

456/1
MATHEMATICS
Paper 1
July/Aug 2026
 $2\frac{1}{4}$ hours

ACEITEKA MOCK EXAMINATIONS 2026

Uganda Certificate of Education

MATHEMATICS

PAPER 1

456/1

Time: 2 hours 15 minutes

INSTRUCTIONS TO CANDIDATES:

*This paper consists of **two** sections; **A** and **B**. It consists of **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.

Item1:

An organization in a particular community owns 4cm^2 of land on a 1:250,000 scale map. They do not know the exact size of the plot of land on ground in km^2 . The organization gave some plots to a certain group in that community.

The group wants to hire two tractors to plough the land; however, it is revealed that tractor A takes 45 minutes to plough an acre of land and tractor B takes 20 minutes to plough an acre of land while they both work at the same speed. The group is challenged on how long it takes to plough 10 acres of land after starting at 7:00 a.m.

The ploughing budget will be supported by clergy, area Members of Parliament (Mps), and group members. The clergy will contribute $\frac{3}{4}$ of the budget, $\frac{1}{8}$ by the Area Mps and half of the remainder by the group members. Each of the 48 members was required to contribute UGX 50,000.

Task;

Help the youth group to determine;

- (a) the actual area of the piece of the land in km^2 .
- (b) The time the tractors shall plough the 10 acres
- (c) Find the total budget for ploughing.

Item 2

Two men at their work place were asked about their children's age during a survey. They could only remember that Peter is the father to John, Mary and Monica. Rashid is the father to Muhamood, Sumini and Bakari. Peter is twice as old as Rashid and the sum of their ages is 90 years. Mary is three times as old as Sumini and the sum of their ages is 30 years.

The termly cost of a child's school requirements is partially constant and partly inversely proportional to the number of children in the household. A family of 10 children needs shs 350,000, whereas a family of 20 requires shs 400,000. Peter has three children and is challenged on how much to spend on requirements for the upcoming school term.

Task :

- a) Help the researcher ,
 - (i) to illustrate the relationship among the men with their children
 - (ii) determine the age of Peter, Rashid, Mary and Sumini
- (b) Help peter to find out how much he is likely to spend on his children's requirements for next school term.

Item 3

A games master in a certain school wants to award sports bursary to a group of new senior five students when the probability of playing two games only is less than 50% and know the number of students that play both netball and volleyball but not tennis. Among the 100 students picked randomly, it was found out that 78 students play Netball, 82 play Volleyball, 53 play Tennis and 2 do not play any of three games. All those that play tennis also play Volleyball. 48 play all the three games.

Task

Help the games master to determine:

- (a) The number of students who play both netball and volleyball but not tennis.
- (b) Whether the games master is able to award the bursary.

Item 4

Musa a business man who deals in agricultural produce business, visited four markets in a certain week and he is challenged on how to arrange the records in rows and columns form. In market A, he bought 3 bags of beans, 5 bags of maize, 10 bags of potato 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, 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 shs 45000; a bag of maize at shs 30000, a bag of potatoes at 15000 and a bag of millet at shs 50000. He wants to sell all the produce at sh 50000 per bag of beans, shs 35000 per bag of maize, shs 18000 per bag of potatoes and 55000 per bag of millet. Musa is not sure of total profit from the sales.

Task:

Help musa to

- (a) Organize the information in rows and columns form clearly stating the order of the produce and their markets.
- (b) Calculate the amount he spent in buying these produce.
- (c) Find the total profit he generated.

Part II

(Attempt any one item from this section)

Item 5

Jessica has a room that she plans to use as a beauty salon. She has wall paper of 4.7m^2 . The wall she plans to cover with paper is 240cm by 300cm . She knows the wall paper she has is not enough. So she needs your advice on how much more she should buy. A roll of 10m^2 of wall paper is sold at shillings $32,000/=$

She is working on her salon's logo based on a simple triangle with corners at $A(1,1)$, $B(4,1)$, and $C(1,5)$ on a digital grid. As part of the design process, she first created a mirrored version of the triangle by reflecting it across the x - axis, resulting in a new triangle $A^1B^1C^1$. Then, to explore variations, she took this new triangle $A^1B^1C^1$ and enlarged it with scale factor 2 around the center of the grid(origin) to get the final shape

$A^{11}B^{11}C^{11}$. She needed to know the precise locations of the corners of the transformed triangles and understand the overall effect of the two steps combined.

Task:

Help Jessica to,

- determine the extra roll she must buy ?
- determine the exact coordinates of the two images.
- describe a single geometric transformation that would map triangle ABC directly onto triangle $A^{11}B^{11}C^{11}$.

Item 6

A geography department in your school hires two buses A and B to transport S.4 student for study trip. He expects to reach the destinations at the same time. At 1400 hours, the two buses left school both travelling to the destination. One bus travels at an average of 80km/h and arrives 50 minutes late. The other bus travels at an average of 100km/h and arrives 20 minutes late. The H.O.D wanted to know the distance apart these buses were travelling so that he reports correctly to the head teacher. The H.O.D had also reported about underpayment in his net monthly salary to the head teacher.

He receives an allowance of **UGX 85,000** per month for management of geography department. Additionally he receives housing allowances of **UGX 50,000** per month, Medical **UGX 939,000** per annum, transport **UGX 180,000** per annum and the school pays his

insurance premium of UGX600,000 annually. He earns a gross monthly income of UGX1,100,000 and he is subjected to Pay As You Earn (PAYE) according to the following tax rates.

Taxable income(UGX) per month	Rate(%)
1–150,000	5
150,0001–350,000	10.5
350,001–450,000	18.5
450,001–650,000	28
Above 650,000	30

Task

As a mathematics student, help the head of department:

- to determine the distance apart between bus A and B
- to determine his net income.

END