



UGANDA NATIONAL EXAMINATIONS BOARD
UGANDA CERTIFICATE OF EDUCATION
OCTOBER - NOVEMBER, 2023

Pg 1

D
ir
m

Do not
write
in this
margin

Candidate's Name EXPECTED RESPONSES

Signature

Random No. | | | | |

Subject Paper code /

Personal Number | | | | |

Item 1

a)
$$\begin{pmatrix} 1 \\ 2 \end{pmatrix} \text{ km} + \begin{pmatrix} 4 \\ 3 \end{pmatrix} \text{ km} = \begin{pmatrix} 5 \\ 5 \end{pmatrix} \text{ km}$$

At $\sqrt{50}$ km from home to Usafi market
or $5\sqrt{2}$ km.

b) (i) Total number of tomatoes bought.

$$\begin{aligned} 1^{\text{st}} & 242_{\text{five}} = (2 \times 5^2) + (4 \times 5) + (2 \times 5^0) \\ & = 72 \text{ tomatoes} \end{aligned}$$

$$\begin{aligned} 2^{\text{nd}} & 664_{\text{eight}} = (6 \times 8^2) + (6 \times 8) + (4 \times 8^0) \\ & = 436 \text{ tomatoes} \end{aligned}$$

$$\begin{aligned} \text{Total} & = (72 + 436) \text{ tomatoes} \\ & = 508 \text{ tomatoes} \end{aligned}$$

$$\begin{aligned} \text{Tomatoes that were sold} & = 508 - 10 \\ & = 498 \end{aligned}$$

$$\begin{aligned} \text{Number of packs sold} & = 498 \\ & \quad 3 \\ & = 166 \text{ packs} \end{aligned}$$

$$\begin{aligned} \text{Total sales for a day} & = 166 \times \text{UGX } 2000 \\ & = \text{UGX } 332,000/- \end{aligned}$$

Total expenses on tomatoes.

$$\begin{aligned} & (2 \times 25000) + (4 \times 2300) + (2 \times 500) + (6 \times 27000) \\ & + (6 \times 3500) + 4 \times 450 \\ & = (50,000) + 9200 + 1000 + 162000 + 21000 + 1800 \end{aligned}$$

The ~~cost~~ expenses.

$$\begin{aligned} & = 25000 + 245,000 \\ & = \text{UGX. } 270,000/- \end{aligned}$$



UGANDA NATIONAL EXAMINATIONS BOARD
UGANDA CERTIFICATE OF EDUCATION
OCTOBER - NOVEMBER, 2023

(Pg 2)

UCE

Do not
write
in this
margin

Do not
write
in this
margin

Candidate's Name

Signature

Random No.					
Personal Number					

Subject Paper code /

$$\begin{aligned} \text{Profit per day} &= \text{UGX. } (332,000 - 270,000) \\ &= \text{UGX. } (62,000) \end{aligned}$$

1 MK

1 MK

1(b) ii) Number of working days

$$= (365 \times 2) - (4 \times 25)$$

$$= 682 \text{ working days.}$$

$$\begin{aligned} \text{Amount needed per day} &= 10,000,000 \\ &= 362 \\ &= 27624.30939 \end{aligned}$$

$$\begin{aligned} \text{Proportion} &= \frac{27624.30939}{62000} \\ &= 0.4456 \end{aligned}$$

1(b) iii) Number of working days.

$$= (365 \times 2) - (52 \times 2)$$

$$= 626 \text{ days}$$

$$\begin{aligned} \text{Amount needed per day} &= 10,000,000 \\ &= 626 \\ &= 15974.44089 \end{aligned}$$

1 MK

1 MK

$$\begin{aligned} \text{Proportion} &= \frac{15974.44089}{62000} \\ &= 0.25765 \end{aligned}$$

1 MK

20 MKS



MENGO SENIOR SCHOOL

P.O. BOX 1901 KAMPALA -UGANDA

EXAMINATIONS' DEPARTMENT

P93

NAME OF STUDENT:.....

DATE:.....

CLASS:..... INDEX NO:.....

SIGNATURE:.....

Item 2.

let x and y be classic and modern chairs respectively.

$$3x + 2y \leq 120$$

$$2x + 3y \leq 100$$

$$x \geq 0, \quad y \geq 0$$

Inequality

$$3x + 2y \leq 120$$

$$2x + 3y \leq 100$$

Boundary line

$$3x + 2y = 120$$

$$2x + 3y = 100$$

Co-ordinates

$$(0, 60), \quad (40, 0)$$

$$(50, 0), \quad (20, 20)$$

4 MKs

(1 for @
inequality)

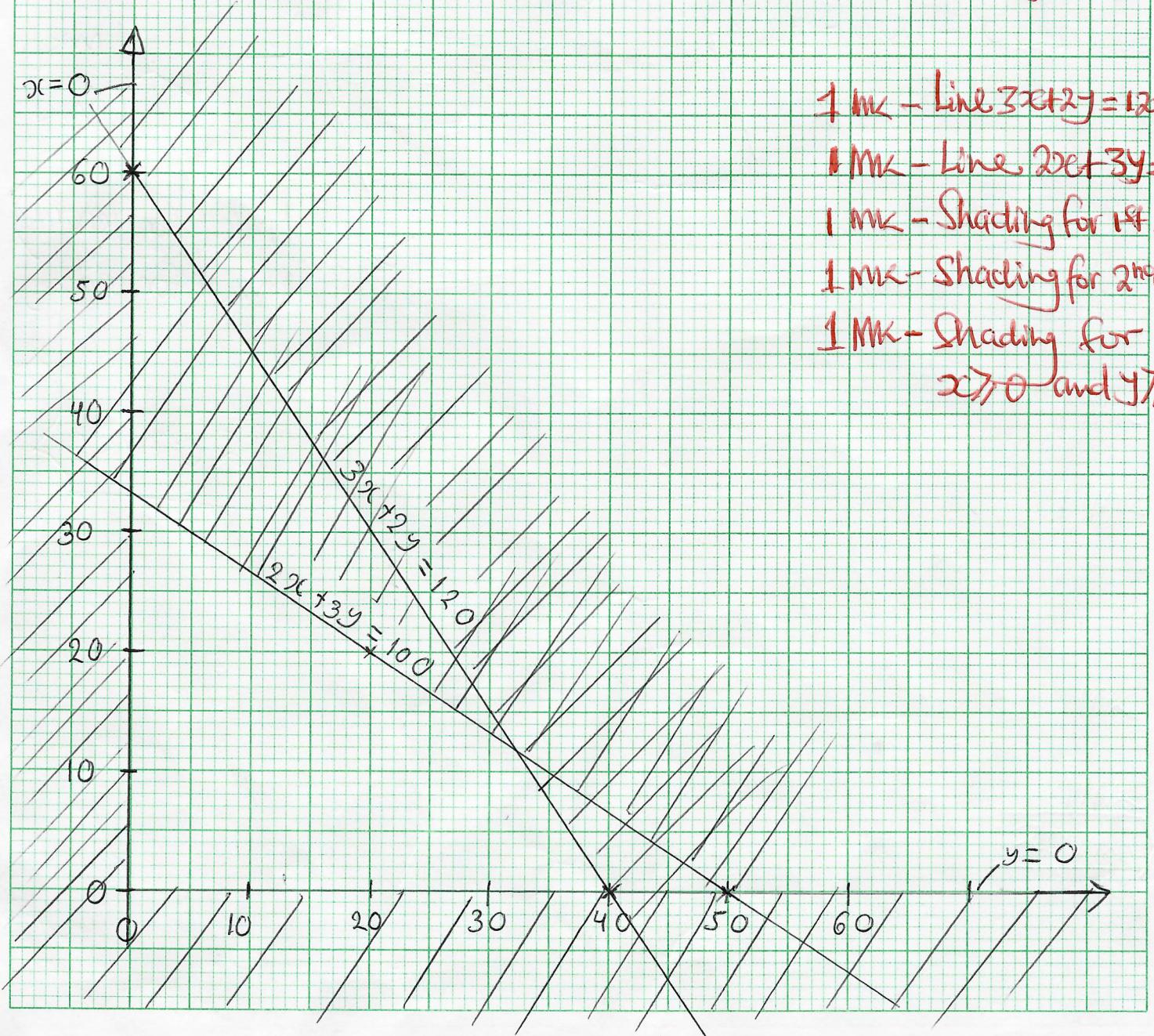
→ 1MK for pair of

→ 1MK for points

Objective function

$$\$50x + \$60y = P(x, y).$$

— 1MK (objective
function)



1 MK - Line $3x + 2y = 120$

1 MK - Line $2x + 3y = 100$

1 MK - Shading for 1st line

1 MK - Shading for 2nd line

1 MK - Shading for
 $x \geq 0$ and $y \geq 0$

Item 2

(P94)

Co-ordinates	Profit ($50x + 60y$) \$
(40, 0)	2000
(32, 12)	23200
(20, 20)	2200
(5, 30)	2050

He must deliver 20 classic chairs and 20 modern chairs to receive a profit of \$2200.

1 MK

b) Wood work.

$$\frac{1}{2} \times \$2200 = \$1100 \rightarrow 1 \text{ MK}$$

Furnishings

$$\left(\frac{2}{3} \times \frac{1}{2} \times 2200\right) = \$733\frac{1}{3} \rightarrow 1 \text{ MK}$$

Marketing

$$= \$ (2200 - 1100 - 733\frac{1}{3}) \rightarrow 1 \text{ MK}$$

$$= \$ 366\frac{2}{3} \rightarrow 1 \text{ MK}$$

c) Yes, ~~re~~ Reason.

No, Reason

$\rightarrow \begin{cases} 1 \text{ MK} (\text{for yes or No}) \\ 1 \text{ MK} (\text{for reason}) \end{cases}$

20 mcs



UGANDA NATIONAL EXAMINATIONS BOARD
UGANDA CERTIFICATE OF EDUCATION
OCTOBER - NOVEMBER, 2023

Do not
write
in this
margin

UCE

Pg 5

Candidate's Name
Signature Random No.
Subject Paper code / Personal Number

Do not
write
in this
margin

Item 3

- a) Time spent by each on the way.

Drone. 17 05 HRS

✓

08 00 HRS

09 05 HRS

✓

$$\Rightarrow = 9\frac{5}{60} \text{ HOURS} - (2+3) \text{ hours}$$

✓

$$= 4\frac{1}{2} \text{ hours.}$$

✓

Costa 17 00 HRS

✓

08 05 HRS

✓

08 55 HRS

✓

$$\Rightarrow 8\frac{5}{60} \text{ hours} - (1+4) \text{ hours}$$

✓

$$= 3\frac{1}{2} \text{ hours.}$$

1 MK

- Should always use a costa because it spent less time on the way.

- Use a costa because if ~~left~~ set off late and arrived earlier than the drone thus it spent less time.

- b) Amount spent by group A.

$$= \$ [(10,000 \times 2) + (20,000 \times 3) + (15000 \times 4)] \quad \checkmark$$

1 MK

$$= \$ [20,000 + 60,000 + 60,000] \quad \checkmark$$

1 MK

$$= \$ 140,000 \quad \checkmark$$

1 MK

Amount spent by group B.

$$= \$ [(10,000 \times 1) + (20,000 \times 4) + (15000 \times 4)] \quad \checkmark$$

1 MK

$$= \$ (10,000 + 80,000 + 60,000) \quad \checkmark$$

1 MK

$$= \$ 150,000 \quad \checkmark$$

1 MK



**UGANDA NATIONAL EXAMINATIONS BOARD
UGANDA CERTIFICATE OF EDUCATION
OCTOBER - NOVEMBER, 2023**

Pg 6

Do not write in this margin

UCE

Do not write in this margin

Candidate's Name

Random No.				
Personal Number				

Signature

Subject Paper code /

Difference in amount spent.

$$= \$ (150,000 - 140,000)$$

✓

1 MK

$$= \$ 10,000 .$$

✓

1 MK

Group B spent more money by than group A
by \$ 10,000 .

1 MK

1 MK

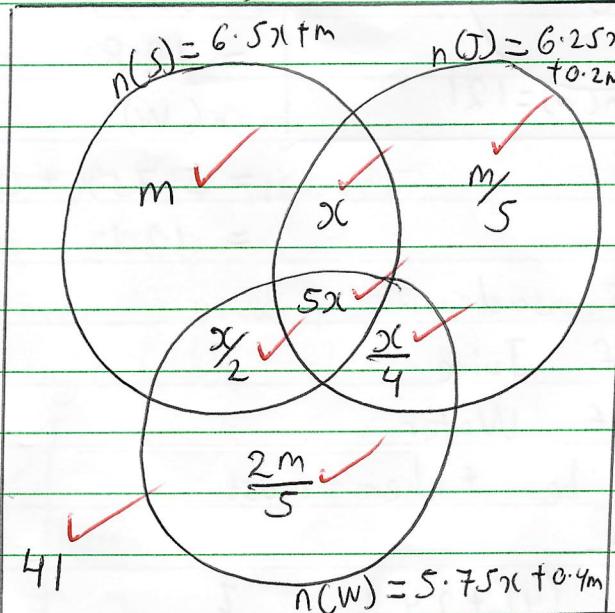
20 Mks

Item 4

a) Let $n(S \cap J)$ only be x

Let $n(S)$ only be m

$$n(E) = 200$$



$n(S)$

$$= 6.5x + m \quad (1 \text{ mca})$$

8 Mks

$$m + 0.4m + 0.2m = 24$$

$$\frac{1.6m}{1.6} = \frac{24}{1.6}$$

✓

1 MK

✓

1 MK



**UGANDA NATIONAL EXAMINATIONS BOARD
UGANDA CERTIFICATE OF EDUCATION
OCTOBER - NOVEMBER, 2023**

Do not
write
in this
margin

(Pg 7)

UCE

Do not
write
in this
margin

Candidate's Name

Random No.				
Personal Number				

Signature

Subject Paper code/.....

$$m = 15 \quad \checkmark$$

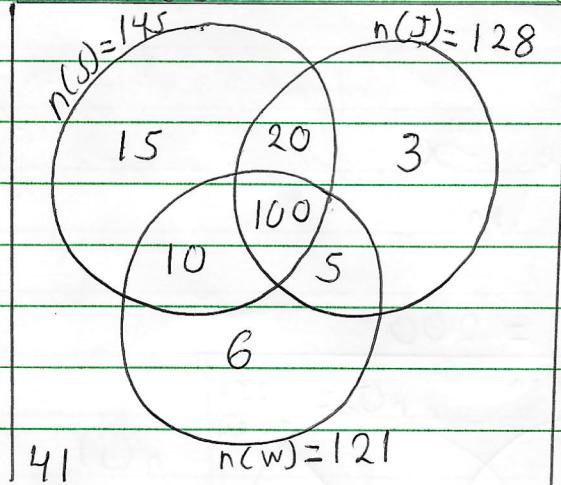
$$\Rightarrow 6.5x + 0.25x + 24 + 41 = 200 \quad \checkmark$$

$$6.75x = 135$$

$$\frac{6.75x}{6.75} = \frac{135}{6.75}$$

$$x = 20 \quad \checkmark \quad \text{IMK}$$

$$n(E) = 200$$



$$n(S) = 6.5x + m$$

$$= (6.5 \times 20) + 15$$

$$= 145$$

$$n(J)$$

$$= 6.25x + 0.2m$$

$$= 128$$

$$n(W)$$

$$= 5.75x + 0.4m$$

$$= 121$$

145 bottles of sodas .

128 bottles of Juice

121 bottles of Water .

b) Soda would be taken most .

Reason : ---

$$c) \text{Probability} = \frac{(41+24)}{200} \quad \checkmark \quad \text{IMK}$$

$$= \frac{65}{200} \quad \text{or} \quad \frac{13}{40} \quad \text{or} \quad 0.325 \quad \checkmark \quad \text{IMK}$$

(20 marks)



UGANDA NATIONAL EXAMINATIONS BOARD
UGANDA CERTIFICATE OF EDUCATION
OCTOBER - NOVEMBER, 2023

UCE

Pg 8

Do not
write
in this
margin

Candidate's Name

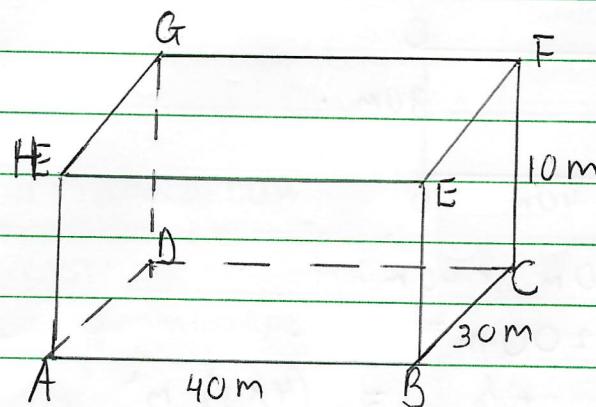
Signature

Random No.			
Personal Number			

Subject Paper code /

Item 5

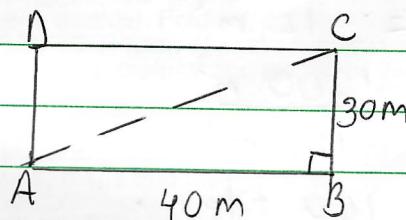
(a) (i)



03

Correct sketch
with dimensions
seen

(ii)



$$\begin{aligned} \bar{AC} &= (\sqrt{40^2 + 30^2}) \text{ m} \\ &= \pm 50 \text{ m} \end{aligned}$$

1MK

$$\therefore \bar{AC} = 50 \text{ m}$$

1MK

$$1 \text{ m} \longrightarrow 100 \text{ cm}$$

1MK

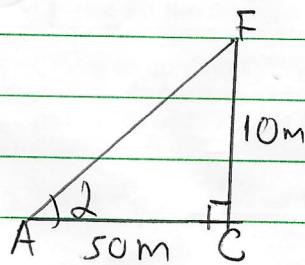
$$\begin{aligned} 50 \text{ m} &\longrightarrow (50 \times 100) \text{ cm} \\ &= 5000 \text{ cm} \end{aligned}$$

1MK

\therefore The engineer needs 5000 centimetres. ✓

1MK

(iii) let the angle be \angle .



$$\tan 2 = \frac{10}{50}$$

1MK

$$\begin{aligned} 2 &= \tan^{-1}(1/5) \\ 2 &= 11.31^\circ \end{aligned}$$

1MK

1MK

The ladder must be placed at an angle of 11.31° ✓

1MK



UGANDA NATIONAL EXAMINATIONS BOARD
UGANDA CERTIFICATE OF EDUCATION
OCTOBER - NOVEMBER, 2023

Pg 9

UCE

Do not write in this margin

Do not write in this margin

Candidate's Name

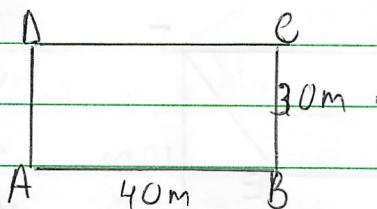
Signature

Random No.				
------------	--	--	--	--

Subject Paper code /

Personal Number			
-----------------	--	--	--

5 b)



$$\begin{aligned} \text{Area} &= 30\text{m} \times 40\text{m} && \checkmark \\ &= 1200\text{m}^2 && \checkmark \end{aligned}$$

$$\begin{aligned} \text{Area of each tile} &= (4 \times 3) \text{ m}^2 && \checkmark \\ &= 12 \text{ m}^2 && \checkmark \end{aligned}$$

$$\begin{aligned} \text{Number of tiles} &= \frac{1200 \text{ m}^2}{12 \text{ m}^2} && \checkmark \\ &= 100 \text{ tiles} && \checkmark \end{aligned}$$

~~Price~~ of Amount to be Spent.

Let the number of tiles in a box be n .

$$\text{Number of boxes} = \left(\frac{100}{n}\right) \text{ boxes.} \quad \checkmark$$

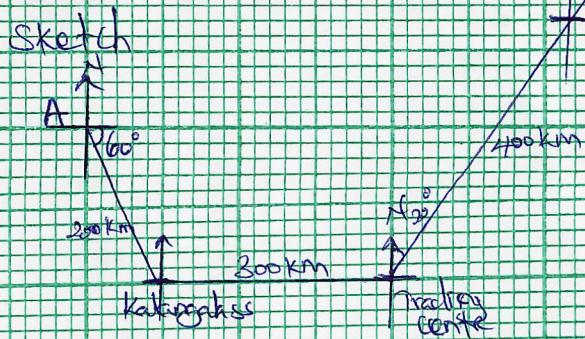
$$\begin{aligned} \text{Total amount} &= \text{UGX} \left(\frac{100}{n} \times 4000 \right) && \checkmark \\ &= \text{UGX.} \left(\frac{400,000}{n} \right) && \checkmark \end{aligned}$$

20 MKS

ITEM 6 > EXPECTED RESPONSES

Pg 10

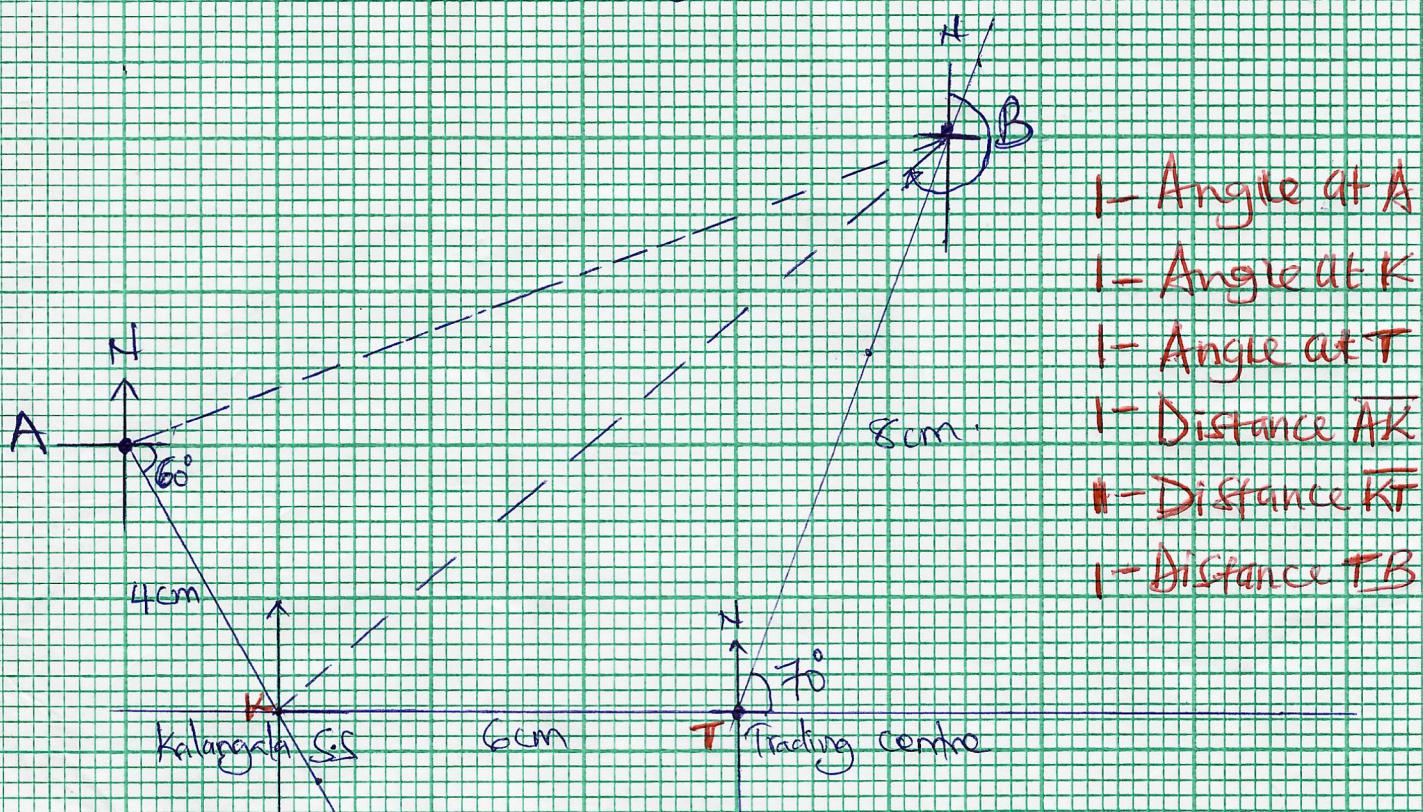
a)



Scale: 1 cm = 50 km

✓ - 3 MKs

Accurate Drawing.



I - Angle at A

I - Angle at K

I - Angle at T

I - Distance AK

II - Distance KT

I - Distance TB

$$\text{a) (i)} \quad AB = 11.5 \text{ cm} = 11.5 \times 50 \text{ km} = 575 \text{ km} \quad \checkmark \text{ 1MK}$$

$$= 575000 \text{ metres.} \quad \checkmark \text{ 1MK}$$

$$\text{(ii)} \quad \text{Distance between the school and Town B is } 11.6 \text{ cm} \quad \checkmark \text{ 1MK}$$

$$= 11.6 \times 50 \text{ km} \quad \checkmark$$

$$= 580 \text{ km.} \quad \checkmark \text{ 1MK}$$

Bearing from B to school is $228^\circ \pm 2^\circ$ \checkmark 1MK



UGANDA NATIONAL EXAMINATIONS BOARD
UGANDA CERTIFICATE OF EDUCATION
OCTOBER - NOVEMBER, 2023

(P911)

Do not write in this margin

UCE

Do not write in this margin

Candidate's Name

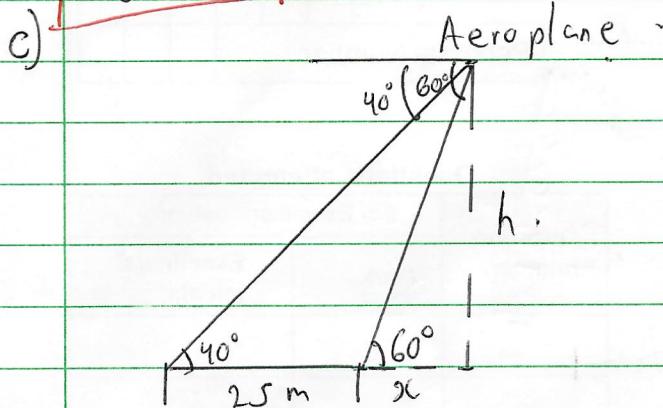
Random No.					

Signature

Personal Number			

Subject Paper code /

Item 6 Let the vertical distance be h .



OB Mk

(Correct sketch)

$$\tan 60^\circ = \frac{h}{x}$$

$$x + \tan 60^\circ = h \quad \text{--- (1)} \quad \checkmark$$

$$\tan 40^\circ = \frac{h}{(25+x)}$$

$$25 + \tan 40^\circ + x + \tan 40^\circ = h \quad \text{--- (II)} \quad \checkmark$$

$$\Rightarrow x + \tan 60^\circ = 25 + \tan 40^\circ$$

$$x = \frac{25 + \tan 40^\circ}{\tan 60^\circ - \tan 40^\circ}$$

$$x = 23.4923 \text{ m} \quad \checkmark$$

$$\Rightarrow h = 23.4923(\tan 60^\circ) \\ = 40.6899 \text{ m} \quad \checkmark$$

1 MK

1 MK

1 MK

1 MK

40.6899 m was the vertical height between the plane and the ground. ✓

1 MK

20 Mks