Name _____

SOLIDS BOOT CAMP REVIEW

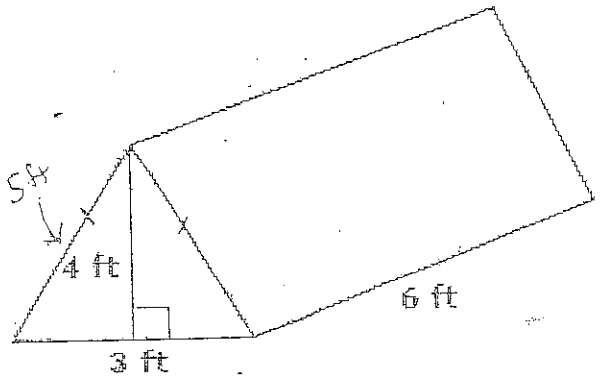
PACKET

A = Basic B = Moderate C = Challenging

A

a) Find the surface area and volume of the following figure.

Identify the solid: _____



Triangular Prism

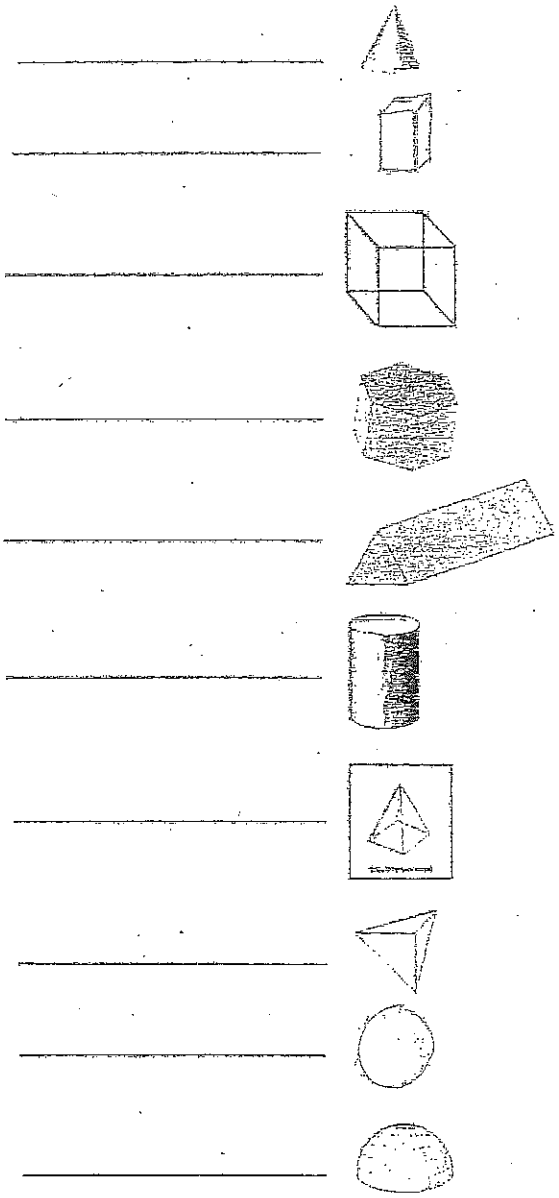
SA = △(3×4) ÷ 2 = 6 ft²
△(3×4) ÷ 2 = 6 ft²
□ (6×5) = 30 ft²
□ (6×5) = 30 ft²
□ (6×3) = +18 ft²

90 ft²

Volume = Area of base × height
[(3×4) ÷ 2] × 6 = 36 ft³

A

2) Label each solid below:



cone

rectangular prism

cube

hexagonal prism

triangular prism

cylinder

square pyramid

triangular pyramid

sphere

hemisphere ($\frac{1}{2}$ sphere)

A

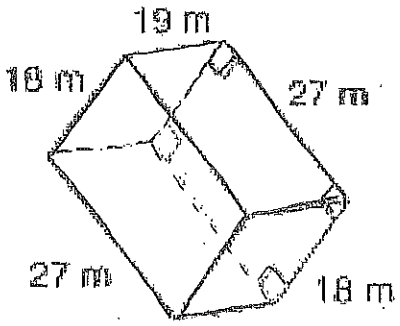
3) How many faces, edges, and vertices does ~~the~~ rectangular prism have?

faces = 6
edges = 12
vertices = 8

A

4) Find the surface area and volume of the following figure.

Identify the solid: _____



Rectangular Prism

SA = (19 × 27) × 2 = 1026

(18 × 19) × 2 = 684

(18 × 27) × 2 = + 972

2,682 m^2

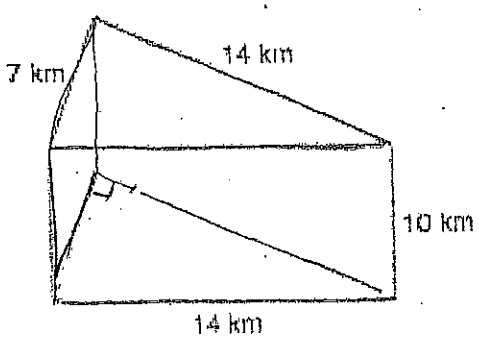
Volume = l × w × h

19 × 18 × 27 = 9,234 m^3

B

Find the surface area and volume of the following figure.

Identify the solid: _____



Triangular Prism

SA = △(7×14) ÷ 2 = 49

△ (7×14) ÷ 2 = 49

▭ (14×10) = 140

▭ (7×10) = 70

▭ (14×10) = 140

49 + 49 + 140 + 140 + 70 = 448 km^2

Volume = Area of base × height

[(14×7) ÷ 2] × 10 = 490 km^3

B

6) Michelle put her sister's birthday present in a box with a length of 13 mm, a width of 4mm, and a height of 8 mm. How much square millimeters of wrapping paper will Michelle need to completely cover the box

If the wrapping paper costs 2¢ per mm^2, how much will it cost Michelle to wrap her sister's present?

$(13 \times 4) \times 2 = 104$

$(4 \times 8) \times 2 = 64$

$(13 \times 8) \times 2 = 208$

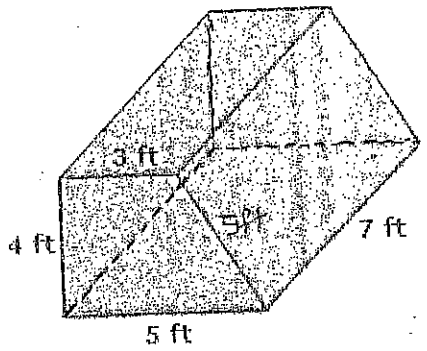
$104 + 64 + 208 = 376\ mm^2$

$376 \times .02 = \$7.52$

C

Find the surface area and volume of the following figure.

Identify the solid: _____



Trapezoidal Prism

SA $\triangle$ = [(5+3) x 4] ÷ 2 = 16

$\triangle$ = [(5+3) x 4] ÷ 2 = 16

$\square$ 5x7 = 35

$\square$ 5x7 = 35

$\square$ 3x7 = 21

$\square$ 4x7 = 28

16+16+35+35+21+28 = 151 ft²

Volume = Area of base x height

[(5+3)x4] ÷ 2 = 16 x 7 = 112 ft³

B

8) What is the base of a parallelogram with an area of 144 inches and height of 16 in?

16 $144in^2$

$A = b \cdot h$

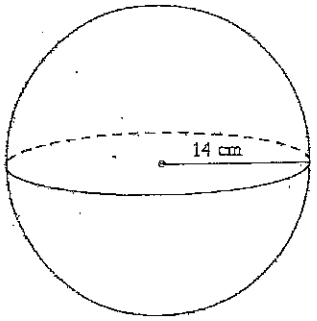
$\frac{144}{16} = \frac{b \cdot 16}{16}$

$9 = b$

base = 9 in

A

9) Find the surface area of the sphere.



$SA = 4\pi r^2$

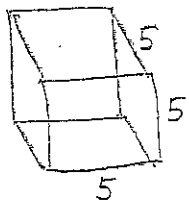
$= 4(3.14)(14)^2$

$= (12.56)(196)$

$SA = 2,461.76\ cm^2$

B

10) The volume of a cube is 125 cm^3. Find the surface area. (Draw a picture to help you find the answer).



$V = 125 cm^3$ $\sqrt[3]{125} = 5$

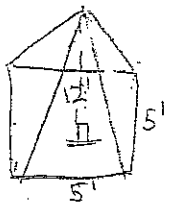
$V = 5 \cdot 5 \cdot 5$

$SA = 2(5 \cdot 5) + 2(5 \cdot 5) + 2(5 \cdot 5) =$

$50 + 50 + 50 = 150$

B

11) A building has a roof made up in part by a square pyramid with a base area of 25 square feet and a height of 12 feet. What is the volume of the pyramid?



square base = $25\ ft^2$

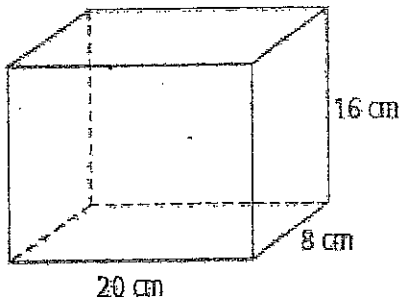
height = 12 ft

$V = \frac{\text{Area of Base} \times \text{height}}{3}$

$V = \frac{(25)(12)}{3} = \frac{300}{3} = \boxed{100\ ft^3}$

B

12) Find the surface area and volume of this prism.



$SA = 2(20\times8) + 2(8\times16) + 2(20\times16)$

$= 2(160) + 2(128) + 2(320)$

$= 320 + 256 + 640$

$\boxed{SA = 1{,}216\ cm^2}$

$V = l \times w \times h$

$= 20 \times 8 \times 16$

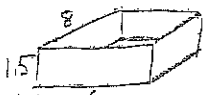
$\boxed{V = 2{,}560\ cm^3}$

B

13) A swimming pool is 8 m long, 6 m wide and 1.5 meters deep. The water resistant paint needed for the pool costs $6 per square meter.

a. How much will it cost to paint the interior surfaces of the pool?

b. How many liters of water will be needed to fill it?



a) 2 sides $1.5 \times 8 = 12$

2 sides $1.5 \times 6 = 9$

bottom $6 \times 8 = 48$

$2(12) + 2(9) + 48 = 90\ m^2$

$90\ m^2 \times 6 = \$540$

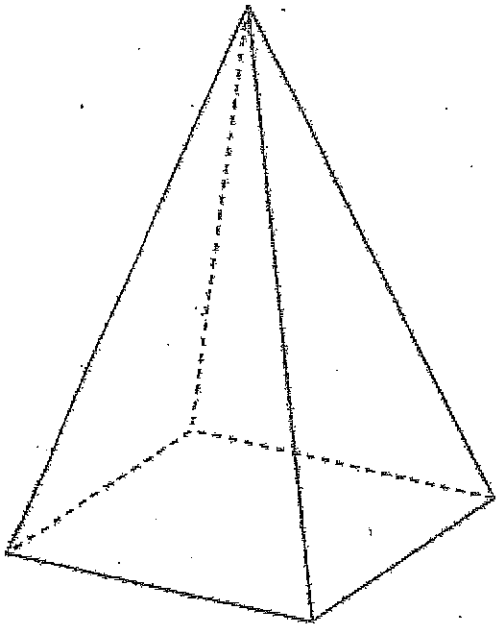
b) $V = 8 \times 6 \times 1.5 = 72\ m^3$

B

14) Draw a cross section this pyramid when it is cut by the planes described below. Then tell what shape is produced.

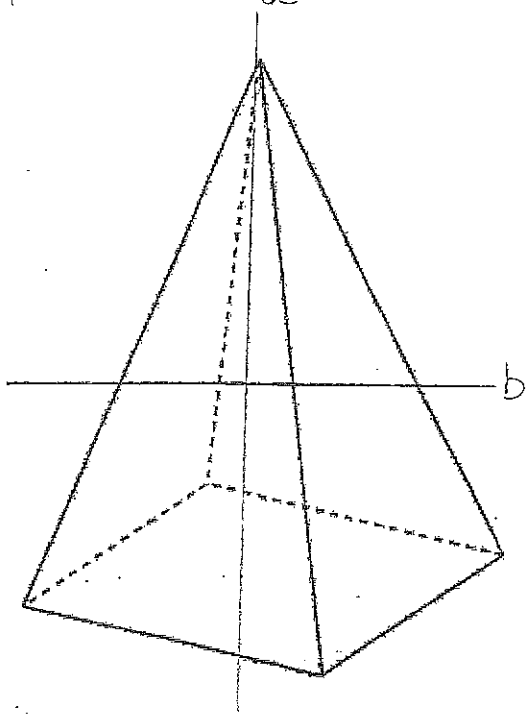
a) Perpendicular to its base

b) Parallel to its base



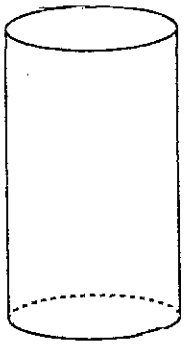
a) perpendicular = triangle

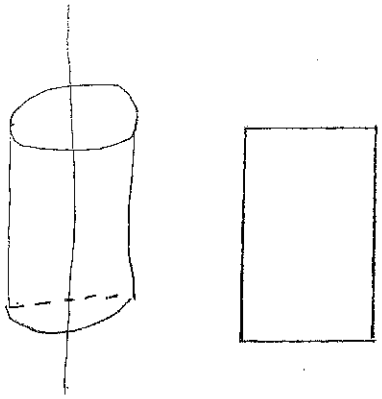
b) parallel = rectangle



A

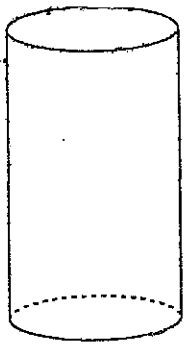
15) Draw a cross section of this cylinder when it is cut perpendicular to the base.

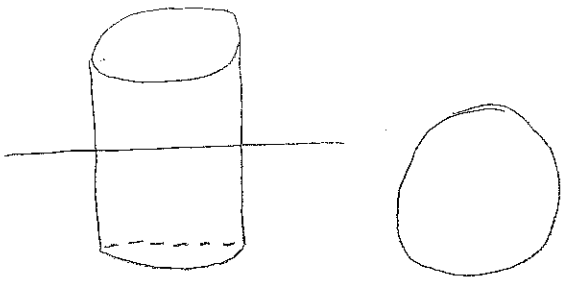




A

16) Draw a cross section of the cylinder when it is cut parallel to the base.





A

17) Draw a cross section of this prism when it is cut parallel to the base.