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MATHEMATICS
Paper 1
Oct./Nov. 2025
2¼ hours



UGANDA NATIONAL EXAMINATIONS BOARD

Uganda Certificate of Education

MATHEMATICS

Paper 1

2 hours 15 minutes

INSTRUCTIONS TO CANDIDATES:

*This examination paper has **two** Sections; **A** and **B**. It consists of **six** items.*

*Section **A** has **two** compulsory items.*

*Section **B** has **two** Parts; **I** and **II**. Respond to **one** item from each part.*

*Respond to **four** examination items in all.*

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

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

Graph Paper is provided.

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

SECTION A

Respond to **both** items in this section.

Item 1

A parish agricultural officer has received 450 kilogrammes of fertilisers for maize and 120 litres of anti-tick vaccine for cattle. He intends to distribute fertilisers equally among the farmers and also distribute anti-tick vaccine equally among the same farmers. He wants to establish the number of farmers that will get the items.

Joseph is one of the farmers and his daily milk production is 180 litres. He sells sixty percent of the milk at Shs850 per litre and donates $\frac{1}{15}$ of the remaining milk to an orphanage. He has been advised to use the quantity of milk left after selling and donating, to make yoghurt and butter in the ratio 1:3. However, Joseph has a challenge of determining the amount of milk he should use to make butter.

Task

Help:

- (a) the parish agricultural officer to establish the number of;
 - (i) farmers that will receive the items.
 - (ii) kilogrammes of fertilisers and litres of vaccine each farmer will get.
- (b) Joseph to determine the amount of;
 - (i) money he collects from the milk he sells.
 - (ii) milk he should use to make butter.

Item 2

Jariah has a cattle section and goats section on her farm. She employed a farm manager.

According to the manager's records, each worker in the cattle section takes care of 50 heads of cattle and each worker in the goats' section takes care of 30 goats. The farm has a total of 310 animals in both sections.

Each worker in the cattle section is paid Shs150,000 per month and each worker in the goats' section is paid Shs100,000 per month. A total of Shs950,000 is spent on paying workers every month.

Jariah needs help to determine the number of workers in each section of the farm using the manager's records.

The records also show that for the past three months, the manager has been selling milk to customers at a constant wholesale price as indicated in table 1.

Table 1

Month	1	2	3
Milk (litres)	100	80	120
Amount paid(Shs)	150,000	120,000	180,000

The manager has informed her that the farm is likely to produce 135 litres for sale at wholesale price next month. Jariah needs assistance to use the sales records to

form an equation that she would use to determine the amount of money to be paid by any customer who buys any quantity of milk at wholesale price.

Task

Help Jariah to:

- (a) determine the number of workers in each section of the farm.
- (b)
 - (i) form an equation she would use basing on the records and state the constant wholesale price of each litre of milk.
 - (ii) calculate the amount of money she is likely to receive from the sale of milk next month.

SECTION B

This Section has two parts; I and II

Part I

Respond to one item from this part.

Item 3

Elisheba employs two workers, Moses and Sarah, to sell soft drinks in a car park while she attends to her wholesale shop.

Moses has been given 12 bottles of soda, 15 bottles of juice and 20 bottles of water for sale.

Sarah has been given 12 bottles of juice, 18 bottles of soda and 15 bottles of water for sale.

The price of each bottle of soda, juice and water is Shs 1000, Shs 2000 and Shs 500 respectively.

Elisheba needs help to arrange the information about the drinks as well as their respective prices in rows and columns, so that she can easily determine how much money to expect from each worker.

Elisheba will be going for shopping tomorrow and has therefore decided to toss two similar coins at once as a fair way of selecting one of the workers to attend to the shop while the other one goes to the park.

The workers have agreed that if at least one head appears on top, then Moses will attend to the shop and if no head appears on top, then Sarah will attend to the shop.

Elisheba needs help to determine the worker with the highest chance of being selected to attend to the shop.

Task

Help Elisheba to;

- (a) organise the information in rows and columns, clearly stating the order of the information you have organised for the drinks and that for the prices respectively.
- (b) calculate the amount she should expect from each of the workers.

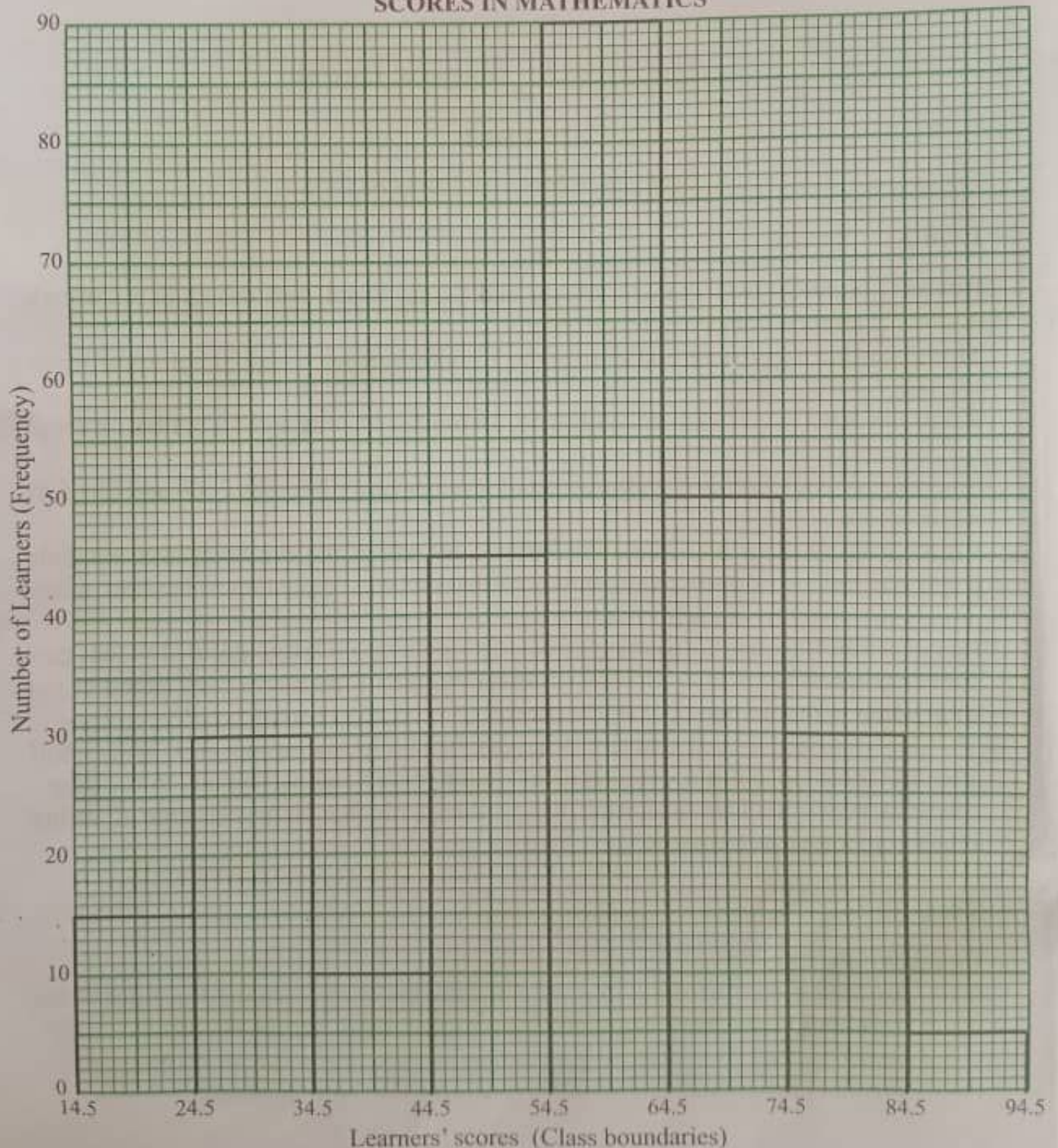
- (c) determine the probability with which the worker with the highest chance will be selected, hence name the worker to attend to the shop.

Item 4

A certain school employed a new teacher of mathematics to help the senior four learners to improve on their performance. Before the new teacher was employed, the analysis showed that the learners' mean score was 54% and 38% of the learners scored below the pass mark of 55%.

The new teacher has taught for a full term and learners have been given an exam whose results are shown in graph 1.

GRAPH 1 SHOWING NUMBER OF LEARNERS AND THEIR SCORES IN MATHEMATICS



The school needs help to analyse the results of the learners' performance shown on graph 1 and establish whether there is an improvement in the learners' performance basing on;

- (i) the mean score of the results on graph 1 in comparison to the previous mean score and
- (ii) the percentage of learners below the school pass mark of 55%.

Task

Provide the school with the help they need.

Part II

Respond to one item from this part.

Item 5

A tourist travelled from the U.S to Kenya. While in Kenya, she exchanged US dollars \$1250 to Kenya Shillings at a rate of \$0.0077 = KShs 1. She spent 30% of the exchanged money.

She has arrived in Uganda with the remainder of the of Kenya shillings which she wants to exchange to Uganda shillings (UgShs). The forex bureau in Town A, where she is now, buys and sells foreign currency as shown in table 2.

Table 2

Currency	Buying (UgShs)	Selling (UgShs)
KShs 1	27.47	28.50
\$1	3490	3600

The tourist is not sure of how much she will get in Uganda Shillings.

After exchanging the money, she intends to set off from town A to visit a game park for a few hours and then return to town A. The driver of the travel company she is going to use has informed her that the direct route they were supposed to use is closed due to road repairs.

They will have to take an alternative route in a direction 210° from town A for 10 km up to a junction. From the junction, they will turn West and drive at an average speed of 72 km/h and this will take them 5 minutes to reach the game park from the junction.

The tourist is supposed to pay UgShs12,500 per kilometre travelled and she wishes to know the extra amount of money she will pay when using the alternative route instead of the direct one to travel from town A to the game park and back to town A.

She has planned to spend a total of UgShs1,141,500 while in Uganda. This will include her transport from town A to the game park and back to town A, plus all other expenses.

On getting back to town A, she intends to exchange the remaining Uganda Shillings to U.S dollars but needs help on how many dollars she will get.

Task

- How much money in Uganda shillings will the tourist get on arrival in Uganda?
- Determine the extra amount of money the tourist will pay for using the alternative route.
- Calculate the amount of money in U.S dollars the tourist will get after exchanging the remaining Uganda shillings.

Item 6

A head teacher of a school with 500 students has been receiving reports of some students missing porridge in the morning. In defence the caterer claims that the students are many and use big cups, yet the container in which the caterer keeps porridge to be served is small.

The container has a surface area of $96,000 \text{ cm}^2$ and a volume of $128,000 \text{ cm}^3$. The caterer has requested the head teacher to buy a similar larger container of surface area $150,000 \text{ cm}^2$ so that the volume of porridge to be served to each student increases when the larger container is filled to capacity.

As a way of improving the services at the kitchen, the head teacher has employed another cook who will earn a gross monthly income of Shs853,500. This income includes a transport allowance of Shs115,500, housing allowance of Shs81,150, lunch allowance which is 10% of the gross monthly income and utilities allowance of Shs35,500.

The cook is supposed to pay income tax according to the structure in table 3, but all the allowances are free of tax.

Table 3

Taxable income(Shs)	Tax rate (%)
0-105,000	free
105,001-250,000	13
250,001- 350,000	20
350,001- 450,000	30
450,001- 550,000	40
550,001 and above	45

The cook is interested in knowing his net income.

Task

- Determine the quantity of porridge, in litres, that will be served to each of the 500 students if the caterer gets the larger container and each student is to receive the same quantity.
- Compute the net income for the cook.

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