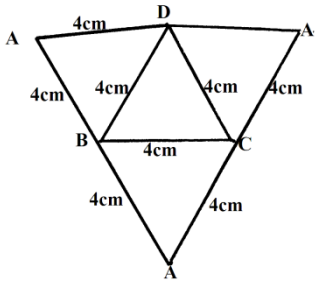
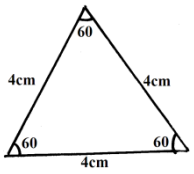
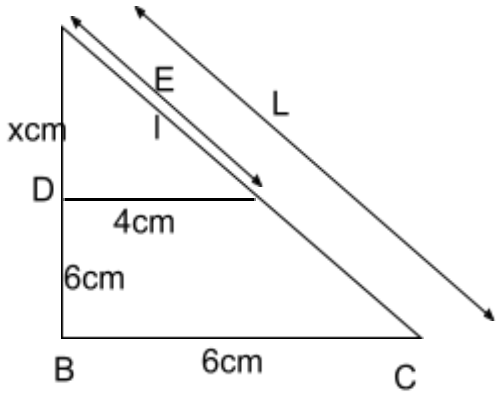
2. *Surface area of solids*

1	(a) $(10+2x)(8+2x)=168$ $80+20x+16x+4x^2=168$ $4x^2+36x-88=0$ $x^2+9x-22=0$ $p=-22$ $s=9$ $-2,11$ $x^2-2x+11x-22=0$ $x(x-2)+11(x-2)=0$ $(x+11)(x-2)=0$ $\therefore x=2$ $2m$ (b) (i) Area of the path $168-80=88m^2$ Area of the path excluding corners $88-4\times4m^2$ $=88-16$ $=72m^2$ No of slabs $=\frac{72\times100\times100}{50\times50}$ $=288$ (ii) $4\times600+288\times50$ $=2400+14400$ $=Ksh.16800$	M_1 M_1 M_1 A_1 M_1 M_1 A_1 M_1 A_1	✔equation ✔quad equation ✔partial fact ✔exp. for area path ✔exp. for area of the slabs excluding corners ✔exp for No. of slabs ✔exp total cost
2.	 S.A = ½ x 4 x 4 sin 60 x 4	B1	

	= 27.713cm2  	M1 A1	
		03	

1. *(a)*



$\frac{x}{x+6} = \frac{4}{6}$

$6x = 4x + 24$

$x = 12\ cm$

$L = \sqrt{12^2 + 4^2}$

$= \sqrt{160}$

$= 12.65$ (2 d.p)

$L = \sqrt{18^2 + 6^2}$

$\sqrt{360}$

$= 18.97$

$SA = \pi (RL - rL)$

$= 3.142 (6 \times 18.97 - 4 \times 12.65)$

$= 3.142 \times 63.22 = 198.64\ cm^2$

(b) Cost of material for one lamp shape

$= \frac{198.64}{10000} \times 800$

$= Sh15.90$

Cost of 10 lamp shape $= 2 \times 10 \times 15.90 = sh\ 318$

2. *Area of the remaining cross-section*

$= 4.22 \times \pi$

$= (17.64\pi)cm^2$

Area of the curved surface

$= (8.4\pi x\ 150$

$= \frac{1260\pi}{2}\ cm^2$

Area of the flat surface

$= (150 \times 8.4)cm^2$

$= 1260cm^2$

Total area $= (1260 + 630\ \pi + 17.64\pi$

$= (1260 + 647.64\pi)cm^2$

$= 3295cm^2 / \ 3295.44cm^2$

3. *Surface area* $= 2(0.6 \times 2.8)m^2 + 2(0.6 \times 3.2)m^2$

$= (3.36 + 3.84)m^2$

$= 7.2m^2$

4. *a) Area of hemispherical part*

$= \frac{1}{2} \times 4\ UR^2$

$= 2 \times {}^{22}/_{7} \times 35 \times 35$

$= 7700cm^2$

b) Slant height for original cone

$\frac{L}{L - 60} = \frac{35}{14}$

$L = 100cm$

c) Surface area of frustrum

$= URL - url$

$= {}^{22}/_{7} \times 35 \times 100 - {}^{22}/_{7} \times 14 \times 40$

$= 11000 - 1760 = 9240\ cm^2$

d) Area of base

${}^{22}/_{7} \times 14^2 = 616\ cm^2$

e) Total surface

$= 7700 + 9240 + 616 = 17556cm^2$

5. *a)* $TA = 2 \times 6.8 \times 3.5 + 2 \times 4.2 \times 3.5m^2$

$= 47.6 + 29.4\ m^2 \qquad = 77m^2$

b) $77 - ({}^{75}/_{100} \times 2.5 \times 2 + {}^{400}/_{100} \times 1.25)m^2$

$77 - (3.75 + 5)\ m^2$

$77 - 68.25\ m^2 = 8.75m^2$

c)i) Cost of paint A

$= 68.25 \times 0.8 \times 80 =$ Kshs.43681

ii) Cost of paint B

$\frac{68.25 \times 35}{0.5}$

$=$ Kshs.4777.5

d) No of tins

$= \frac{54.6 \times 1000}{400}$

$= \frac{136.5}{} \qquad = 137$ tins

No. of tins

$= \frac{136.5}{1.25}$

$= 109.2 \quad = 110$ *tins*

6. *Top surface area* $= 8 \times 8 = 64cm^2$

Bottom surface area $= 12 \times 12 = 144cm^2$

Height of slanting faces

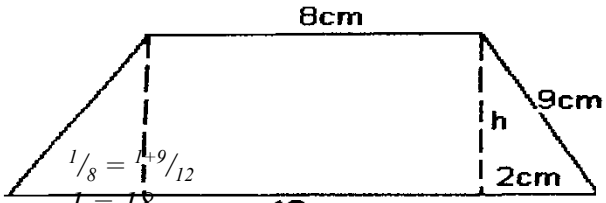
$H = 9^2 - 2^2 = 8.775cm$

Area of slanting face $= \frac{1}{2}(12 + 8) \times 8.775 \times 4$

$= 351cm^2$

For both
Attempt to solve area
for slant face

$T.S.A = 64 + 144 + 351 = 559cm^2$



$\frac{1}{8} = \frac{l+9}{12}$

$l = 18$

$D = \frac{1}{2}\sqrt{12^2 + 12^2} = 8.485$

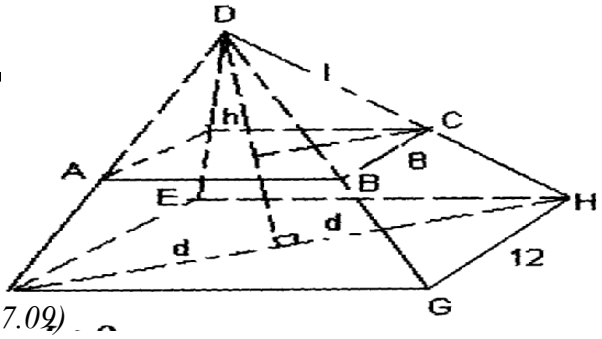
$H = \sqrt{27^2 - 8.485^2} = 25.63$

$\frac{h}{25.63} = \frac{8}{12}$

$h = 17.09cm$

$v = (\frac{1}{3} \times 12 \times 12 \times 25.63 - (\frac{1}{3} \times 8 \times 8 \times 17.09)$

$= 865.7cm^2$



(c) $\tan\theta \frac{25.63}{6} = 4.272$

$\theta = 76.82^o$