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MATHEMATICS
Paper 1
July, 2025
2 ¼ hours



MATIGO EXAMINATIONS BOARD

MOCK 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

A vendor dealing in spices mixes different spices for her customers' needs. The vendor borrowed shs100,000 from a SACCO that requires her to return the money with an increase of 5%. She used the money to buy 120kg of spice **C** and due to its high demand, she was able to sell $\frac{1}{6}$ th of it to make enough money to pay back what she owed the SACCO. However, she found it difficult to bank the money since she cannot ably fill the amount in words on the deposit slip.

She mixes 200g of **A** with 150g of **B** and 250g of **C** for a perfect mixture of tea spice. She has got a client who wants the tea spice with 1800g of **A** but is not sure of the amount of **B** to mix in order to get the perfect mixture.

She wants to reduce the price of the remaining kilogrammes by shs100 since it has a short shelf-life but needs help to determine the amount of money she would get before she makes the decision.

Task:

- (a) Help the vendor to write the money on the deposit slip.
- (b) Show the vendor how to determine the quantity of **B** and **c** needed to make the perfect mixture for her client.
- (c) Determine the amount of money she will make if she reduces the price by shs100.

Item 2

Mukasa has started a factory that makes ladies shoes and handbags. The cost of material for a bag is shs40,000 and the cost of making a pair of shoes is shs120,000. He has shs2,400,000 left to spend on materials. In order to establish themselves in the market, they have been advised to supply at least 10 items to their distributor and the number of handbags should not be more than the number of pairs of shoes supplied. Mukasa knows that he will make a profit of shs3,000 on each handbag and shs9,000 on each pair of shoes. Mukasa needs to determine the number of items of each type he can produce so as to maximize profits.

Task.

- (a) Represent the conditions as inequalities.
- (b) By showing the feasible region determine the number of items he can supply so as to maximize profits and the maximum profit he can obtain.

SECTION B

This Section has two Parts; I and II

Part I

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

ITEM 3

A band needed to recruit new members who can play instruments. They asked interested musicians who can also play either a guitar, drum or keyboard to apply. Of the 30 applicants they received, 10 could only play a guitar, 3 could only play the drums, 6 could only play both the guitar and keyboard, the number of those who could play both the guitar and drums was equal to those who could play only the keyboard and 1 could play both the drums and keyboard but not the guitar. There was no applicant who could play all the instruments. The band plans to retain those who can play more than one instrument.

Task:

What is the likelihood that the band will be able to get a new member to retain.

Item 4

You have just got a job at a restaurant in town and the manager has records of the number of the number of customers that asked for a newly introduced dish for the past 40 days. The table below shows the number of customers who asked for the new dish for the past 40 consecutive days.

138	145	145	157	150	172	154	140
146	135	128	149	164	147	152	138
168	152	135	125	158	135	168	176
156	150	155	154	126	153	136	163
161	156	144	132	174	160	147	154

The manager has asked you to determine the mean number of customers that ordered for the dish in the past 40 days so as to cater for his customers' demands, he also wants to plan well for the ingredients so he asks to determine the highest number of customers that could have asked for the dish on any one day for the past 40 days.

Task:

- (a) How can you use your mathematical skills to determine the mean number of customers that ordered for the dish in the 40 days.
- (b) Using a suitable graph determine the highest number customers that could have ordered for the dish on any one day of the period stated.

Part II

Answer one item from this part.

Item 5

A surveyor 1.5 m high standing 100metres away on the left of the base of the lighthouse, wants to determine the height of the lighthouse. He used the surveyors tool and measured the angle of elevation of the house as 35° . He then went up the lighthouse to a window 10 meters below the top of the house and looked down at a boat on the bank at the opposite side and measured the angle of depression of the boat as 28° . He also wants to know the distance between the him and the boat.

He observed the boat sailing out to sea from bank **A** in a direction of 075° for 800m towards point **B**. It then changed course and moved in a direction of 285° for 500m until it stopped before reaching point **C**.

Tasks:

- (a) Help the surveyor determine the height of the light house and the distance between the surveyor and the first position of the boat.
- (b) Help the surveyor determine the distance the boat will cover to if it were to move directly from **A** to point **C**.

Item 6

A tent-making company has got an order from a client who wants a square-based tent with sides 12m and its vertical poles to stand at a height of 5m. Its roof is to be of the form of a right pyramid with its vertex standing 8m above the ground. Onyango was asked to determine the least amount of canvas material that would be needed to cover the roof and the three sides of the tent.

The tent costs shs1,300,000 but the company offers a discount of 3% if one pays cash but the client was not sure of the actual amount to pay.

On delivery to the client's premises, the tent was set up but the owner asked that it should be shifted 4 steps to the right and 5 steps southwards from its original positions that were marked (2,1), (2,6), (6,1) and (6,6) because it was blocking the parking area.

Task

- (a) Determine the least amount of canvas material needed to make the tent.
- (b) How much did the client pay for the Tent if he paid cash.
- (c) Show the new positions of the tent

END