proposed guide by T. Kenneth
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456/1
Mathematics
Paper 1
JULY/AUG 2024
2 ¼ HOURS

A

ASSHU ANKOLE JOINT MOCK EXAMINATIONS 2024

Uganda Certificate of Education

MATHEMATICS

PAPER 1

2 hours and 15 minutes

INSTRUCTIONS TO CANDIDATES

- This paper consists of **two** sections A and B. It has **six** examination items.
- Section A has **two** compulsory items.
- Section B has **two** parts; I and II answer **one** item from **each** part.
- Answer **four** examination items in all
- Any additional item(s) answered will **not** be scored.
- All answers **must** be written in the answer sheet(s) provided.
- Graph paper is provided.
- Silent non programmable scientific calculators may be used.

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Item 1

(a) Old price = Ush 4,800,000
New price = Ush 2,200,000

Reduced %age in price = $\frac{2,200,000}{4,800,000} \times 100\%$

$= 45.8\%$

Reduction in %age = Ush $(100 - 45.8)\%$
with 2 years. $= 54.2\%$

(b) (i) Since the daughter qualifies for bursary,

school fees = $(100 - 30)\%$ of 810,000
$= 70/100 \times 810,000$ Ush
$= 567,000$ Ush

Money paid on uniform
$= 250,000 - 75000$
$= 175,000$ Ush

Total amount the business man will pay $= 567,000 + 175000$
$= 742,000$ Ush

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(ii) Let the month be 30 days.
Exception of sundays = 30 - 4 = 26 days.

Amount collected in a month = 26 × 10,000/= = 260,000/=.

Amount for three months
= 260,000 × 3
= 780,000/=

∴ The business man will afford the school fees with his income for three months from one motorcycle.

(c)
paying in three quarters of all dues at beginning of term and balance on resumption day.

at beginning of term = 3/4 of shs 810,000
= 3/4 × 810,000
= shs 607,500/=

Balance of resumption day
= (810,000 - 607,500)
= shs 202,500/=.

Payment plan two
= Total school fees / 3 = shs 810,000 / 3

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shs 270,000/= .

At beginning of term, on registration day and at the end of the term he will pay shs 270,000 for each instalment.

Item 3

Let B, T, M be Bicycle, Taxis and motorbike respectively.

$n(\xi) = 100$.

(a) $n(B)$ only $= 46$

$n(T)$ only $= 21$

(b) $n(M)$ only $= 11$.

$n(T \cap B \cap M') = 5$

$n(T \cap M) = 3$.

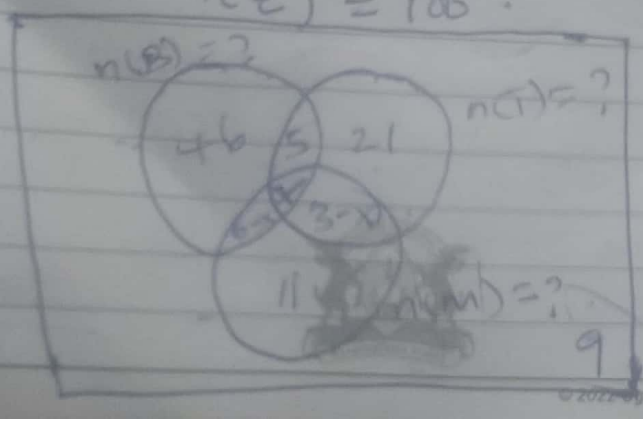
$n(B \cap M) = 6$

$n(\text{~~T∪B∪M~~})' = 9$

$n(T \cup B \cup M)' = 9$

Let x be number of people who used all the three transport means.

$n(\xi) = 100$.



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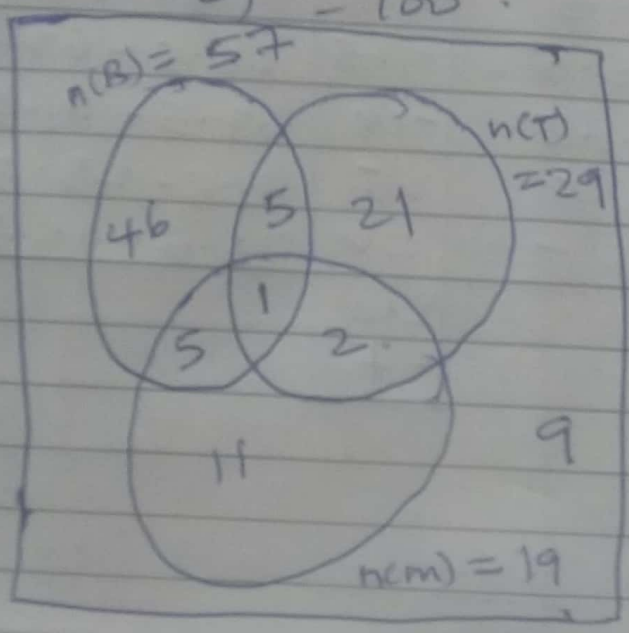
(a) $46+5+21+6-x+x+3-x+11+9=100$

$104-x=100$

$x=1$

$n(\xi)=100$.



number of people who used all the three forms of transport = 1

(b) $n(T)=29$

$P(T)=\frac{n(T)}{n(\xi)}=\frac{29}{100}$

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Item 4

(a) Assumed mean = 71 , mean = $\frac{\Sigma fd}{\Sigma f}$.

Class limits	f	d = x - A	fd	C.B	x
60 - 63	1	-9.5	-9.5	59.5 - 63.5	61.5
64 - 67	3	-5.5	-16.5	63.5 - 67.5	65.5
68 - 71	12	-1.5	-18	67.5 - 71.5	69.5
72 - 75	10	2.5	25	71.5 - 75.5	73.5
76 - 79	4	6.5	26	75.5 - 79.5	77.5
	Σf = 30		Σfd = 7		

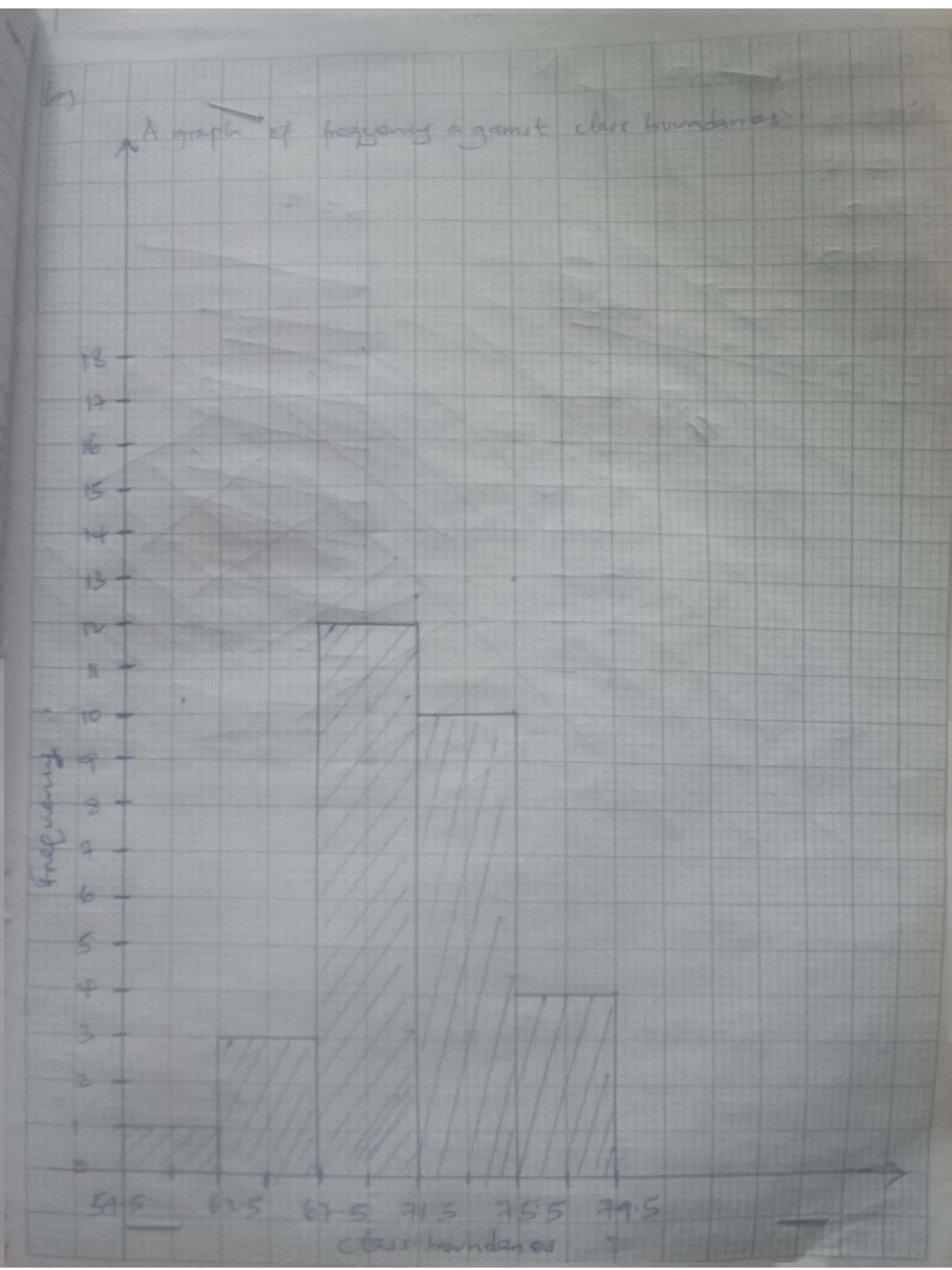
mean($\bar{x}$) = $A + \frac{\Sigma fd}{\Sigma f}$

= $71 + \frac{7}{30}$

= 71.2333 minutes.

(b)

A graph of frequency against class boundaries



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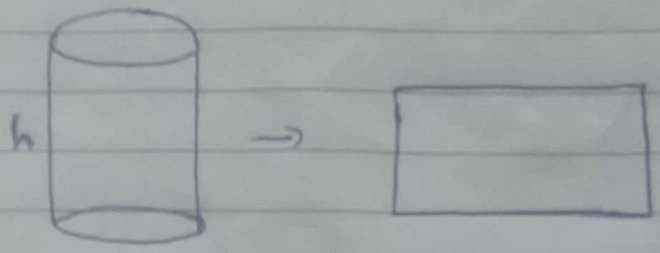
(c) $\frac{4}{30} = \frac{2}{15}$.

Item 5

(a)

Surface Area of an open cylinder on both sides.

$= 2\pi rh$



$= 2 \times 3.14 \times \frac{7.7}{2} \times 2.7$

$= 65.2806 m^2$.

Area of windows $= 2(L \times W)$

$= 2(0.9 \times 0.6)$

$= 0.54 \times 2$

$= 1.08 m^2$.

Area of door $= L \times W$

$= 2.1m \times \frac{0.8m}{2}$

$= 1.68m^2$

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Surface Area of wall to be painted = Area of open ended cylinder − (Area of window + Area of door)

$= 65.2806\,m^2 - (1.08\,m^2 + 1.6\,m^2)$

$\Rightarrow 62.6006\,m^2$.

(b) ~~1 litre for paint at 15,000/=~~

1 litre for paint can paint $5\,m^2$.

1 litre for $\longrightarrow 5\,m^2$.

$1\,m^2 \longrightarrow \frac{1}{5}$ litre for.

$62.6006\,m^2 \Rightarrow \frac{1}{5} \times 62.6006$

$= 12.52012$

$\simeq$ 13 lts of litre for paint.

(c) Amount to be spent on paint

$= 13 \times 15000$

$= 187,801.8$

$\simeq$ 187,802/=

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Item 6

(a) Taxable income = Ugx 2,400,000 − 600,000
= Ugx 1801000/=

Rate	Tax income
8.5% on the first ugx 850,000	$\frac{8.5}{100} \times 850000 = 72,250$
12.0% on next Ugx 600,000	$\frac{12}{100} \times$ Ugx 600,000 $= 72000$
20% on next Ugx 150,000	$\frac{20}{100} \times 150,000 = 30000$
31% on next Ugx 70,000	$\frac{31}{100} \times 70,000 = 21,700$
36% on (1801000 − 1,670,000) = 130,000	$\frac{36}{100} \times 1301000 = 461800$
Total income Tax	242,750

His monthly income tax = 242,750/=

(b) Annual net income = Gross income − income tax
= 2,400,000 − 242,750
= shs 2157,250/=

c) % age of his monthly salary in his monthly income tax

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$= \frac{\text{Income tax}}{\text{Total income}} \times 100$

$= \frac{242,750}{2,400,000} \times 100\%$

$= 10.11458333\overline{3}$

$\approx 10.1146\%$

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Item 2

Let x be beer
Let y be soda.

$2x \geq y$

$25x + 20y > 200$.

$5x + 4y > 40$

$40{,}000x + 15000y \leq 450{,}000$

$8x + 3y \leq 90$

cost function.

$40{,}000x + 15000y = C$

$x \geq 0$

$y \geq 0$.

Inequality	Boundary line	Co-ordinates.
$2x \leq y$ / $y \geq 2x$	$2x = y$	(0,0), (2,4)
$5x + 4y > 40$	$5x + 4y = 40$	(8,0), (0,10)
$8x + 3y \leq 90$	$8x + 3y = 90$	(0,30), (3,22)
$x \geq 0$	$x = 0$	
$y \geq 0$	$y = 0$	

A graph of Beer against Soda.