

MATHEMATICS

ITEM ONE:

A newly established secondary school is offering bursaries to learners who have obtained between first grades up to 8 aggregates only in PLE so as to attract more learners to their school. a full bursary for those who got 4 aggregates only in PLE. 75% for those with 5 and 6 and 50% for the rest, their school charges 2.46 million for school fees and other requirements for all new students. Amos scored 111 aggregates.

- a) Does Amos qualify for the bursary, if so, how much will his mother pay?
- b) Determine his mother's balance on the account if she had saved ugx 3,000,000 for his school fees. (15 scores)

ITEM TWO

Your twin brother who works in Dubai has asked you to help him establish the actual dimensions of a plot of land which his friend has identified for him before he makes any payments. His friend only tells you that the plot has an area of 448m^2 . However, on reaching the site you discover that the plot has a rectangular shape with one side having a wall fence that the neighbor had already built while the rest of the three sides need to be fenced with sixty metres of material. Given that each meter costs shs. 50,000,

TASK

- (a) Determine the total cost of the material required to fence the three sides.
- (b) Make a clear report to your twin brother about the plot clearly showing the dimensions of the plot.

(15 scores)

SECTION B

This section has two parts I and II

PART I

Answer one item from this part

ITEM THREE

In 2024, population census was carried out by Uganda national bureau of statistics. The human resource manager advertised with new vision newspaper for job opportunities and they required as many enumerators as possible. Senior six of a certain school applied for this vacancy and they went through all recruitment process. They were all successfully recruited into the ministry of planning and development. The ministry sent them into the field in Kakuto, Kyotera district and they successfully obtained data. Their supervisor requested them to arrange the data concerning mass (kg) of the youth aged between 18 and 25 years to enable the government plan for them. The following results were presented.

71	52	47	40	70	60	30	62
63	42	50	62	26	56	65	32
62	53	51	65	40	47	45	25
46	46	37	30	27	30	24	48
47	30	36	28	45	50	54	62

TASK:

This report was to be forwarded to the chief administrative officer of Kyotera district. As a mathematics club member with the knowledge of statistics and using a suitable class interval, guide the enumerators on how they can be able to obtain the average mass (kg), mode and illustrate the above information on a suitable graph to enable the enumerators estimate the median mass (kg) for the youth in Kakuto zone. (25 scores)

ITEM FOUR

The ministry of health in Uganda is conducting a survey about the existence of malaria in three districts; A, B and C. the ministry will then come up with control measures if the chance of a person testing positive having visited atleast one of the district is above 50%. the ministry has intentionally selected a sample of people who visited the three districts and tested them for malaria. The test results have revealed that 50 people who visited district A, 60 people who visited district B and

40 people who visited district C tested positive for malaria. Additionally, 20 people who visited both A and B, 10 people who visited both A and C and 15 people who visited both B and C tested positive for malaria. The ministry has also discovered that 20 people who only visited district C tested positive for malaria. Given that 40 people who visited the three districts tested negative for malaria.

TASK

- Determine the number of people that were tested for malaria by the ministry of health
- Calculate the probability of a person testing positive having visited at least two of the three district.
- Advise the ministry of health, with a reason based on calculation, whether to come up with control measures or not. (25 scores)

PART II

Answer one item from this part.

ITEM FIVE

A certain school gives the following allowances to its staff members

- Housing allowance shs. 100,000 per month
- Transport allowance shs. 2500 per day
- Water and electricity shs. 60,000 per month
- Medical care shs. 480,000 per annum
- Marriage allowance shs. 30,000 per month
- Insurance and relief shs. 600,000 per annum
- Family allowance for only three children, for children in the age bracket, 0-10 years shs. 15000 per child, between 10 to 15 years shs. 10,000 each, 15 and above shs. 8000 per child, a certain teacher has five children two of them aged between 0 and 10, the other two aged between 10 and 15 while the other 21 years. Given that he earns shs. 940,000 per month and he pays tax using the tax structure below.

Taxable income	Tax rate
50,001-100,000	8
100,001-180,000	12
180,001-280,000	15
280,001 -390,000	25

390,001 - 490,000	32
490,001 - 580,000	40
Above 580,000	45

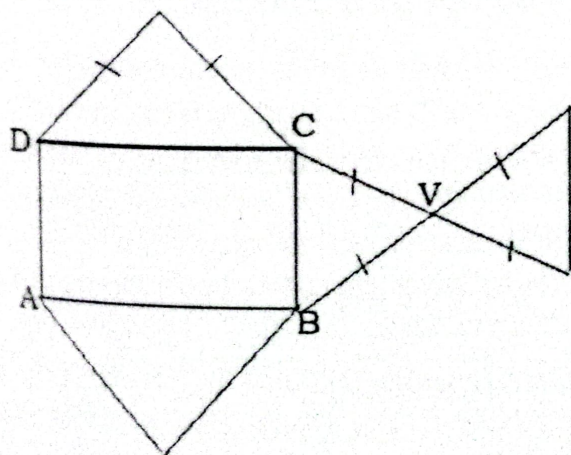
TASK

Help the teacher determine his;

- Net income for the month of august
- Percentage of his gross income that goes to tax (25 scores)

ITEM SIX

The figure below shows a net of a right pyramid with rectangular base ABCD



Given that v is the vertex of the pyramid VABCD above the base ABCD, $AB = 24\text{cm}$, $BC = 18\text{cm}$ and the slant sides each triangle measure 39cm .

Determine the;

- vertical height of the pyramid and hence its volume
 - area of plane VAB
 - Angle between edge VA and the base ABCD
 - Angle between plane VBC and the base ABCD.
- (25 scores)