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MATHEMATICS
Paper 1
June/July 2025
 $2\frac{1}{4}$ hours

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MATHS LEARNERS UGANDA EXAMINATIONS

Uganda Certificate of Education

MATHEMATICS

Paper 1

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** 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 is provided.

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

SECTION A

Answer **all** items in this section.

Item 1

The president of the country advised all the citizens to consider planting trees to respond to the current effects of climate change. In response to the above piece of advice, three members of community A, Amal, Ben, and Cathy, decided to plant trees in their community. Amal plants a tree every 4 days, Ben plants a tree every 6 days, and Cathy plants a tree every 8 days. They all planted their first tree on the same day. While four community B members, Ruth, Bridget, Sarah and Oscar, also decided to plant trees in their community. They all planted the first tree after every 8, 16, 48 and 60 days respectively. The LC1 of community B stated that the four community B members will plant the second tree on the same day again after 22220 base three days.

Task

- a) After how many days will they all plant a tree on the same day again? Express your answer in binary (**answer:** 11000 base two)
- b) Is the LC1's statement correct? Give a reason to support your answer. (**answer:** yes)

Item 2

Juma owns a rectangular piece of land. Juma wants to divide his land into two smaller rectangular plots to grow maize and beans. He decides to use a fence to separate the two plots. The total area of the land is 600 square meters. Juma knows that the length of the entire piece of land is 10 meters more than twice the width. He also wants to ensure that the length of the maize plot is 5 meters more than the width of the beans plot. Juma needs to figure out the dimensions of each plot to buy the right amount of fencing material. Juma is buying fruits for a party. He buys apples and bananas. Each apple costs 500 Ugandan Shillings, and each banana costs 300 Ugandan Shillings. Juma buys a total of 10 fruits and spends 4,200 Ugandan Shillings.

Task

- a) How many apples and bananas did Juma buy? (**answer:** 6 apples and 4 bananas)
- b) Help Juma to figure out the dimensions of each plot to buy the right amount of fencing material. (**answer:** maize plot width 20m and length 25m, beans plot 15m by 20m)

Turn Over

SECTION B

This Section has two Parts; I and II

Part I

*Answer **one** item from this part*

Item 3

In a small village with 50 households, a survey was conducted by students to determine the types of pets kept by the families. The results showed that 15 households own dogs (D), 20 households have cats (C), and 12 households keep chickens (H). Among these, it was found that 6 households keep both dogs and cats, while 5 households have both cats and chickens while 4 households own both dogs and chickens. There are also 16 households that do not keep any of the three types of pets: dogs, cats, and chickens. The students were tasked with distributing a total of 46000 kg of pet food among these families who own only one type of pet based on the number of pets each family owns. All members of a household were picked randomly from the group for training on how to feed pets.

Task

- a) How many families own all the three types of pets? (**answer:** 2)
- b) What is the chance that the members picked for training comes from a household that owns only two types of pets? (**answer:** $\frac{9}{50}$)
- c) Determine the amount of pet food that will be distributed to the family keeping only one type of pet. (**answer:** 200kg to each household)

Item 4

A woman, Margret is hired for a position with a weekly salary and a fixed monthly increment. At the end of the first week after 4 months of service, her salary is sh. 22,500 per week. After an additional 5 months of service, at the end of the first week, her salary increases to sh. 27,000 per week. she needs to determine her starting salary and the amount of her monthly increment. Margret normally cycles to her work place a distance of 30km from her home at a steady speed of $x\text{km/h}$ when she has not eaten enough food. But when she has eaten, her speed is $(x + 2)\text{km/h}$ which makes her to take 15 minutes less than her normal time when she has not eaten enough food to complete the journey.

Task

- a) Help Margret to know her starting salary (**answer:** sh.18900)
- b) Find out the time she takes to cycle to work when she has not eaten enough food. (**answer:** 2.5 hours)

Turn Over

Part II

Answer **one** item from this part.

Item 5

A motorcyclist, Darwin travels around a rectangular route defined by points W, X, Y, and Z. The journey begins at point W, where the motorcyclist rides 5 km due north to reach point X. From point X, the motorcyclist then rides 2 km due east to point Y. Next, the motorcyclist heads 4 km due south to reach point Z. Finally, from point Z, the motorcyclist rides in a direction of N30E for a distance of 3 km. The motorcyclist is so confused on how he can ride from point Z to point W. one day while riding his motorcycle, he discovered a market place where they sell a box at UGX3000 in order for the seller to make a profit of 25%. The box is of capacity 40cm^3 and 0.05m long. A similar box is of capacity 1080cm^3 . Darwin wants to know the number of boxes the seller should sell to make a profit of UGX10800.

Task

- Direct the motorcyclist on how he can ride from point Z to point W (answer: 2.24km in the bearing of 116.5°)
- How many boxes should the seller sell to make a profit of UGX10800? (answer: 18 boxes)
- How long is the box of capacity 1080cm^3 ? (answer: 15cm)

Item 6

In a certain telecommunication company in a city, there is an employee named James who works for the telecommunication company. He often expresses dissatisfaction with his net income, claiming that the deductions from his salary are too high and that he only receives a net pay of UGX470,950 in a month. The tax structure of the company where he works is as follows:

Taxable income per year	Tax rate (%)
0-1000000	10
1000001-2000000	20.5
2000001-4000000	38
4000001 and above	40

James earns a gross monthly income of UGX7,800,000. He also receives various allowances each month and year:

- Transport: UGX120,000 per month
- Marriage: UGX300,000 per annum

- Water: UGX60,000 per month
- Housing: UGX500,000 per annum

James has a sister, Marion who works with the same company as a cleaner. She earns $\frac{1}{4}$ of his brother's gross monthly salary and the same monthly allowances.

Marion wants to use her net pay of this October to buy a saucepan that costs UGX95000 and a second hand radio that costs UGX45000 but does not know if her income will be enough to purchase the items.

Task

- a) state whether James's complain is true. (**answer:** it is not true since he earns a net pay of UGX533250 in a month)
- b) Help Marion to find out whether or not her income will be enough to purchase the items. (**answer:** No, the money will not be enough to buy the items since her net pay is UGX45,750 which is less than the total cost of the two items, UGX140,000)

END

Prepared by Sam Ogwang Otema;

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