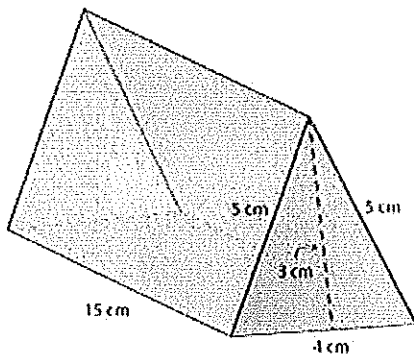Name:

Boot Camp: Solids: Take Home and Check
Tier B

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

Identify the solid:

5 cm   5 cm

3 cm

15 cm

4 cm

① Triangular Prism

SA

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

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

▭ $= 15 \times 5 = 75 \ cm^2$

▭ $= 15 \times 5 = 75 \ cm^2$

▭ $= 15 \times 4 = 60 \ cm^2$

$\boxed{222 \ cm^2}$

Volume = Area of base × h

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

H = 15 cm

$6 \times 15 = \boxed{90 \ cm^3}$

1) Identify each solid below.

a)

b)

c)

d)

e)

f)

g)

h)

i)
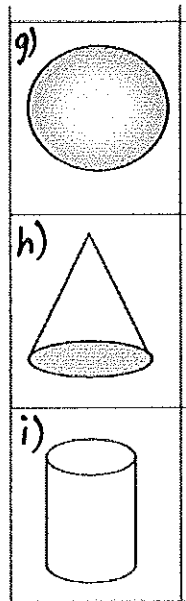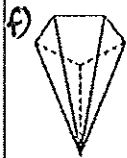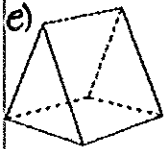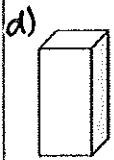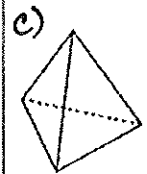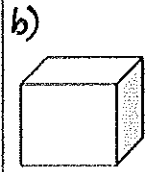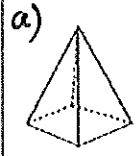
2)

a) Rect pyramid
b) Cube
c) Triangular pyramid
d) Rec prism
e) Triangular prism
f) Pentagonal pyramid
g) sphere
h) cone
i) cylinder

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

faces = 6
edges = 12
Vertices = 8

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

Identify the solid:

27 ft
19 ft
18 ft

3) Rectangular prism

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

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

$= 684 + 1026 + 972$

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

$V = \ell \times w \times h$
$(27)(19)(18) = \boxed{9234 \ ft^3}$

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

Identify the solid:

4 cm
5 cm
12 cm
4 cm.

4) Triangular Prism

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

Faces:
$\square = 5 \times 12 = 60 \ cm^2$
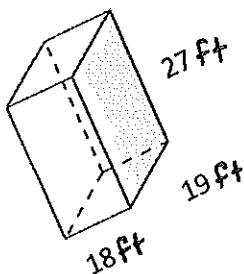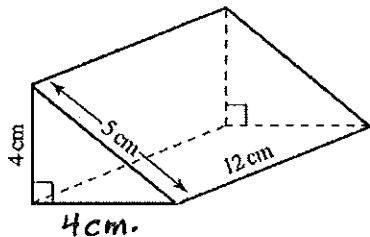$\square = 12 \times 4 = 48 \ cm^2$
$\square = 12 \times 4 = 48 \ cm^2$

$\boxed{172 \ cm^2}$

$V = area \ of \ base \times h$
Base $\triangle = (4 \times 4) \div 2 = 8 cm^2$
$H = 12 \ cm$
$8 \times 12 = \boxed{96 \ cm^3}$

5) 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?

5) Find SA

$$SA = 2(13 \times 4) + 2(13 \times 8) + 2(4 \times 8)$$
$$= 2(52) + 2(104) + 2(32)$$
$$= 104 + 208 + 64$$
$$= 376 \ mm^2$$

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

6) 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?

$$\boxed{1 \ m^3 = 1000 \ L}$$

6)

a)

SA → Interior

$$2(8 \times 1.5) + 2(6 \times 1.5) + (8 \times 6)$$
$$2(12) + 2(9) + 48$$
$$24 + 18 + 48 = 90 \ m^2$$
$$90 \times 6 = \boxed{\$540}$$
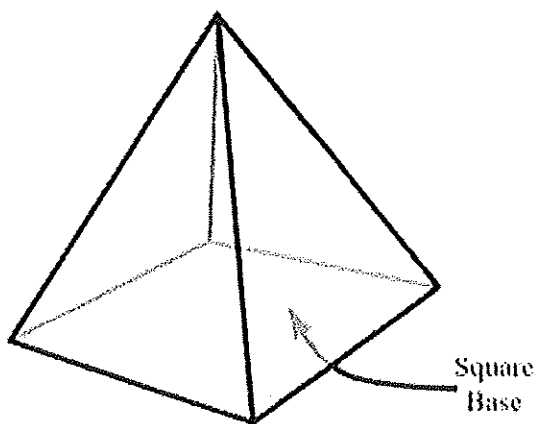pnt int. surfaces

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

$$\frac{1}{1000} = \frac{72}{x}$$

$$\boxed{x = 72000 \ L \ of \ water}$$

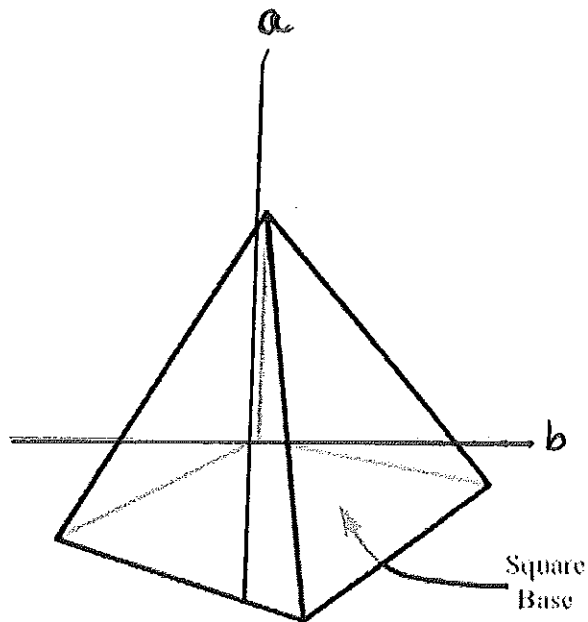7) Draw a cross section of this pyramid when it is cut by the planes described below. Then tell what shape is produced.

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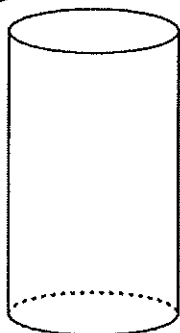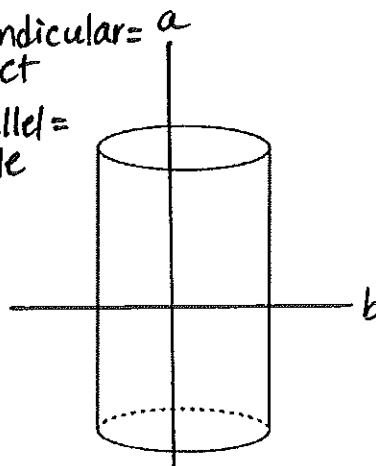b) Parallel to its base

Square Base

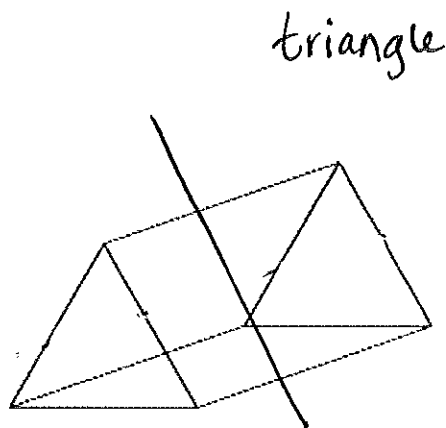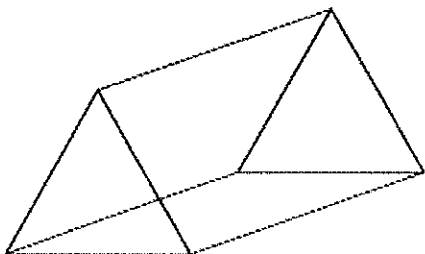a) perpendicular = triangle
b) parallel = Square

a

b

Square Base

8) Draw a cross section of this cylinder when it is cut perpendicular and parallel to the base. Tell what shapes are produced.
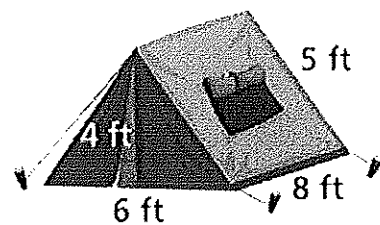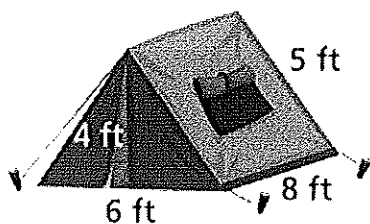
a) Perpendicular = rect
b) parallel = circle

a

b

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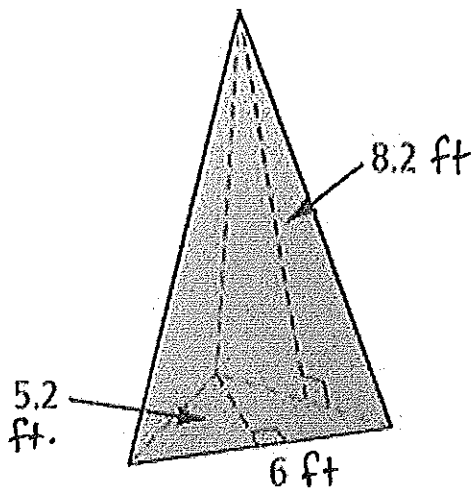
triangle

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

5 ft
4 ft
6 ft
8 ft

$$SA = \triangle = (4 \times 6) \div 2 = 12 \, ft^2$$
$$\triangle = (4 \times 6) \div 2 = 12 \, ft^2$$
$$\square = 8 \times 5 = 40 \, ft^2$$
$$\square = 8 \times 5 = 40 \, ft^2$$
$$\square = 6 \times 8 = 48 \, ft^2$$
$$\boxed{152 \, ft^2}$$

11) Find the surface area of the figure below.

Identify the solid:

8.2 ft

5.2 ft.

6 ft

11) Triangular Pyramid

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

$\frac{31.2}{2}$

15.6 ft^2

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

$\frac{49.2}{2} = 24.6 \text{ ft}^2$

3 of them= 3(24.6)

73.8

$15.6 + 73.8 = \boxed{89.4 \text{ ft}^2}$