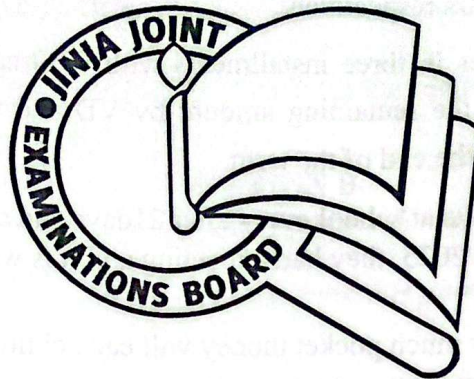


456/1  
MATHEMATICS  
Paper 1  
Jul/Aug 2025  
2¼ Hours



## JINJA JOINT EXAMINATIONS BOARD

Uganda Certificate of Lower Secondary Education

MOCK EXAMINATIONS - JULY / AUGUST 2025

MATHEMATICS

2 hours 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 (4) examination items in all*

*Any additional item(s) answered will not be scored.*

*All answers must be written in the answer booklet(s) provided.*

*Graph paper will be provided*

*Silent, non-programmable scientific calculators and mathematical tables with a list of formulae may be used.*

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Turn Over

## SECTION A

Answer all items in this section

## Item 1

John has 4 adopted children at his home whom he takes care of. He wants them to share five hundred twenty thousand shillings as their term 2 pocket money in the ratio of their ages. They are aged 5, 10, 12 and 13 years respectively.

He deposits their school fees in three installments with 60% as the first installment at the beginning of the term,  $\frac{2}{3}$  of the remaining amount by VD and the rest of the fees balance amounting to shs 160,000 at the end of the term.

He also makes follow up visits at school every after 21 days and also attends weekly meetings at his workplace. On 11<sup>th</sup> /05/2025, they had a meeting and it is when he visited school.

## Task:

- (a) Determine how much pocket money will each child get.
- (b) Determine the amount paid for a child in the;
  - (i) first installment
  - (ii) second installment.
- (c) When is he likely to have a meeting and a follow up visit at the same time?

## Item 2

At Wanyange eggs and nutritional center, they sell trays of eggs and sugar. One day, a young boy bought 4 trays of eggs and 3 kg of sugar and paid shs. 58000. On the same day, another boy from neighboring home was given shs. 40,000 and he bought 2 trays of eggs and 4 kg of sugar and remained with only shs. 1000. The parents of these children failed to know the prices of a tray of eggs and that of a kilogram of sugar since the two children were not given receipts. At the same center, they also sell cartons of juice and cartons of water. The number of cartons of water sold per day are always **less than** twice the number of cartons of juice sold. Each carton of water is sold at shs. 5,000 and that of juice at shs. 4,000 and they always make sales of a **minimum** of shs. 200,000 per day. The number of cartons of water sold are **at least** 25. There is a profit of shs 700 on each carton of water and shs 600 on each carton of juice. The profits made per day **does not exceed** shs. 42,000.



Fig 1. Items sold at Wanyange eggs and nutritional center.

**Task;**

- (a) Help these two parents to determine the price of a tray of eggs and a kilogram of sugar.
- (b) (i) Form mathematical constraints from the above information  
(ii) Show the feasible region for the constraints in (b)(i) above.  
(iii) Determine the number of cartons of each type that can be sold per day to maximize profits.  
(iv) What is the maximum profit made from the optimal sales?

**SECTION B**

*This section has two parts; I and II*

**Part I**

*Answer one item from this part*

**Item 3**

As a requirement for the NLSC, learners in a certain institution have to opt for either Foods and nutrition (F), Fine art (A) or Chinese (C) as a language. Out of 120 S.1 learners who joined the institution this year, 40 opted to do Fine Art, the number of learners who opted to do Chinese is twice the number of those who opted to do Foods and nutrition. The Head teacher agreed to purchase new Chinese textbooks if the probability of a learner taking Chinese is greater than 50%. In the first month, some learners were still finding out which subject they can take and some ended up studying more than one subject. 10 learners studied all the three subjects, 25 studied Foods and nutrition and Fine Art, 10 studied only Fine Art, 12 studied only Foods and nutrition and Chinese.

**Task**

- (a) Should the Head teacher buy more Chinese textbooks? Justify your answer.  
(b) Determine the likelihood that a learner studied more than one subject.  
(c) Determine the number of learners who opted for the required number of subject(s).

**Item 4**

Maize farmers in a certain village have decided to form a producer cooperative society if the average produce is less than 50bags and they are also calling for government help through their leaders. Leaders have accepted to help them with either fertilizer, seedlings or ready market.

Farmers with less than 25bags are to be given fertilizers.

Farmers with more than 25 bags but less than 55 bags are to be given seedlings and those farmers with more than 55bags are to be provided with ready market. A sample of 40 farmers was interviewed after harvesting and their produce (in bags) were recorded as follows;

11	38	14	60	71	48	52	21	28	17
45	59	45	37	65	68	35	56	43	47
25	42	59	62	79	21	52	65	48	34
22	34	51	18	49	43	54	64	27	38

**Task:**

- (a) Should farmers form a producer cooperative society or not? Justify your answer.
- (b) Determine the number of farmers that will be provided with;
  - (i) fertilizers
  - (ii) seedlings
  - (iii) ready market.

**Part II**

*Answer one item from this part.*

**Item 5**

Uncle Collin wants to invest shs. 12,000,000 in a hard ware business. He wants to use his savings which is 45% of what he needs and plans to get a loan for the remaining amount. He approached a money lending institution with lending terms as;

10% pa simple interest for 3 years.

Interest and principal must be paid in equal monthly installments.

He is a secondary school teacher who earns a monthly salary of shs 990,000 which is subjected to PAYE as a government requirement according to the tax structure below;

Taxable income (shs)	Tax rate (%)
0 – 100,000	0
100,001 – 200,000	5
200,001 – 350,000	10
350,001 – 500,000	18
Above 500,000	25

At this school, they also give the following allowances to their teaching staff members on a monthly basis. Lunch shs. 80,000, accommodation shs. 170,000, medical shs. 55,000, transport shs.3000 daily and children allowance for only 3 children; below 10 years shs. 7,000, between 10 and 15years shs. 10,000, above 15years but less than 18years shs. 12,000. Uncle Collin has 5 children aged 3, 7, 14, 17 and 21years.

**A month has 30 days**

**Task**

- (a) Determine the amount of money that uncle Collin pays to the money lending institution monthly.
- (b) How much does Uncle Collin pay to the government as tax?
- (c) How much does Uncle Collin earn as his net income?

**Item 6**

A certain metal and fabrication workshop has been contracted by a school make a cylindrical metallic water tank of diameter  $12ft$  and height  $2.5m$ . The tank is made up of metallic pieces of dimensions  $8ft$  by  $4ft$  only and each sold at shs.  $80,000$ .

They want to paint outside part of the tank excluding the bottom part with paint which is sold in either jerry cans or cylindrical tins. A sealed jerry can which costs shs.  $23,000$  can paint  $300ft^2$ . and a sealed tin which costs shs.  $14,000$  can paint  $200ft^2$ .

Given that  $1m = 3.3ft$ .



*Fig 2. The cylindrical metallic water tank*

**Task**

- Determine the number of pieces of material required to make the tank.
- How much money is used to buy the required pieces of material?
- Should they use paint in jerry cans or tins? Justify your answer.