Answers Sheet

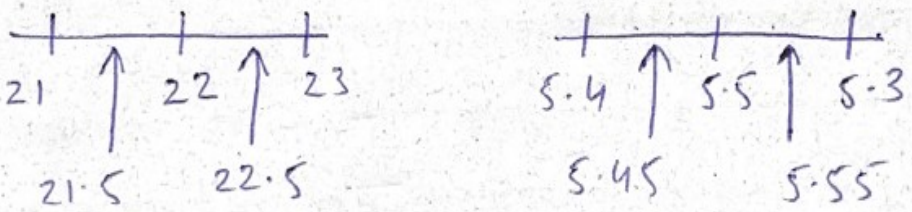
BOUNDS

1-

Lenght 22 cm , Width 5.5 cm

(1)

a) Upper bound for Perimeter



$= 2(22.5) + 2(5.55)$

$= 45 + 11.1$

$= 56.1$ cm

b) LOWER BOUND AREA

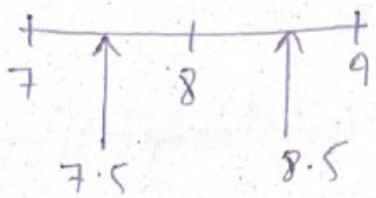
21.5×5.45

$= 117.175$ cm^2

2-

(2) Radius = 8 cm

a)



$2\pi(7.5)$

$= 15\pi$ cm

b) Upper bound Area

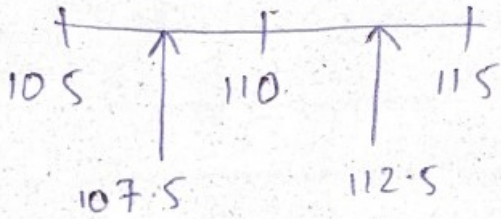
$\pi(8.5)^2$

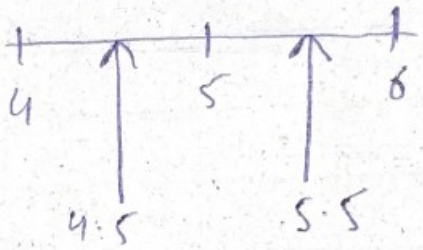
$= 72.25$ cm^2

3-

(3) Length 110 meter , Width 5 m

a)





$2(107.5) + 2(4.5)$

$215 + 9$

$= 224$ m

b)

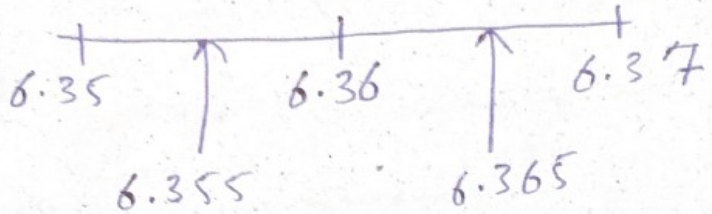
112.5×5.5

$= 618.75$ m^2

4-

④ Radius = 6.36 cm

a)



$2\pi(6.355)$

$= 39.90$ cm

b)

$\pi(6.365)^2$

$= 127.2$ cm

$= 127$ cm

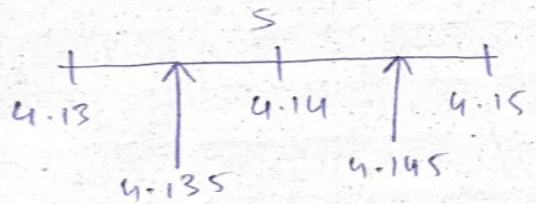
5-

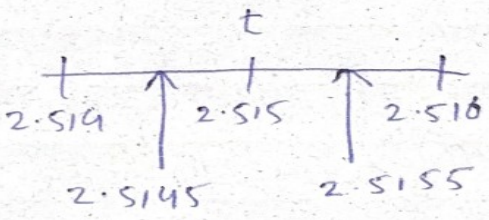
⑤ $V = \frac{s}{t}$

$s = 4.14$

$t = 2.515$

upper $V = \frac{\text{upper } s}{\text{Lower } t}$





$= \frac{4.145}{2.5145}$

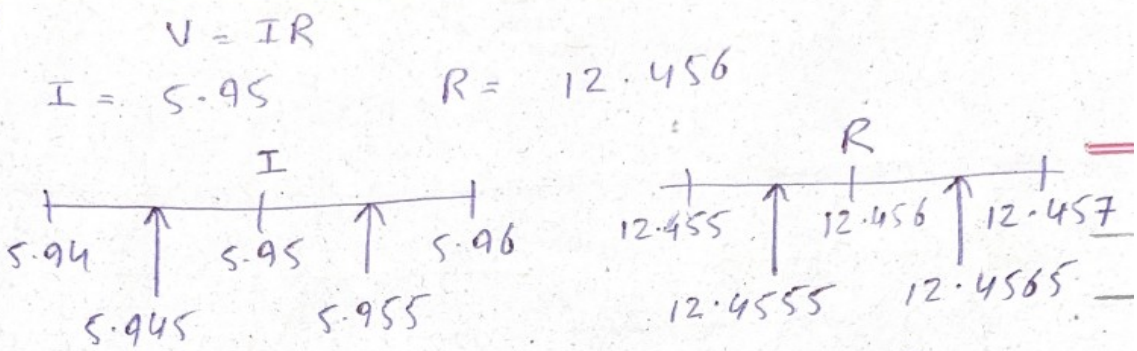
$= 1.6484$

6-

(6)

$V = IR$

$I = 5.95 \qquad R = 12.456$



Upper V = Upper I × Upper R

5.955×12.4565

$= 74.178$

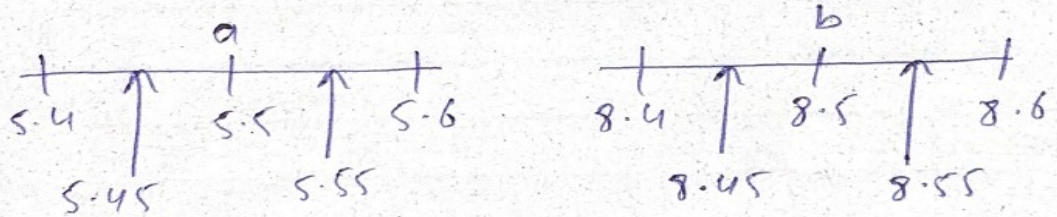
7-

(7)

$a^2 + b^2 = c^2$

$a = 5.5$ cm

$b = 8.5$ cm



$= \sqrt{(5.45)^2 + (8.45)^2}$

$= \sqrt{29.70 + 71.40}$

$= \sqrt{101.10}$

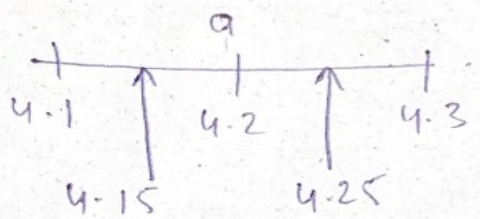
$= 10.05$ cm

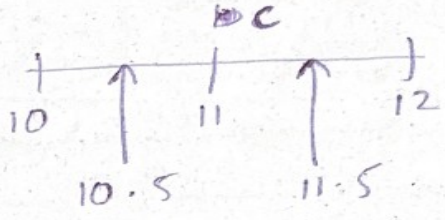
8-

(8) $a = 4.2$ cm
$b = 11$ cm

$b^2 = c^2 - a^2$

(Lower b)^2 = (Lower c)^2 − (Upper a^2)





$= \sqrt{(10.5)^2 - (4.15)^2}$

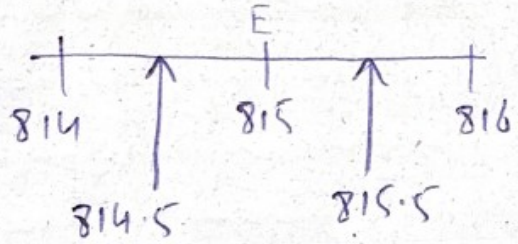
$= \sqrt{110.25 - 17.22}$

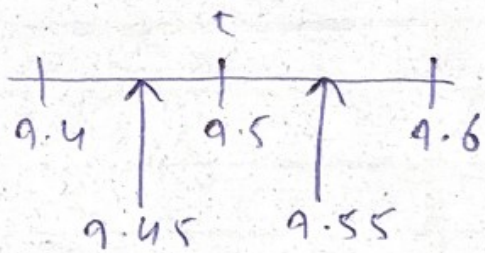
$= \sqrt{93.03}$

$= 9.6$ cm

9-

(9) $P = \frac{E}{t}$ $E = 815$ $T = 9.5$





Upper P = $\frac{\text{Upper E}}{\text{Lower t}}$

$= \frac{815.5}{9.45}$

$= 86.29$

Lower P = $\frac{\text{Lower E}}{\text{Upper t}}$

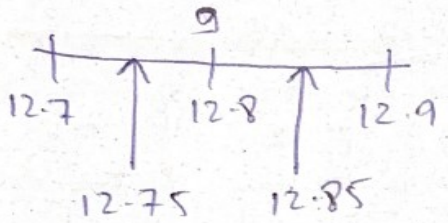
$= \frac{814.5}{9.55}$

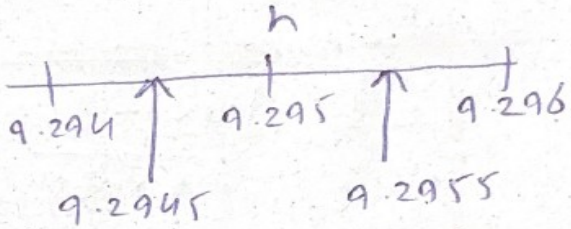
$= 85.28$

Both round to 90 (1 s.f) (Approx.)

10-

(10) $f = \frac{\sqrt{g}}{h}$ $g = 12.8$ $h = 9.295$





Upper $f = \frac{\sqrt{\text{Upper } g}}{\text{Lower } h}$

$= \frac{\sqrt{12.85}}{9.2945}$

$= \frac{3.5846}{9.2945}$

$= 0.3856$

Lower $f = \frac{\sqrt{\text{Lower } g}}{\text{Upper } h}$

$= \frac{\sqrt{12.75}}{9.2955}$

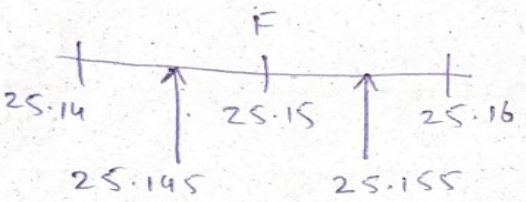
$= \frac{3.5707}{9.2955}$

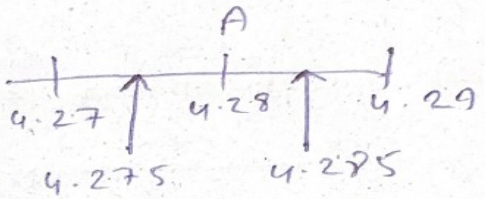
$= 0.3841$

Both round to 0.38 (2 dp / 2 sf)

11-

(11) $P = \frac{F}{A}$ $F = 25.15\ N$ $A = 4.28\ m^2$





Upper $P = \frac{\text{Upper } F}{\text{Lower } A}$

$= \frac{25.155}{4.275}$

$= 5.8842$

Lower $P = \frac{\text{Lower } F}{\text{Upper } A}$

$= \frac{25.145}{4.285}$

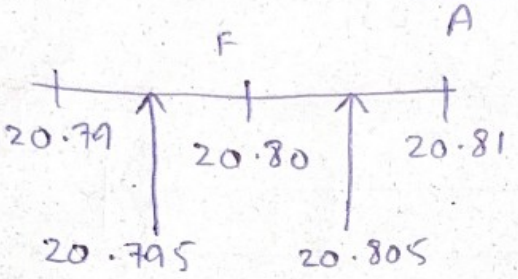
$= 5.8681$

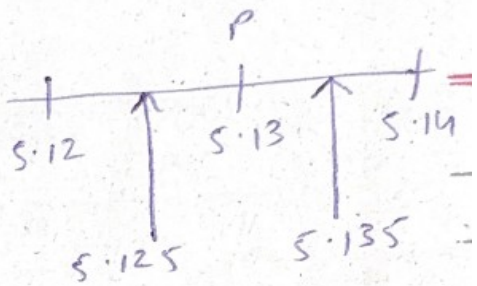
Both round to 5.9 (2 sf / 1 dp)

12-

(12) $F = 20.80\,N$ $P = 5.13\,Nm^{-2}$

$P = \frac{F}{A}$





Upper A = $\frac{\text{Upper F}}{\text{Lower P}}$

$= \frac{20.805}{5.125}$

$= 4.0595$

Lower A = $\frac{\text{Lower F}}{\text{Upper P}}$

$= \frac{20.795}{5.135}$

$= 4.051$

Both round to 4.1 (2 sf / 1 dp)

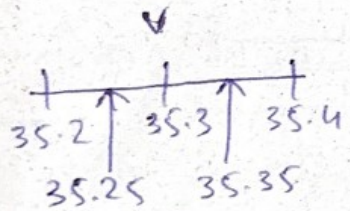
13-

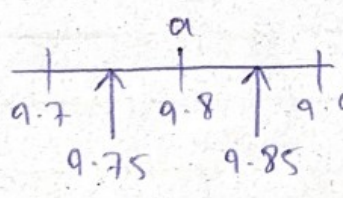
(13) $v^2 = u^2 + 2as$

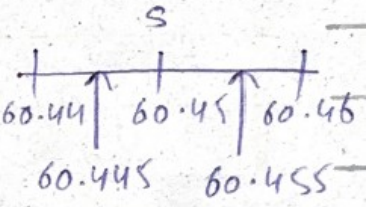
$v = 35.3$ $a = 9.8$ $s = 60.45$

$u^2 = v^2 - 2as$

$u = \sqrt{v^2 - 2as}$







Upper $u = \sqrt{(\text{upper } v)^2 - 2(\text{Lower } a)(\text{Lower } s)}$

$= \sqrt{(35.35)^2 - 2(9.75)(60.445)}$

$= 8.42318$

$= 8.42$ (3 sf)