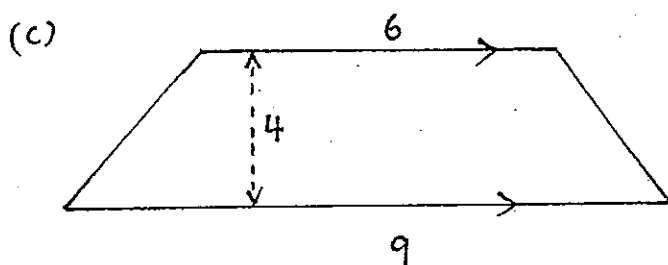
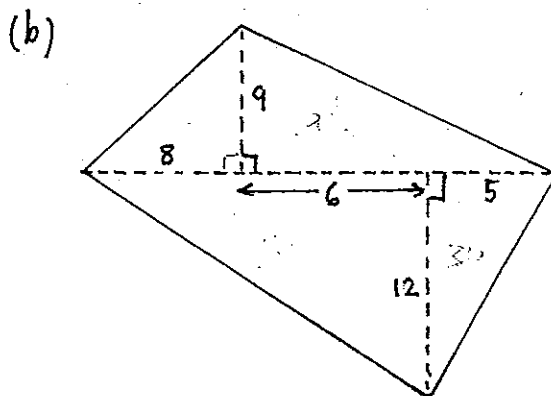
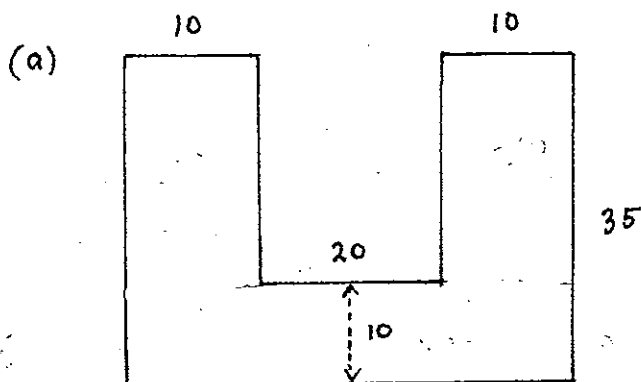
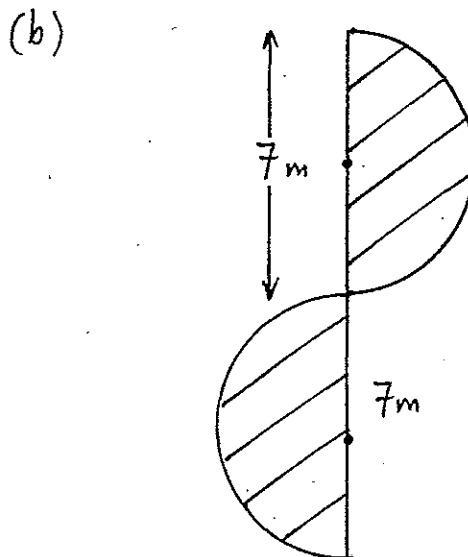
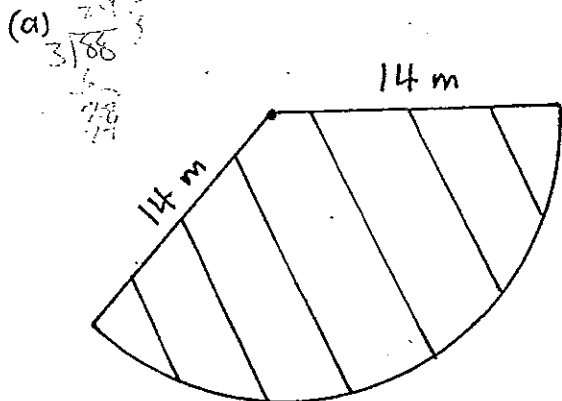


1. Find the area of the following figures: DIMENSIONS ARE IN CENTIMETRES

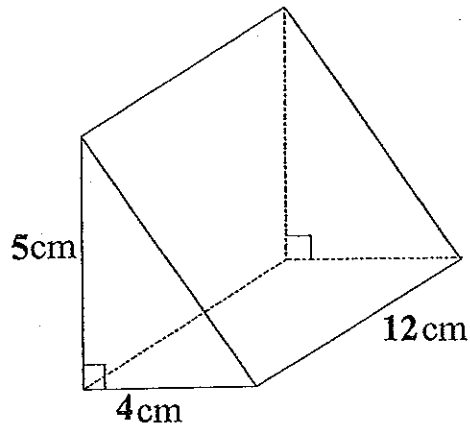


(d)

2. Using  $\pi = \frac{22}{7}$ , find the perimeter AND area of the following figures. (The centres of circles are clearly marked.)

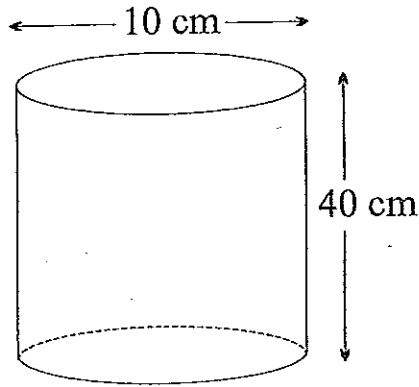


3. (a) (i)



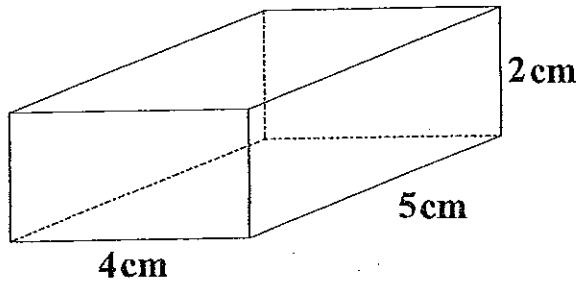
Find the volume of the triangular prism above.

(ii)



Find the volume of the cylinder above. Take  $\pi \doteq 3.14$  and give your answer correct to the nearest cubic centimetre.

(b) (i)



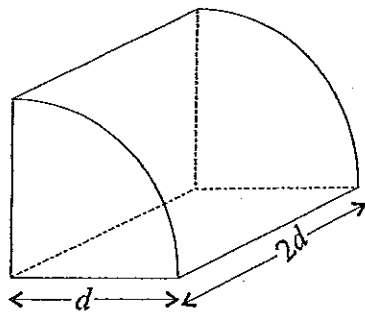
Find the surface area of the rectangular prism above.

Handwritten calculations:  
 $3 \overline{) 78.5}$   
 $25 \overline{) 78.5}$   
 $3.14$   
 $3.14 \times 25 = 78.5$

4. A rectangular garden has dimensions  $9\text{m} \times 5\text{m}$ . It has a path around its perimeter of width  $1.5\text{m}$ , outside the garden. Find the area of the path.

5. If the edge of a cube is increased by  $60\%$  then what is the percentage increase in surface area?

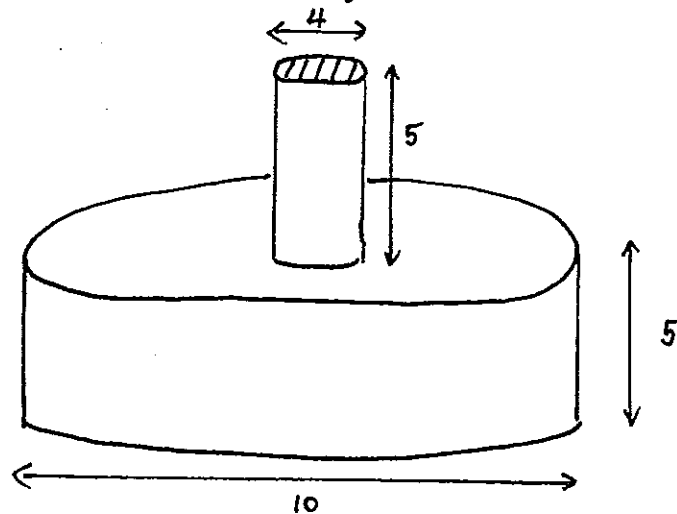
6.  $\frac{1 \times 2}{4} = \frac{1}{2}$



The quarter-cylinder drawn above has volume of  $108\pi\text{ cm}^3$ . Find the value of  $d$ .

7. I pour  $800\text{ ml}$  of water into a cylindrical glass of diameter  $8\text{ cm}$ . At what height is the water level? Leave your answer in terms of  $\pi$ .

8.



Lengths are in metres

The figure above has two cylindrical shapes - a base and a top. Find the exact surface area of the figure in square metres.

2B - AREA AND VOLUME, CIRCLES AND CYLINDERS

1. (a)  $A = 2 \times 10 \times 35 + 10 \times 20$  ✓  
 $= 900 \text{ cm}^2$  ✓

(b)  $A = \frac{1}{2} \times 19 \times 9 + \frac{1}{2} \times 19 \times 12$  ✓  
 $= \frac{1}{2} \times 19 \times 21$   
 $= 199 \frac{1}{2} \text{ cm}^2$  ✓

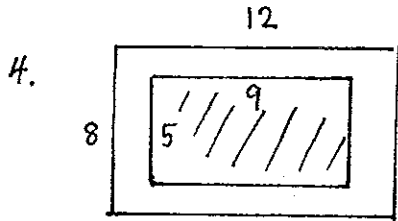
(c)  $A = \frac{1}{2} \times 4 \times (6+9)$  ✓  
 $= 30 \text{ cm}^2$  ✓

2. (a)  $P = \frac{1}{3} \times 2\pi r + 28$  ✓  $A = \frac{1}{3} \pi r^2$  ✓  
 $\doteq \frac{1}{3} \times 2 \times \frac{22}{7} \times 14 + 28$   $\doteq \frac{1}{3} \times \frac{22}{7} \times 14^2$   
 $\doteq \frac{88}{3} + 28$   $\doteq \frac{1}{3} \times 44 \times 14$   
 $\doteq 57 \frac{1}{3} \text{ m}$  ✓  $\doteq 205 \frac{1}{3} \text{ m}^2$  ✓

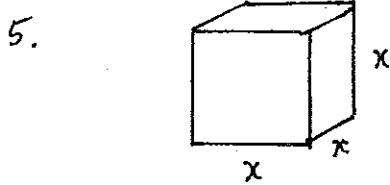
(b)  $P \doteq \frac{22}{7} \times 7 + 14$  ✓  $A = \pi r^2$  ✓  
 $\doteq 36 \text{ m}$  ✓  $\doteq \frac{22}{7} \times \frac{7}{2} \times \frac{7}{2}$  ✓  
 $\doteq \frac{77}{2}$   
 $\doteq 38 \frac{1}{2} \text{ m}^2$  ✓

3. (a) (i)  $V = Ah$  ✓  $V = \pi r^2 h$  ✓  
 $= \frac{1}{2} \times 4 \times 5 \times 12$   $\doteq 3.14 \times 25 \times 40$  ✓  
 $= 120 \text{ cm}^3$  ✓  $\doteq 3.14 \times 1000$  ✓  
 $\doteq 3140 \text{ cm}^3$  ✓

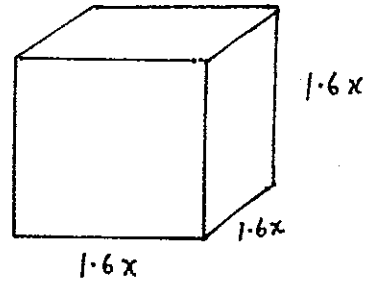
(b)  $SA = 2 \times 4 \times 5 + 2 \times 5 \times 2 + 2 \times 4 \times 2$  ✓  
 $= 40 + 20 + 16$  ✓  
 $= 76 \text{ cm}^2$  ✓



$$\begin{aligned}
 A &= 12 \times 8 - 9 \times 5 \\
 &= 96 - 45 \\
 &= 51 \text{ m}^2
 \end{aligned}$$



$$SA_1 = 6x^2$$



$$\begin{aligned}
 SA_2 &= 6 \times (1.6x)^2 \\
 &= 6 \times 2.56x^2
 \end{aligned}$$

$$\begin{aligned}
 \text{Increase in SA} &= 6 \times 2.56x^2 - 6x^2 \\
 &= 6 \times 1.56x^2 \\
 &= 9.36x^2
 \end{aligned}$$

$$\begin{aligned}
 \text{Percentage Increase} &= \frac{9.36x^2}{6x^2} \times \frac{100}{1} \% \\
 &= 156 \%
 \end{aligned}$$

5 [Alternatively, use a 10 x 10 x 10 cube and calculate the percentage increase]

6. NOTE: The radius in this case is d units !!

$$\frac{1}{4} \pi r^2 h = 108 \pi$$

$$\frac{1}{4} \pi d^2 \times 2d = 108 \pi$$

$$d^3 = 216$$

$$d = 6 \text{ cm}$$

7. [1 mL = 1 cm<sup>3</sup>]

$$800 \text{ mL} = 800 \text{ cm}^3$$

$$r = 4 \text{ cm}$$

$$V = \pi r^2 h$$

$$800 = \pi (16) h$$

$$h = \frac{800}{16\pi}$$

$$h = \frac{50}{\pi} \text{ cm}$$

8.

$$SA = 2\pi R^2 + 2\pi RH + 2\pi rH$$

✓ where  $\left\{ \begin{array}{l} R=5 \\ H=5 \\ r=2 \end{array} \right.$

$$= 2\pi(25) + 2\pi(25) + 2\pi(10)$$
$$= 120\pi \text{ m}^2$$

✓

2

TAW.

TOTAL

31