cylindrical water tank is shown below. What is the approximate volume of the water in cubic feet?



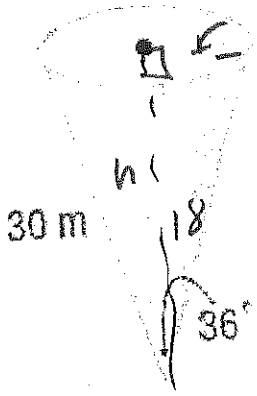
A 235.62 ft³
B 549.78 ft³
C 942.48 ft³
D 2,199.11 ft³

13. FIND THE SURFACE AREA & VOLUME OF EACH.

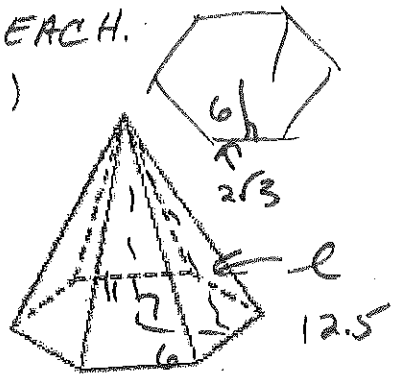
a)



b)



c)



The height is 11m and the apothem is 6m.

$p = 24\sqrt{3}$

$A = \frac{1}{2}(6)(24\sqrt{3})$

$= 72\sqrt{3} \approx 124.7$

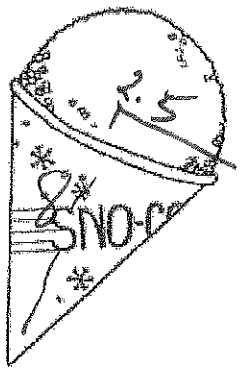
$SA = \frac{1}{2}pl + B$

$= \frac{1}{2}(\quad)(\quad) + (\quad)$

$V = \frac{1}{3}Bh$

$= \frac{1}{3}(\quad)(\quad)$

14. A snow cone has a paper cone that is 8 cm deep and has a diameter of 5 cm.
The flavored ice comes in a spherical scoop with a diameter of 5 cm.



a) If **all** the ice melts into the cone, will the cone overflow?

Yes No

b) Show ALL work to justify your answer.

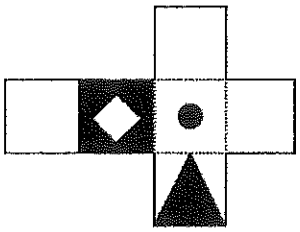
$V_{cone} = \frac{1}{3}\pi(2.5^2)(8)$ $V_{sphere} = \frac{4}{3}\pi(2.5)^3$

≈ 52.4 ≈ 65.4

c) Explain why the melted ice does or does not overflow

yes by 13 cm^3

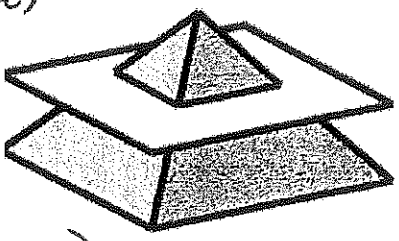
15. Which figure to the right would be formed by the net shown?



a. b. c. d.

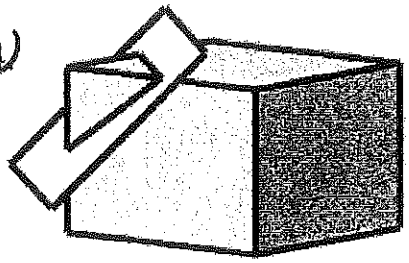
16 What figure would be formed by each cross-section?

a)



rectangle/Square
↑ whatever the base is

b)



triangle