ST. VICTOR'S SECONDARY SCHOOL, KITAASA

S.3 MATHEMATICS END OF TERM II 2026 ASSESSMENT.

TIME: 2 HOURS 15 MINUTES.

INSTRUCTIONS:

Section A has two compulsory items.

- *Section B has TWO parts; 1 and 2. Respond to ONE Item from each part.*
- *Respond to four examination items in all.*
- *Any additional item(s) responded to will not be scored.*

SECTION A

ITEM 1

Due to the increasing demand for yoghurt in Wakiso Town Council, a local factory supplies products to different shops A, B and C. shop A places an order every 12 days, shop B every 18 days and shop C every 24 days on 1st April, all shops placed orders on the same day, which prompted the council to organize a joint promotion.

The factory had used a digital labeling system code 101101 during a production cycle in which it packed 600 boxes of yoghurt. Out of the total production, three-fifths of the boxes were straw berry flavoured, while the remaining boxes were vanilla flavoured,

Due to lower – than expected production, the factory had reserved only 15% of the strawberry- flavaured boxes for two catering companies, P and Q ,which shared the allocation in the ratio 1:3 respectively.

The factory management had then contacted you to determine how the available stock had been distributed and to establish the sales distribution for planning purposes.

Task:

Help us to;

a) Establish the ordering schedules and determine when the next joint promotion can be held.

b) Compute the number to be stored in the database in denary form.

c) Determine the quantity of yoghurt to be delivered to company Q.

Item 2

After noticing that animals were crossing into his garden and damaging crops, Mr Mandela noticed that stray animals were crossing into his rectangular garden through the

open sides. To protect his crops, he decided to fence the garden using the existing wall on one side. The wall had been built earlier by his neighbors.

The area of the garden was 312.5m^2 and Mandela had 50m of fencing material
To improve the environment around the garden, Mandela decided to plant trees along the fenced area. He planted 8 seedlings in the first row and increased the number by 3 in each new row. The garden can accommodate 15 rows of seedlings.

Before buying the last batch, he wants to know how many seedlings will be needed in the final row. You have been asked to help Mr. Mandela plan the fencing and tree planting activities.

Task

Help us to;

a) Determine the dimensions of the garden
b) Interpret the planting pattern and determine the number of seedlings in the last row.
c) Predict what would happen if the increase changed from 3 seedlings to 4 seedlings per row..

SECTION B
PART 1
RESPOND TO ONE ITEM TO THIS PART

Item 3

The Harmony Community Threatre offers three types of lessons to its members: singing, Dancing and Acting. A survey was conducted among 40 members of the theatre to find out which lessons they take part in.
It was found that every member participate in at least one lesson. 3 members take part in both singing and acting but not dancing. 25 members take part in only one lesson. 19 members take part in singing. 6 members take part in singing and dancing only and 10 members prefer acting only.
Additionally, 4 times as many people take part in a singing lesson only as those who take part in all three lessons. The theatre wants to recruit new trainers to help handle the increase in the number of members taking at most two lessons is above75%.

Task.

a) Using this information provided , find the number of members who take:
   i) All the three lessons.
   ii) Atleast two lessons

b) Will the theatre recruit new trainers? Give a reason for your response.

Item 4

Four traders Akello, Baine, Cherop and Damba bought commodities from a wholesale store as given below.
Akello bought 1 bag of Posho, 2 bags of Sorghum, 5 bag of Potatoes and 2 bags of rice.
Baine bought 3 bags of potatoes , 5 bags of posho and 4 bags of rice.
Cherop bought 4 bags of posho and 8 bags of rice, Damba bought 3 bags of rice, 5 bags of potatoes, 2 bags of posho and 4 bags of sorghum.
The cost per bag of the commodities was posho at shs. 100,000, potatoes at shs. 75,000, sorghum at shs. 600,000 and Rice at shs. 150,000. The wholesale manager wants to organize the information in rows and columns to find how much each trader spent on the commodities but she needs your help.
The traders sold all the commodities and got the following amounts. Akello got shs 1,145,000, Baine got shs 1,725,000, cherop got shs 2,200,000 and Damba got shs 1,455,000.

Task.

a) Organize the information in rows and colums starting clearly their orders.
b) Using the organized information, determine the;
   i) Amount received in total by the wholesale store from the traders.
   ii) Profit made by each trader.

PART II
RESPOND TO ONE ITEM FROM THIS PART .

Item 5.

A farmer in Mukono District is developing a triangular piece of land into a small horticultural garden. The land is intended to support two different types of crops in separate sections and therefore requires a carefully planned fencing and internal partitioning design using wooden poles and barbed wire.
The boundary of the garden is a triangle **OAB** where O is a fixed corner of the land, $\mathbf{OA} = \mathbf{a}$ and $\mathbf{OB} = \mathbf{b}$ with all positions are measured from point O.
To construct the fence, the farmer's workers place supporting wooden poles along the boundary, A pole M is fixed on the boundary line **OB** such that **OM** = 1/3 ob. Another pole N is fixed on the boundary line **AB** such that **AN**=2/5**AB**. To improve the strength of the fencing structure and clearly separate the two planning sections inside the garden,

barded wires are stretched from pole A to pole M and from point O to pole N. these two wires interfect at point P, where the position of the intersection is such that **OP =5/9 ON.** After completing the layout, the farmer wants to confirm whether the internal fencing has been correctly aligned. In particular, he needs to check whether the poles at A, P and M lie on a straight line, since this would affect the tension balance and stability of the internal fencing design.

Task

a) Express the vectors **AB, ON** and **AM** in terms of vectors **a** and **b**.
b) Help the owner of the garden to establish whether the poles A, P and M are in a straight line.

Item 6.

An events organizing company needs to make a new type of decoration, they want to cut out an octagon out of the circular card board whose diameter is 8cm so you are given the task to come up with the accurately cut out decoration.

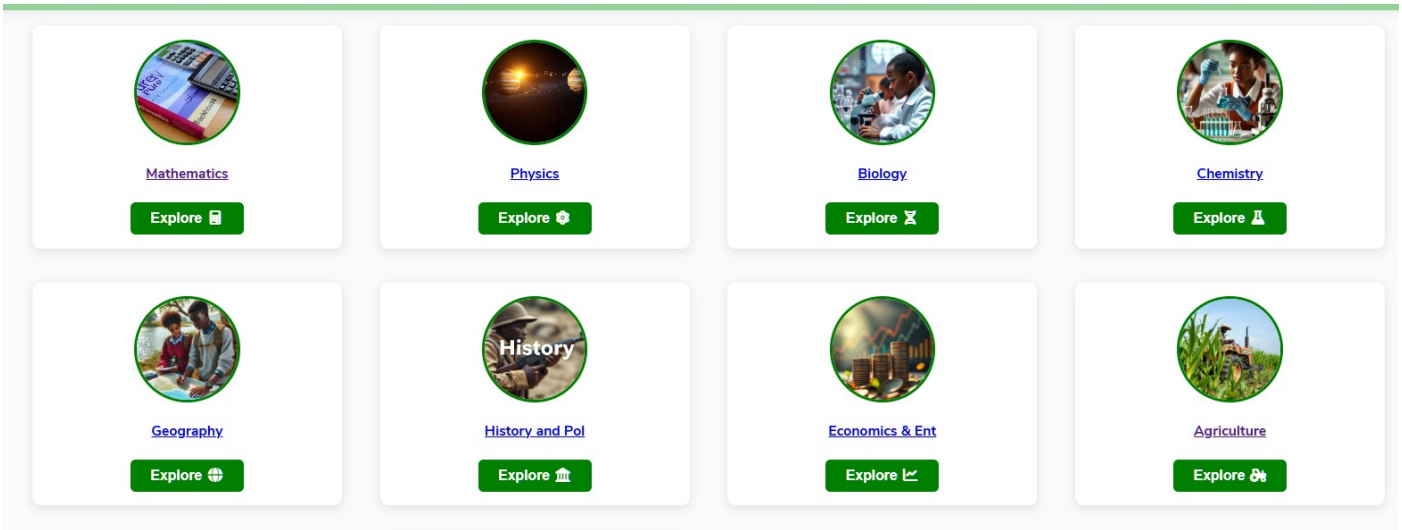
The head decorator has got a contract to organize an event but he does not have enough money for materials he needs so he wants to borrow. Shs 8,400,000, the bank has two orphans but orphan 1, they give him the loan at a compound interest rate of 8% per annum to be paid in 2 years while option 2, the loan can be given at a simple interest rate of 8% per year, the bank requires that for both options the money should be paid back in 20 equal installments. He plans to pay back the money in 2 years so he needs your help to decide which option to use.

Task.

a) You are required to show how you were able to draw the accurate octagon as instructed.
b) Using your mathematical skills recommend a loan option for the head decorator to use.

END

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