

**COMPETENCE BASED
CURRICULUM**

HOLIDAY WORK

UGANDA LOWER SECONDARY CERTIFICATE OF EDUCATION (U.L.S.C.E)

S.4 MATHEMATICS Paper 2

2hours

Instructions to Candidates

- **Attempt any four questions from this paper**
- **All necessary calculations must be done in the answer sheet provided**
- **Any additional question (s) answered will not be marked**
- **Graph papers are provided by yourself**

1. Okot and Opio of different ages. They need to join Kabongo S.S this year 2024. Okot is four times as old as Opio. Eight years ago, the product of their ages was 108 years. One day in a mathematics lesson, Okot borrows a calculator from Opio and on the screen he finds a number 720 which made him wonder which numbers he could have entered to get the outcome as that figure. On the same day, since they had moved with a metallic case in form of a rectangular based pyramid measuring 10cm by 8cm and each slanting edge of length 13cm. They decided to change the colour of the case by painting.

Task

- a) How old do you think are the present ages of the two friends?
- b) Assist Okot to figure out the possible values that Opio could have typed in the calculator to get the number on the screen?
- c) Help the two friends Opio and Okot to figure out the area of the material that was used to paint their metallic case? (25mks)

2. The population census carried out by Uganda Bureau of Statistics in 2022 showed that 0.55 million Ugandans in Bugema village were female of which $\frac{5}{8}$ were children. The males in Bugema village were 0.00072 million of which $\frac{5}{9}$ were children and 30% of all the children in Bugema village were hospitalized.

Kampess is a non-profitable organization that extends a helping hand. Kampess has budgeted UGX 25 million for the purchase of food stuffs and soap to distribute to all hospitalized children in the village. The prices of the items on market was found to be as tabled.

Items	Quantity	Amount(UGX)
Beans	100kg	400,000
Rice	50kg	250,000
Soap	1 box (24 bars)	84,000
Sugar	25kg	75,000
Posho	50kg	250,000

In a meeting, a member suggested a distribution plan as follows: give to each child 5kg of beans, 4kg of rice, 4 bars of soap, 2kg of sugar and 10kg of posho. The chief financing officer is worried that the money might not be enough to serve all the hospitalized children in Bugema village.

Task

Help the chief financing officer, explain to the members in the meeting that the suggested distribution will cause scarcity of funds and thus come up with a better plan that fits within the budget? (25mks)

3. Mr Mwecbe, a peasant farmer in Bombo Kalule village wants to start goat rearing in zero grazing approaches with a vision of becoming the greatest farmer in the country.

He consulted the experts and he was told that due to the nature of his land, he is supposed to construct fixed poles on which he is supposed to tie ropes of goats and the following positions were discovered to form a straight line: $(-2,-1), (0,0), (2,1), (4,2)$ and $(6,3)$. One day while on the farm grazing, had not moved with

packed food and decided to visit a nearby shop. He had ugx 6,200 which was exactly enough to buy 3 loaves of bread and 2 bottles of soda. However, he made a mistake and purchased 2 loaves of bread and 3 bottles of soda. He then had a balance of ugx 400. Since the shop attendant was busy, he never asked the price of each item.

Task

- a) Help him to figure out the equation of the line that passes through the positions of the poles?
- b) By drawing a straight line through the positions, identify the coordinates of four other positions on the line where the poles can be fixed?
- c) Help him to obtain the relationship between the x and y-coordinates of the above positions?
- d) Using matrix multiplication, assist him to figure out the cost of each item a loaf bread and a bottle of soda? (25mks)

4 .A friend to your guardian wants to bring his child to the same school you attend. He calls your guardian and requests her to direct him to your school. There are two routes you can use from home to school.

Route A; A straight direct murrum road from home to school

Route B; From home, drive in the direction of 135 degrees for 55km and then make a bearing of 180 degrees turn and drive more 40km you will find Kalagi trading centre. From Kalagi you will further drive in the western direction until you reach the school. The home is vertically located above the school premises.

The friend requests your guardian to send him a drawing instead of summarizing his direction.

Task

- a) Assist her to make the drawing showing the road map to school?
- b) If after the drawing a friend rather decides to take the southern direction from home. Through what distance will he drive to reach school?
- c) If he starts driving at 12:30pm and arrives at school at 2:30pm through route B non stop. What shall be his average speed?
- d) Which option of the two routes should he take and why?

5. Musa is a business man who deals in an agricultural produce business. One day he visited four markets in a certain week.

In market A, he bought 3 bags of beans, 5 bags of maize, 10 bags of potatoes and 3 bags of millet. In market B, he bought 1 bag of beans, 4 bags of potatoes and 2 bags of millet. In market C, he bought 5 bags of beans and 1 bag of maize. In market D, he bought 4 bags of beans, 3 bags of maize, 6 bags of potatoes and 1 bag of millet.

He bought each bag of beans at ugx 45,000, a bag of maize at ugx 30,000, a bag of potatoes at ugx 15,000 and a bag of millet at ugx 50,000. He later sold all the produce he had bought at ugx 50,000 per bag of beans, ugx 35,000 per bag of maize, ugx 18,000 per bag of potatoes and ugx 55,000 per bag of millet.

Task

a) Assist Musa to summarize the above information in form of ;

i) a 4×4 matrix for the produce he bought in the four markets

ii) a 4×2 matrix for the cost and selling prices of the produce

b) What do you think is the appropriate order for computing total cost and selling expenses in each market?

c) Using the matrices above, help him to determine the total profits obtained from the produce in each market. Hence determine the overall profit made in a week?

d) Guide him to figure out the percentage profit he made on the produce in each market in a week?

e) Of the four markets, where did Musa make maximum expenditure and why? (25mks)

6. A worker who earns a gross salary of ugx 600,000 annually wants to save money to start his own business. He is able to save ugx 100,000 every year. However each time money accumulates on his account, he gets a challenge and he uses the money. He approaches a friend for advice and he is told to open up a smart plan with his bank on the terms and conditions that, he is given additional 5% saving simple interest on the total amount saved in the agreed time.

His other expenditures after saving include; House rent which is a quarter of his salary, Home glossaries of ugx 98,000 and a deposit on a flat screen costing ugx 350,000 .It's hire purchase price is 12% higher than the cost price. He is able to pay the screen in 10 equal instalments of ugx 24,000 each.The balance is what he keeps for other un expected circumstances.

Task

- a) How long will it take him to save ugx 210,000 to start the business?
- b) How much amount does he deposit on the screen every year?
- c) Determine the money saved if the worker buys the screen by paying cash rather than by hire purchase?
- d) Which money goes to un expected circumstances every year? (25 mks)