1) Corn Meal is packaged in a cylindrical container with the dimensions shown in the drawing.

Find the approximate volume of this corn meal container. Round to the nearest tenth.

$V = Bh$

$= \pi (8)^2 11 = 2211.7 in^3$

8 in.

11 in.
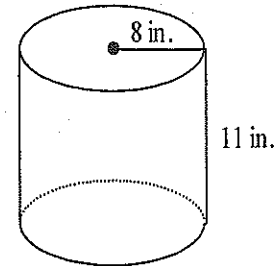
2) Mrs. Smith purchased a China Cabinet shaped like an isosceles trapezoid. The height of the China Cabinet is approximately 199 centimeters. The other dimensions are shown below.
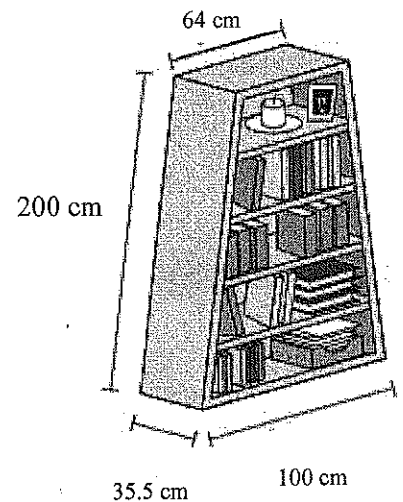
What is closest to the surface area of the top, left, and right and back sides of Mrs. Smith's China Cabinet? Round to the nearest tenth.

Top: $64(35.5) \doteq 2272 \ cm^2$

Left: $200(35.5) = 7100 \ cm^2$

Right: $200(35.5) = 7100 \ cm^2$

Back: $\dfrac{(100+64)199}{2} = 16318 \ cm^2$

64 cm

200 cm

35.5 cm   100 cm

3) A jewelry store buys small boxes in which to wrap items that they sell. Instead of wrapping the jewelry box, the store wants to decorate only the sides and the top of the jewelry box. The diagram below shows one of the boxes. How much decoration is needed to cover only the sides and the top of the jewelry box? Round your answer to the nearest square inch.

$TSA = Ph + B$

$= 36(1) + 12(6)$

$= 108 in.^2$
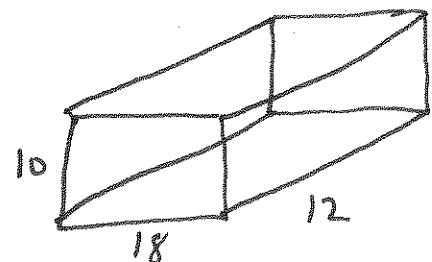
1 in   6 in

12 ~~cm~~ in.
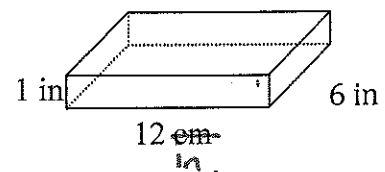
4) Lorraine wants to paint the 4 rectangular walls of a room, including the door. The room is 18 feet long and 12 feet wide, and the walls are 10 feet high. What is the total area that will be painted?

$2\left(10(18) + 10(12)\right)$
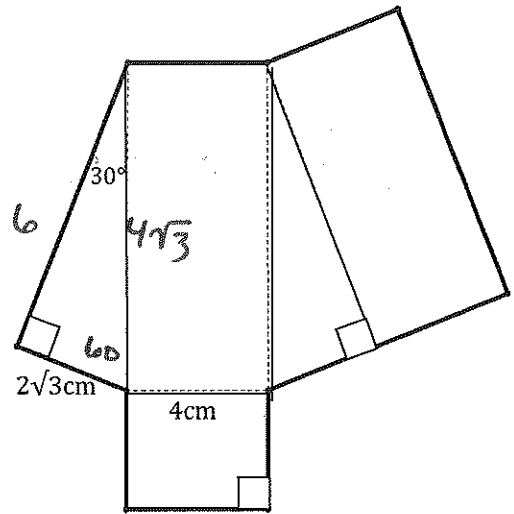
F 300 ft²
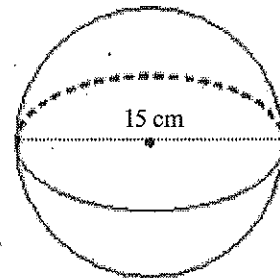
(G) 600 ft²

H 816 ft²

J 864 ft²

10

18   12

5.) What is the total surface area of this right triangular prism? Round to the nearest tenth.

$TSA = Ph + 2B$

$= (6\sqrt{3} + 6)4 + \dfrac{2(6 \cdot 2\sqrt{3})}{2}$

$= 24\sqrt{3} + 24 + 12\sqrt{3}$

$= 36\sqrt{3} + 24 \text{ cm}^2$

$= 86.4 \text{ cm}^2$

30°

6

$4\sqrt{3}$

60

2√3cm

4cm

6.) A spherical ball has a diameter of 15 centimeters. What is the surface area and volume of the ball? Round to the nearest tenth.
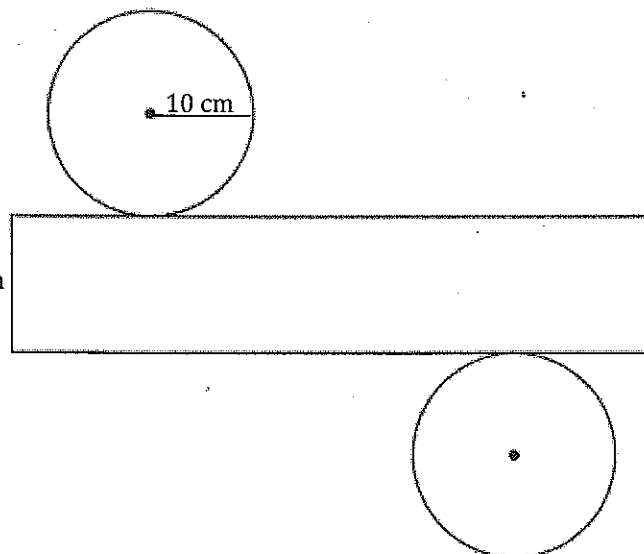
15 cm

Surface Area: $4\pi(7.5)^2 = 706.9 \text{ cm}^2$

Volume: $\dfrac{4}{3}\pi(7.5)^3 = 1767.1 \text{ cm}^3$

10 cm

7.) Find the total surface area of this cylinder to the nearest square centimeter.

$TSA = 2\pi r h + 2\pi r^2$
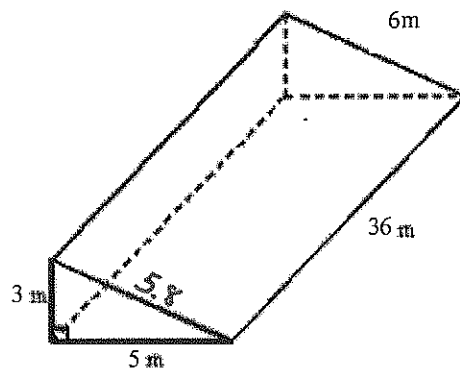
$= 2\pi(10)7 + 2\pi(10)^2$

$= 340\pi$

$= 1068.1 \text{ cm}^2$

7cm

8.) A triangular prism is shown below.

What is the Surface Area of this triangular prism?

$\text{TSA} = Ph + 2B$
$= 13.8(36) + 2(\frac{3 \cdot 5}{2})$
$= 512.9 m^2$

What is the volume of this triangular prism?

$V = Bh$
$= \frac{3 \cdot 5}{2} \cdot 36$
$= 270 m^3$

6m

36 m

3 m   5.8

5 m

Not drawn to scale

9.) If the surface area of a cube is increased by a factor of 4, what is the change in the length of the sides of the cube?

(1) TSA: x
(2) TSA: $4x$

$\left(\frac{4x}{x}\right) = \frac{4}{1} = \left(\frac{2}{1}\right)^2$ S.F

S.F. $= 2$

A. The length is 2 times the original length.

B. The length is 4 times the original length.

C. The length is 6 times the original length.

D. The length is 8 times the original length.

10.) Mrs. Johnson bought a Clothing Dresser that contains 6 drawers shaped like rectangular prisms, one is shown below.

What is the approximate volume in cubic meters of the 6 clothing drawers?

$V = Bh$
$= Lwh$
$= 19 \cdot 5 \cdot 4 = 380$
$380 \cdot 6 = 2280 m^3$

4 m   19 m   5 m
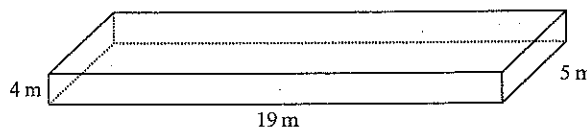
Not drawn to scale

11.) Erica made a cylindrical pottery vase with a height of 4r cm and a diameter of 2r cm. Erica wants to fill the vase with soil and seeds. She wants the soil x units from the top of the pottery. Which expression best represents the amount of soil that can fit in the pottery?
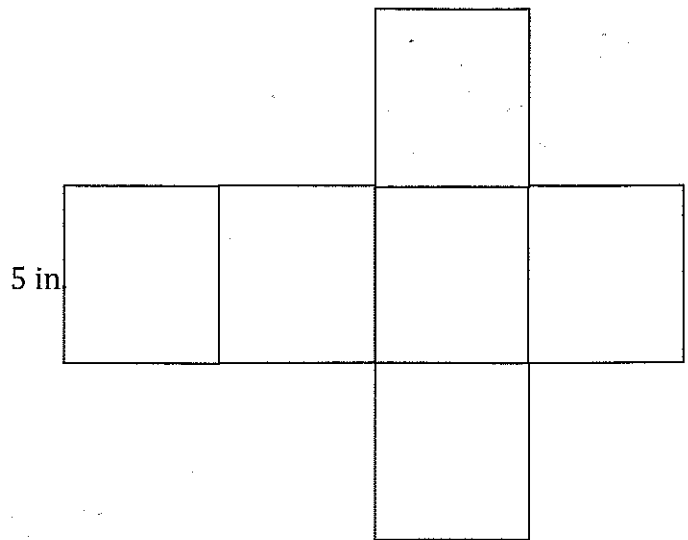
A. $16\pi r^3 - \pi x$

B. $4\pi r^3 + \pi r^2 x$

C. $4\pi r^3 - \pi r^2 x$

D. $16\pi r^3 + \pi x$

x $4r$
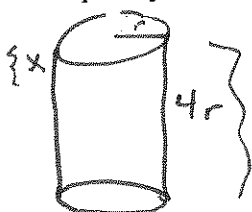
$V = Bh - Bh$
$= \pi (r)^2 (4r - x)$
$= 4\pi r^3 - \pi r^2 x$

12.) The net of a cube is shown below. What is the surface area of this cube to the nearest quarter inch?

$TSA = Ph + 2B$
$= 20(5) + 2(25)$
$= 150 in^2$

5 in

13.) Allison is planning to cover the lateral surface of a large cylindrical garbage can with decorative fabric for a theme party. The can has a diameter of 3 feet and a height of 3.5 feet. How much fabric does she need? Round to the nearest square foot.

$LA = 2\pi rh$
$= 2\pi (1.5) 3.5$
$= 33 ft^2$

●—3 ft.—●

3.5 ft.
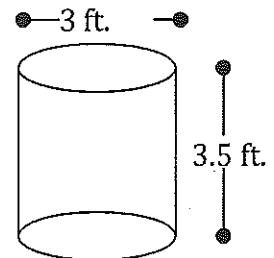
14.) Mr. Kelly's Company manufactures a cylindrical soup can that has a diameter of 6 inches and a volume of 226 cubic inches. If the diameter stays the same and height is doubled, what will happen to the can's volume?

$V = Bh$
$226 = \pi(3)^2 h$
$h = 8$

$V = 22L$

$V = \pi(3)^2 \cdot 16$
$= 452.4$

A. It will remain the same.
B. It will double.
C. It will triple.
D. It will quadruple.

15.) A rectangular solid has a volume of 24 cubic decimeters. If the length, width, and height are all changed to $\frac{1}{2}$ their original size, what will be the new volume of the rectangular solid?
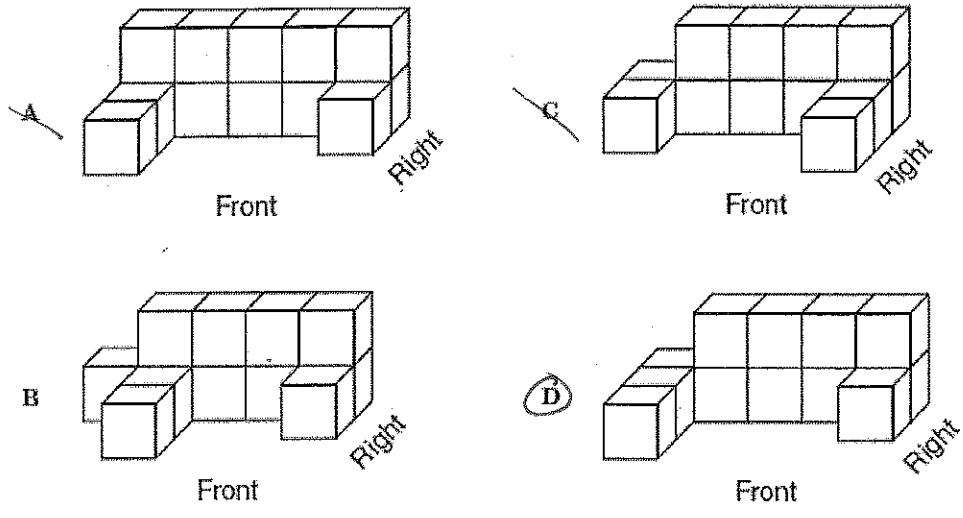
$(\frac{1}{2})^3 = \frac{x}{24}$

3 cubic decimeters

16.) The drawings below show the left-side, front, and top views of a three-dimensional structure built with identical cubes.

Left-side view   Front view   Top view
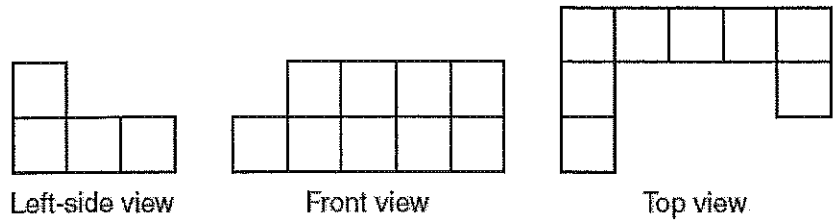
Which of the following 3-dimensional structures is best represented by these views?

A

Front   Right

C

Front   Right

B

Front   Right

(D)

Front   Right

17.) Three balls are packaged in a cylindrical container as shown below. The balls just touch the top, bottom, and sides of the cylinder. The diameter of each ball is 13 cm. Round to the nearest tenth.

6.5

39
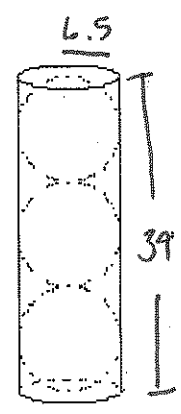
a.   What is the volume of the cylinder?

$$V = \pi (6.5)^2 \; 39$$
$$= 5176.6 \; cm^3$$
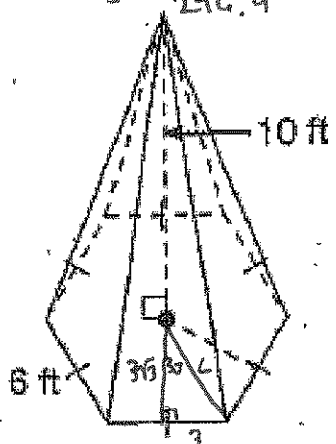
b.   What is the total volume of the three balls?

$$V = \frac{4}{3} \pi (6.5)^3$$
$$= 1150.3$$

$$1150.3(3) = 3451 \; cm^3$$
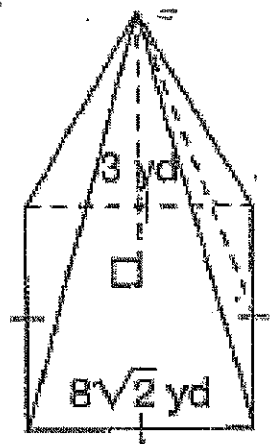
Find the Surface Area and Volume of the figures below:

18.)

A. $TSA = \frac{1}{2}Pl + B$
$= \frac{1}{2}(36)11.3 + \frac{1}{2}(3\sqrt{3})36$
$= 294.4$

B. $TSA = \frac{1}{2}Pl + B$
$= \frac{1}{2}32\sqrt{2} \cdot 6.4 + 128$

C. $TSA = \pi r L + \pi r^2$
$= \pi(3)3\sqrt{2} + \pi(3)^2$

— 10 ft

6 ft   3√3   3

3 yd

8√2 yd

3√2
3
45°
3

S.A. = __296.4 ft²__

S.A. = __272.9 yds²__

S.A. = __68.3 units²__

Volume = __311.8 ft³__
$V = \frac{1}{3}Bh$
$= \frac{1}{3}(\frac{1}{2}3\sqrt{3} \cdot 36)10$

Volume = __128 yds³__
$V = \frac{1}{3} \cdot 128 \cdot 3$
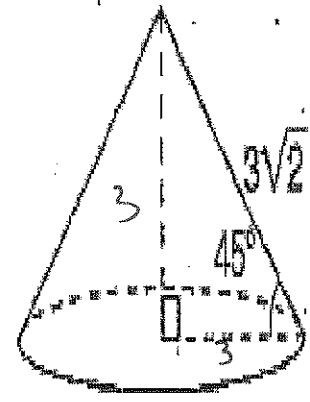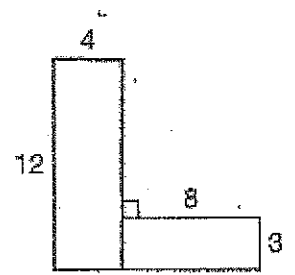
Volume = __28.3 units³__
$V = \frac{1}{3}\pi(3)^2 3$

19.) Manuel is eating a stack of waffles that are 8 inches square. If the height of the stack is 4 inches, what is the volume of the waffles? $V = $ __l · w · h__
$= 8 \cdot 8 \cdot 4 = 256 \text{ in}^3$

20.) A tent is constructed with a regular decagon floor that has sides of 5 feet. The height of the tent is 12 feet and the apothem of the floor is 8√3 feet. What is the volume of the tent? Express your answer in simplified radical form. $V = $ __800√3 ft³__

$V = \frac{1}{3}(\frac{1}{2} \cdot 8\sqrt{3} \cdot 50)12$

22.)

21.) A company is designing a container for its product and has narrowed it down to the shapes below. The volumes of the containers are equal.
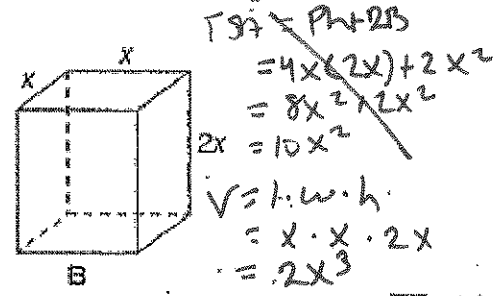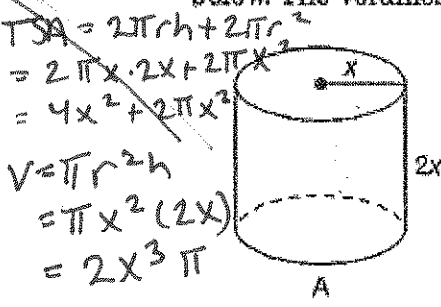
A prism has a height of 2 units. The base of the prism is the composite figure shown.

$TSA = 2\pi rh + 2\pi r^2$
$= 2\pi x \cdot 2x + 2\pi x^2$
$= 4x^2 + 2\pi x^2$

$V = \pi r^2 h$
$= \pi x^2(2x)$
$= 2x^3 \pi$

x
2x

A

x
x
x
2x

B

$TSA = Ph + 2B$
$= 4x(2x) + 2x^2$
$= 8x^2 + 2x^2$
$= 10x^2$

$V = l \cdot w \cdot h$
$= x \cdot x \cdot 2x$
$= 2x^3$

4
12
8
3

What is the volume, in cubic units, of the composite prism?
$V = 2 \cdot 12 \cdot 4 + 8 \cdot 3 \cdot 2$
$= 144 \text{ units}^3$

Which should the company choose in order to use the least amount of material? And why?

prism, less TSA volume