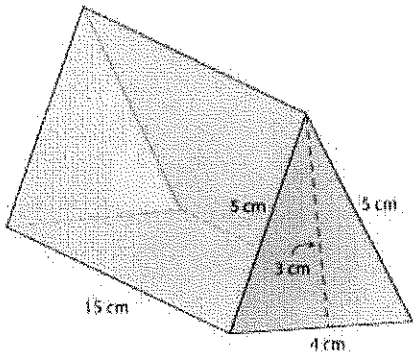
Name :

Boot Camp: Solids Take Home and Check Accelerated

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

Identify the solid:



① Triangular Prism

SA

$\Delta = (4 \times 3) \div 2 = 6\ cm^2$

$\Delta = (4 \times 3) \div 2 = 6\ cm^2$

$\square = 15 \times 5 = 75\ cm^2$

$\square = 15 \times 5 = 75\ cm^2$

$\square = 15 \times 4 = 60\ cm^2$

$222\ cm^2$

Volume = Area of base × h

Base = $\Delta = (4 \times 3) \div 2 = 6\ cm^2$

H = 15 cm

$6 \times 15 = 90\ cm^3$

2) There was a solid that had a cross-section removed from it. What are all the possible shapes that the solid could be if the cross-section was a rectangle?

Select one or more correct answers:

a) Cone
b) Cube
c) Cylinder
d) Pyramid
e) Rectangular Solid
f) Sphere

2)

Cylinder
Pyramid
Rectangular solid

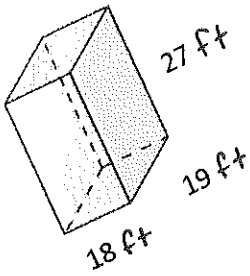
3) How many faces, edges, and vertices does a rectangular prism have?

3)

faces = 6
edges = 12
vertices = 8

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

Identify the solid:



4) Rectangular prism

$SA = 2(18 \times 19) + 2(19 \times 27) + 2(18 \times 27) =$

$= 2(342) + 2(513) + 2(486)$

$= 684 + 1026 + 972$

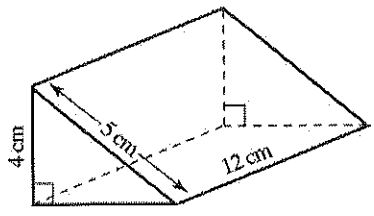
$SA = \boxed{2682\ ft^2}$

$V = l \times w \times h$

$(27)(19)(18) = \boxed{9234\ ft^3}$

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

Identify the solid:



5) Triangular Prism

$SA =$

Bases =

$\triangle = (4 \times 4) \div 2 = 8\ cm^2$

$\triangle = (4 \times 4) \div 2 = 8\ cm^2$

Faces: $\square = 5 \times 12 = 60\ cm^2$

$\square = 12 \times 4 = 48\ cm^2$

$\square = 12 \times 4 = 48\ cm^2$

$\boxed{172\ cm^2}$

$V =$ area of base $\times h$

Base $\triangle = (4 \times 4) \div 2 = 8 cm^2$

$H = 12\ cm$

$8 \times 12 = \boxed{96\ cm^3}$

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 cents per mm^2, how much will it cost Michelle to wrap her sister's present?

6) Find SA

$SA = 2(13 \times 4) + 2(13 \times 8) + 2(4 \times 8)$

$= 2(52) + 2(104) + 2(32)$

$= 104 + 208 + 64$

$= 376\ mm^2$

$376 \times .02 = \boxed{\$7.52}$

7) 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?

7) SA rect prism (no top)

a)

$2(6 \times 1.5) + 2(8 \times 1.5) + (8 \times 6)$

$2(9) + 2(12) + 48$

$18 + 24 + 48$

$90\ m^2$

$90 \times 6 = \boxed{\$540}$

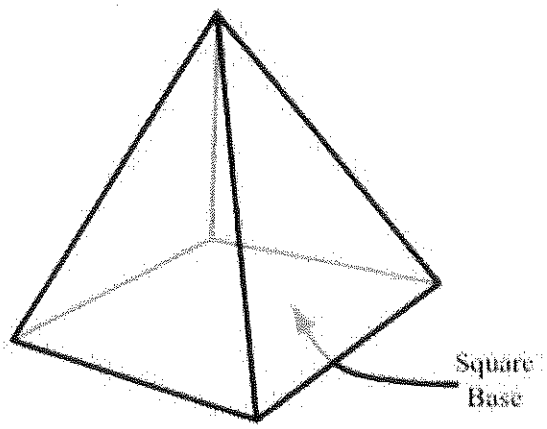
pnt int. surfaces

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

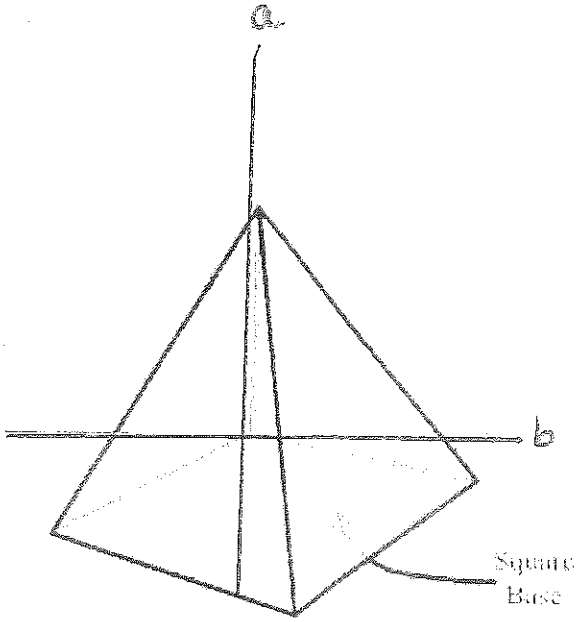
$\frac{1}{1000} = \frac{72}{x}$ $\quad x = \boxed{72000\ L \text{ of water}}$

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

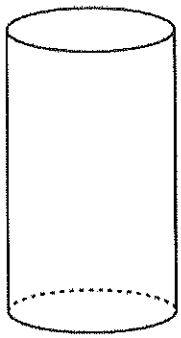
a) Perpendicular to its base
b) Parallel to its base



8) a) perpendicular = triangle
b) parallel = rectangle



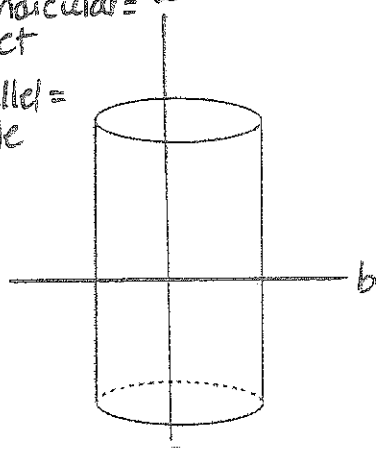
9) Draw a cross section of this cylinder when it is cut perpendicular and parallel to the base.



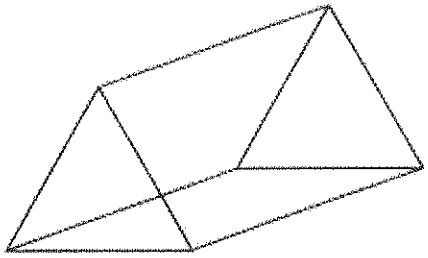
9)

a) perpendicular = a rect

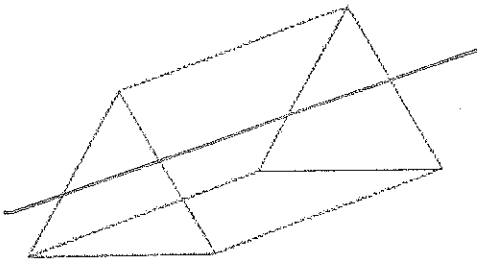
b) parallel = circle



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

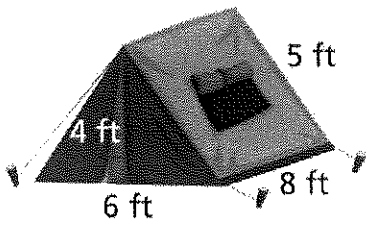


10)

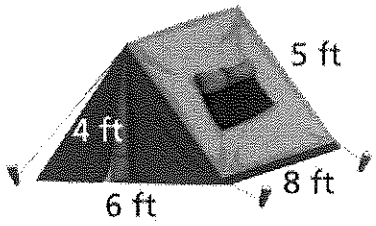


rectangle

11) The tent shown has fabric covering all four sides and the floor. What is the minimum amount of fabric needed to construct the tent?



11)



SA = $\triangle$ = $(4 \times 6) \div 2 = 12\ ft^2$

$\triangle$ = $(4 \times 6) \div 2 = 12\ ft^2$

$\square$ = $8 \times 5 = 40\ ft^2$

$\square$ = $8 \times 5 = 40\ ft^2$

$\square$ = $6 \times 8 = 48\ ft^2$

$152\ ft^2$

12) You are painting a rectangular room that is 13 feet long, 9 feet wide, and 8.5 feet high. There is a window that 2.5 feet wide and 5 feet high on one wall. On another wall, there is a door that is 4 feet wide and 7 feet high. A gallon of paint covers 350 square feet. How many gallons of paint do you need to cover the four walls with one coat of paint, not including the window and door?

12) SA

Window area = $2.5 \times 5 =$
12.5 ft.

Door area = $4 \times 7 = 28$

SA of rm

$2(13 \times 9) + 2(13 \times 8.5) + 2(9 \times 8.5)$

$2(117) + 2(110.5) + 2(76.5)$

$234 + 221 + 153$

608 ft

Subtract window/door -

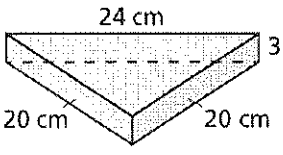
$608 - 40.5 =$

567.5 ft^2

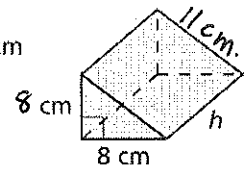
$\frac{567.5}{350} \approx 1.6$ gallons.

13) The right triangular prisms shown have the same surface area. Find the height of prism B.

Prism A



Prism B



This is a reach question. Nothing this difficult on quiz!

13) SA =

$\triangle = \frac{20 \times 20}{2} = \frac{400}{2} = 200$

2 of them = $400\ cm^2$

$\square = 20 \times 3 = 60$

2 of them = $120\ cm^2$

$\square = 24 \times 3 = 72$

$400 + 60 + 72 = 532\ cm^2$

Prism B → Base = $\frac{8 \times 8}{2} = \frac{64}{2} = 32$

$SA = 32 + 32 + 11h + 2(8h)$

$16h$

$532 = 64 + 27h$

$-64 \quad -64$

$468 = 27h$

$h = 17.33$

VIT: $\triangle = 64$

$\square = 8 \times 17.33 \times 2 = 277.33$

$\square = 11 \times 17.33 = 190.63$

Add = $531.96 \approx 532$

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

14) $V = 125cm^3$

$S^3 = 125$

$S = \sqrt[3]{125} = 5$ ($5 \times 5 \times 5 = 125$)

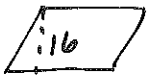
$S = 5$

$SA = 5 \times 5 = 25$

6 faces =

$25 \times 6 = \boxed{150\ cm^2}$

15) What is the base of a parallelogram with an area of 144 inches and a height of 16 in^2.

15) 

$A = 144$

$bh = 144$

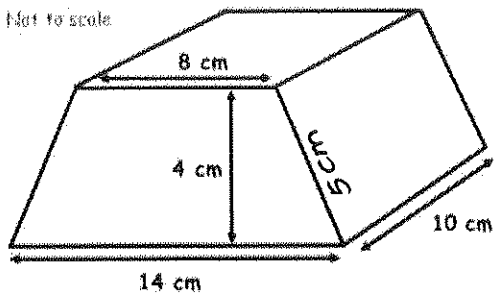
$b \times 16 = 144$

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

$\boxed{b = 9\ in}$

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

Identify the solid:



16)

Trapezoidal prism

SA

Bases = ⏢ = $\frac{8+14(4)}{2}$ =

$\frac{22(4)}{2} = \frac{88}{2} = 44$

2 of them = $88\,cm^2$

Top = $10 \times 8 = 80$

Bott = $10 \times 14 = 140$

side = $10 \times 5 = 50$

2 of them = 100

Add = $\boxed{378\ cm^2}$

V Bh

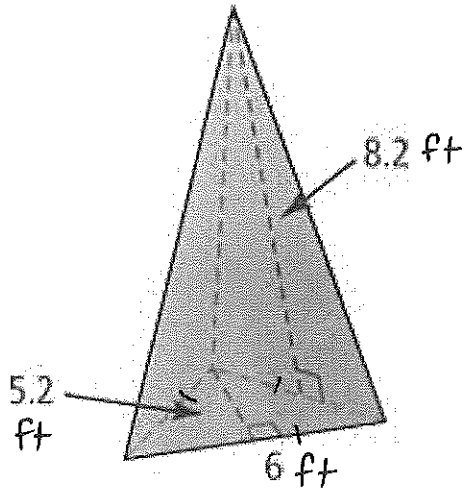
Area of base = $44\ cm^2$

$h = 10$

$44 \times 10 = \boxed{440\ cm^3}$

17) Find the surface area of the figure below.

Identify the solid:



17)

Triangular Prism

Base = $\frac{(6)(5.2)}{2}$ = 15.6

Faces = $\frac{(6)(8.2)}{2}$ = 24.6

3 of them = 73.8

Add: $89.4\ ft^2$