9 Finding the H.C.F of 80, 150, 60

2	80	150	60
5	40	75	30
	8	15	6

I = 1

$2 \times 5 = 10$ M = 1

∴ Each mat will be of $10m^2$

From the $80m^2$

Number of mats : $\frac{80}{10}$ I = 1

$= 8$ mats M = 1

1 mat costs UGX 25000

8 mats cost UGX 25000×8

$=$ UGX 200,000

Number of mats $= \frac{150}{10}$

$= 15$ mats M = 1

1 mat costs UGX 25000

15 mats cost UGX 25000×15

$=$ UGX 375000

Number of mats $= \frac{60}{10}$

$= 6$ mats M = 1

1 mat costs UGX 25000

6 mats cost UGX 25000×6

$=$ UGX 150,000

Total : UGX 200,000 + UGX 150,000 + UGX 375,000 I = 1

= UGX 725,000 M = 1

∴ He will earn UGX 725000 from the resale of the gym mats from the rolls A = 1

6 Total amount of money collected = UGX 850,000

Money banked

$\frac{15}{100}$ x 850,000 I = 1

= UGX 127,500 M = 1

Remainder after banking

UGX 850,000 - UGX 127500 I = 1

= UGX 722,500 M = 1

Money for utility bills

$\frac{1}{5}$ x 722,500

= UGX 144,500 M = 1

Remainder after Utilities

UGX 722,500 - UGX 144500 I = 1

= UGX 578,000 M = 1

Brother	Instructor	Total ratio
3	2	5

I = 1

Brother $\frac{3}{5}$ x 578000 I = 1

= UGX 346,800 M = 1

∴ The brother received UGX 346,800 on his mobile money account A = 1

Instructor

$\frac{2}{5}$ x 578000

= UGX 231,200

∴ The instructor received UGX 231,200

Item 2

Let the number of tables be represented by x F=1

Let the number of chairs be represented by y.

i $20{,}000x + 12000y \leq 120{,}000$

$20x + 12y \leq 120$

$10x + 6y \leq 60$

$5x + 3y \leq 30$ (i) F=1

ii $x + y \geq 8$ F=1

Objective function

$80{,}000x + 45{,}000y$ F=1

Inequality	Boundary line	Coordinates
$5x + 3y \leq 30$	$5x+3y=30$ M=1	(0, 10) (6, 0) M=1
$x + y \geq 8$	$x + y = 8$	(0, 8) (8, 0)
$x \geq 0$	$x = 0$	
$y \geq 0$	$y = 0$	

Coordinates	Profits $80{,}000x + 45000y$
1, 8 M=1	$80{,}000 + 360{,}000 = 440{,}000$
2, 6	$160{,}000 + 270{,}000 = 430{,}000$
3, 5	$240{,}000 + 225000 = 465{,}000$ M=1

∴ The carpenter should make 3 tables and 5 chairs inorder to maximize his profit of UGX 465,000 $A_P = 1$

b Let the cost of the small chairs, be represented by a in UGX F_1

Let the cost of the big chairs, be represented by b in UGX

$3a + b = 1{,}500{,}000$

$2b + a = 2{,}000{,}000$ M=1

3 | $a + 2b = 2{,}000{,}000$

1 | $3a + b = 1{,}500{,}000$

$3a + 6b = 6{,}000{,}000$

$-\ 3a + b = 1{,}500{,}000$

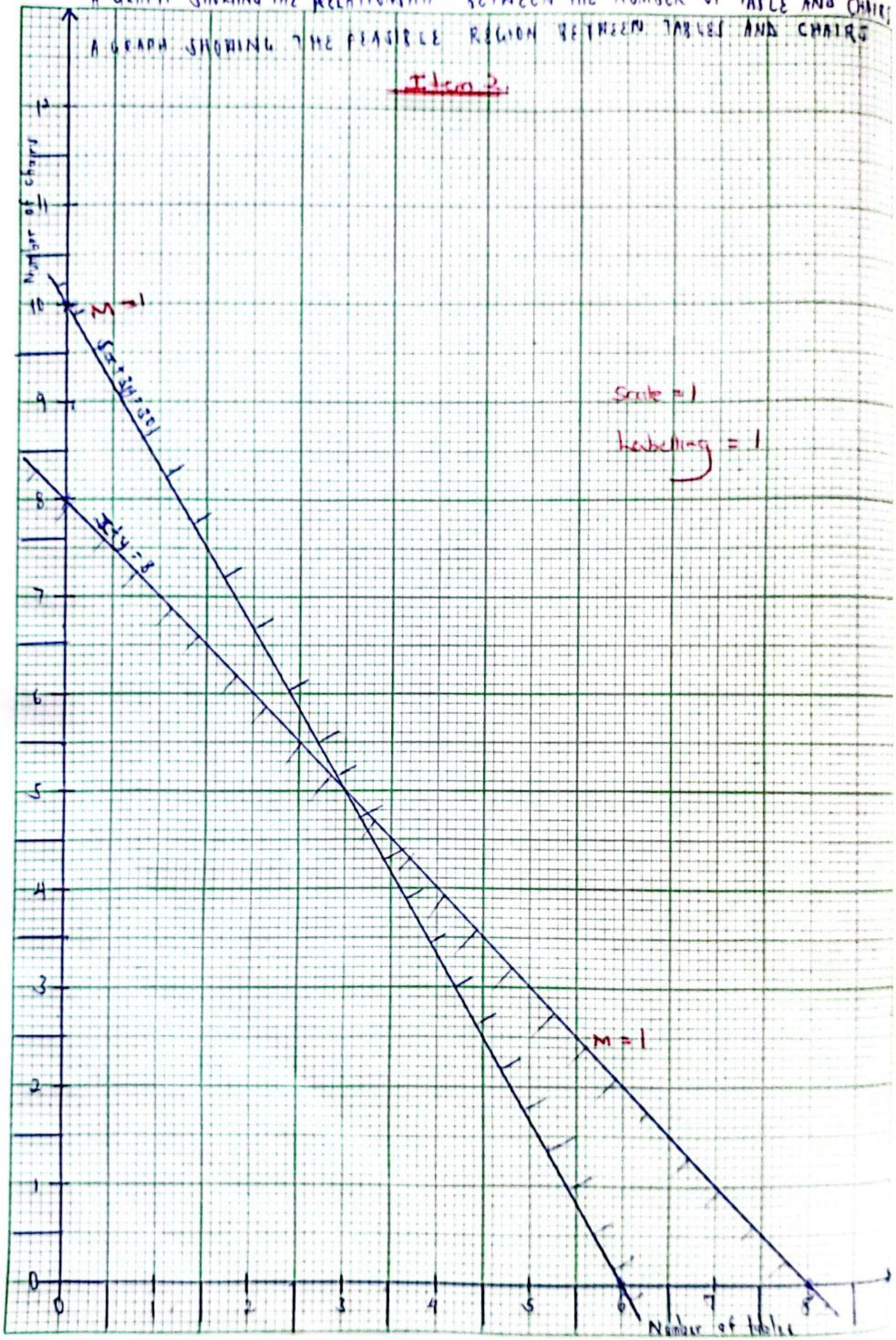
$\frac{5b}{5} = \frac{4{,}500{,}000}{5}$

$b = 900000$ M=1

A GRAPH SHOWING THE RELATIONSHIP BETWEEN THE NUMBER OF TABLE AND CHAIRS

A GRAPH SHOWING THE FEASIBLE REGION BETWEEN TABLES AND CHAIRS

Idea 2



$2b + a = 2{,}000{,}000$

$(2 \times 900{,}000) + a = 2{,}000{,}000$

$1800000 + a = 2{,}000{,}000$

$a = 2{,}000{,}000 - 1{,}800{,}000$

$a = 200{,}000$ M=1

∴ 1 small chair costs UGX 200,000 and 1 big chair costs UGX 900,000

Client

1 small chair and 1 big chair

UGX 200,000 + UGX 900,000 M=1

= UGX 1,100,000 A_P=1

∴ The client will pay UGX 200,000 for small chair and UGX 900,000 for a big chair.

Item 3

$n(\varepsilon) = 45$ P=1

$n(M) = n(N)$

$n(M \cap F) = 10$

$n(F \cap N) = 11$

$n(M \cap N)$ only $= 6$

$n(F) = 26$

$n(M)$ only $= 5$

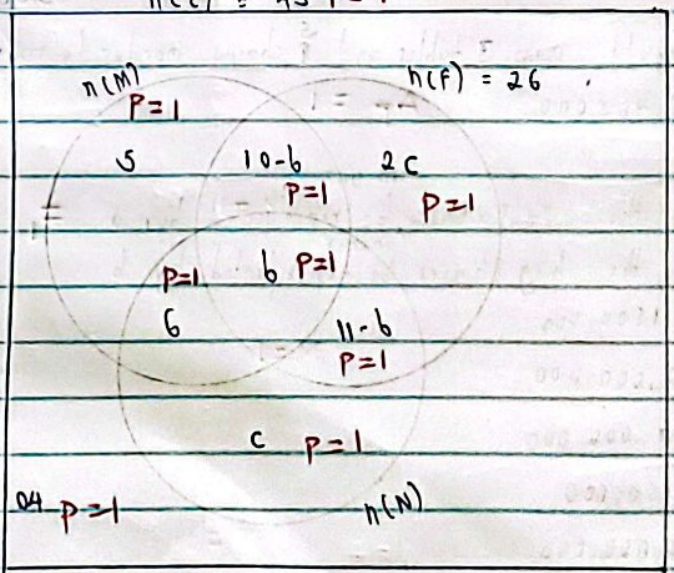
$n(F)$ only was double $n(N)$ only

Let the number of people in the intersection be represented by b

Let c represent $n(N)$ only.

A VENN DIAGRAM SHOWING THE DATA P=1

$n(\varepsilon) = 45$ P=1



$5 + 10 - b + b + 6 = 6 + b + 11 - b + c$

$11 + 10 = 6 + 11 + c$

$21 = 17 + c$

$c + 17 = 21$

$c = 21 - 17$

$c = 4$ ~~A=1~~

$\therefore n(N)\text{ only} = c = 4$ A = 1

$n(F)\text{ only} = 2c$

$= 2 \times 4$

$= 8$ A = 1

$10 - b + 2c + b + 11 - b = 26$ A = 1

$10 + 8 + 11 - b = 26$

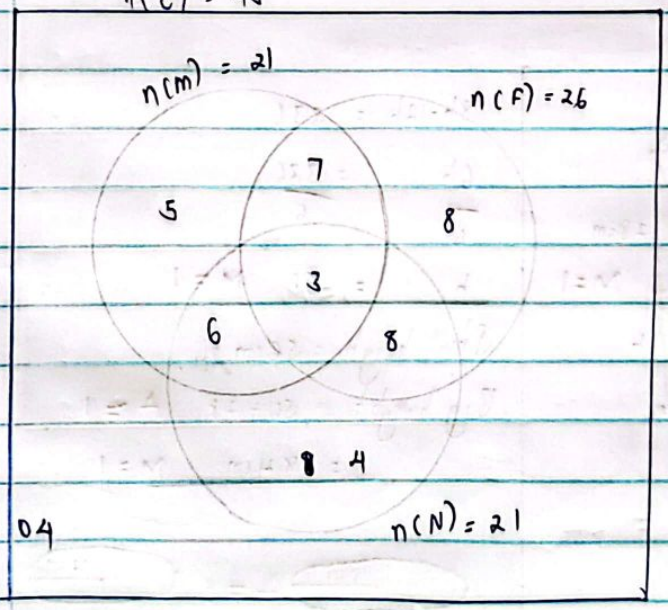
$29 - b = 26$

$-b = 26 - 29$

$\frac{-b}{-1} = \frac{-3}{-1}$

$b = 3$ A = 1

$n(\xi) = 45$



P = 1

Drink F should be produced the more because it has the highest number of preference on market. Ap = 2

b Probability = $\frac{4}{45}$ A = 1 Ap = 1.

Item 4 A FREQUENCY TABLE REPRESENTING DATA P=1

Time	f	x	fx	Cf	class boundary P=1
120-124	15	122	1830	15	119.5 - 124.5
125-129	14	127	1778	29	124.5 - 129.5
130-134	13	132	1716	42	129.5 - 134.5 P=1
135-139	11	137	1507	53	134.5 - 139.5
140-144	7	142	994	60	139.5 - 144.5
	$\Sigma f = 60$		$\Sigma fx = 7825$		

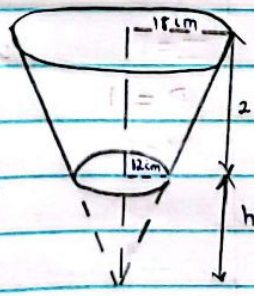
P=1 P=1 P=1

Average $= \frac{\Sigma fx}{\Sigma f}$

$= \frac{7825}{60}$ A=1

$= 130.4$ A=1

Items



M=1

Radius = $\frac{\text{Diameter}}{2}$

Top radius = $\frac{36}{2}$

$= 18\text{cm}$

bottom radius = $\frac{24}{2}$

$= 12\text{cm}$

Using similarity

$\frac{18}{12} = \frac{28+h}{h}$ A=1

$18h = 12(28+h)$

$18h = 336 + 12h$

$18h - 12h = 336$

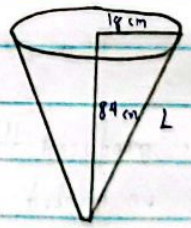
$\frac{6h}{6} = \frac{336}{6}$

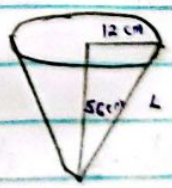
$h = 56$ M=1

Small height = 56cm

Big height = 56 + 28 A=1

$= 84\text{cm}$ M=1





A=1

$L^2 = 18^2 + 84^2$ A=1

$L^2 = 324 + 7056$

$\sqrt{L^2} = \sqrt{7380}$

$L = 85.91\text{cm}$ M=1

$L^2 = 56^2 + 12^2$

$L^2 = 3136 + 144$

$\sqrt{L^2} = \sqrt{3280}$

$L = 57.3\text{cm}$ M=1

Surface Area of Big Cone

T.S.A = πrl

$= \frac{22}{7} \times 18 \times 85.91$ A = 1

$= 4860.05\ cm^2$ M1

Surface Area of small cone

T.S.A = πrl

$= \frac{22}{7} \times 12 \times 57.3$

$= 2161.03\ cm^2$ M1

Area of material

4860.05 - 2161.03 A = 1

$= 2,699.02\ cm^2$ M = 1.

Area of small circle

$= \pi r^2$

$= \frac{22}{7} \times 12 \times 12$

$= 452.57\ cm^2$ M = 1

Total area of material

2699.02 + 452.57 A = 1

$= 3151.59\ cm^2$ M = 1.

6 Diameter = 9cm

Radius $= \frac{9}{2}$

$= 4.5cm$

Volume = $630\ cm^3$

$V = \frac{1}{3}\pi r^2 h$

$63 = \frac{1}{3} \times \frac{22}{7} \times 4.5^2 \times h$ A =

$63 = \frac{445.5h}{21}$

$63 \times 21 = 445.5h$

$\frac{1323}{445.5} = \frac{445.5h}{445.5}$

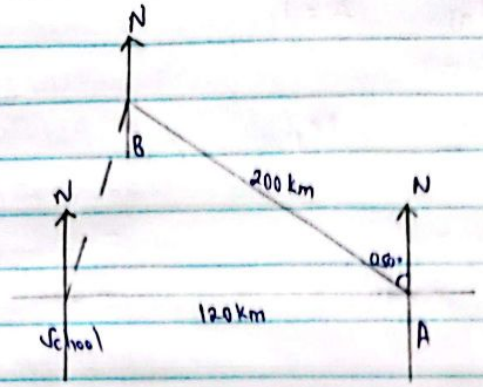
$2.97 = h$

$h = 2.97\ cm$ M = 1

∴ The height of the cone that should be put in the machine is 2.97 cm

Item 6

a) sketch DIAGRAM SHOKING THE JOURNEY



A=1

Scale

1cm represents 20 km

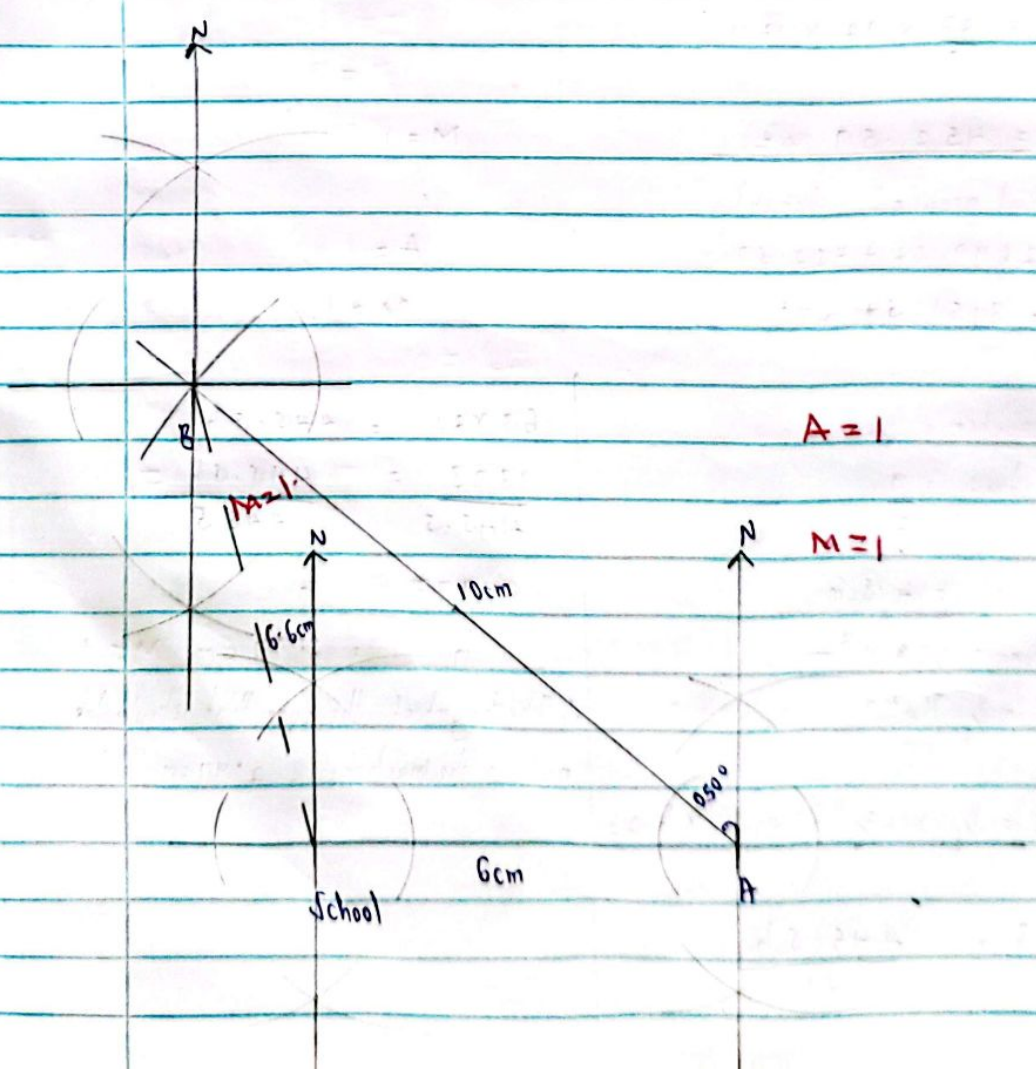
$\frac{120}{20}$ = 6 cm

A=1 M=1

$\frac{200}{20}$ = 10 cm

M=1

AN Accurate diagram SHOKING THE JOURNEY



M=1

Distance

6.6cm 1cm represents 20km

(6.6 x 20)km A=1

= 132km M=1

Short route / Direct route Long route

= 132km 120 + 200 A=1

= 320km M=1

Ap=1

∴ Since the direct route is shorter than the long route, he should use the direct route to save on fuel costs.

6

Allowance	Calculations	Amount (UGX)
Housing		300,000
Utilities		100,000
Off station		150,000
Social Security fund	$\frac{5}{100}$ x 1,200,000	60,000
		610,000

Taxable income = Gross monthly Income - Allowances A=1 M=1.

= UGX 1200000 - UGX 610,000 A=1

= UGX 590,000 M=1.

Taxable Income	Rate (%)	Calculations	Amount (UGX)
0 - 300,000	0	$\frac{0}{100}$ x 300,000	0
300,001 - 590,000 290,000	10	$\frac{10}{100}$ x 290,000	29000
Total			29000

Income tax = UGX 29000 A=1 M=1.

Net Income = Gross Income - Income tax

= UGX 1,200,000 - UGX 29000 A=1

= UGX 1,171,000 M=1

∴ The administrator should deposit 1,171,000 on the teacher's account Ap=1