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MATHEMATICS
Paper 1
May/June 2025
$2\frac{1}{4}$ hours

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10th May 2025

MATHS LEARNERS UGANDA 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.

 Turn Over

SECTION A

Answer **all** *items in this section.*

Item 1

A bakery is making a cake for a customer who wants it to be decorated which a specific pattern. The customer provides a design in binary code: 101101. The baker only understands the code as a decimal number. The baker had already made 45 cakes in the morning and 12 cakes in the afternoon before the customer came to him. He plans to divide the cakes in to the largest number of equal slices and put each slice in a 1 litre container. Each slice occupies 25% of the container.

Task

a) Help the baker to write down the code he can use in the design (**answer**:45 base ten)
b) Determine the number of slices that each cake will be made off (**answer**:3)
c) Determine whether or not the container will be enough for the slices to be made from the cakes and hence determine the size of the container enough for 30 slices (**answer:** yes, 7.5 litres)

Item 2

Your community center has organized an open house event for next Saturday. The center plans to create a garden area in the shape of a rectangle with dimensions of $(2y + 5)$ meters in length and $(y + 4)$ meters in width. This garden area will be beautifully landscaped and will cover an area of $4800m^2$ within the community grounds. Additionally, the center intends to build a decorative fence around this garden, which will take the form of a rectangle with dimensions of $(2y + 15)$ meters in length and $(y + 10)$ meters in width. The cost to construct one meter of this decorative fence is UGX 1200000. The entire fenced area will occupy an area of $9600\ m^2$ on the community grounds.

Task

a) determine the dimension of the garden (**answer:** length 106.5m and width 55.75m)
b) determine the cost of constructing the fence (**answer:** 399000000UGX)

Turn Over

SECTION B

This Section has two Parts; **I** *and* **II**

Part I

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

Item 3

In a classroom of 20 students of senior two, the teacher is trying to understand the distribution of students taking different subjects. Out of these 20 students, 12 are enrolled in Art (A), and 10 are taking Chemistry (C). The teacher discovers that the number of students who take neither subject is half the number of those who take both subjects. The teacher in tends to know the number of those students who take both subjects since they are rumored to be very disciplined. The school has organized a sports tournament amongst students of senior one, senior two, senior three and senior four in which $Shs3{,}800{,}000$ was shared amongst the four classes according to their ranks as shown; 1st position, 60% of the money, 2nd position 20% of the money, 3rd position $\frac{2}{25}$ of the money and the remaining balance was for the 4th position. The class with the highest points was ranked 1st. the table below shows the performance of all the four classes indicating the number of games won.

Class	Soccer	Netball	Basketball	Volleyball
Senior one	23	17	16	14
Senior two	18	33	21	7
Senior three	15	18	19	20
Senior four	24	16	18	11

Each win in soccer was awarded 3 points, each win in netball was awarded 5 points, each win in basketball was awarded 4 points while each win in volley ball was awarded 7 points.

Task

a) How many students are rumored to be very disciplined? (**answer:** 4)
b) Which class was in 1st position? Give a reason to support your answer. (**answer:** senior two, because it had the highest points, 352)
c) Determine the amount of money the 4th position got. (**answer:** UGX76,000)

Item 4

In a drug store located in Kampala, the owner, Mr. Kato, was keen to analyze his sales performance over two consecutive days. On the first day, he sold 2 tins of Panadol and 4 tins of Aspirin tablets. The total revenue generated from these sales amounted to sh108,000. Mr. Kato was pleased with this outcome but wanted to understand the pricing structure better. The following day, he decided to increase

his sales efforts and managed to sell 3 tins of both Panadol and Aspirin tablets. This time, the total sales reached sh126,000. concerned by the differences in sales figures between the two days, Mr. Kato wants out to determine the unit-selling prices for each type of medication for accountability. The average weight of 30 tins of Panadol at the drug store is $0.45kg$. The laboratory technician has confirmed that the average weight of 10 heavier tins of Panadol is $0.58kg$. however, he has not yet confirmed the average weight of all the 40 tins of Panadol.

Task

a) Help Mr.Kato to determine the unit-selling prices for each type of medication (**answer:** The unit-selling price of Panadol is sh.30,000 and Aspirin is sh12,000)
b) Find the average weight of the 40 tins of Panadol. (**answer:** 0.4825)

Part II

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

Item 5

A teacher, Mr. Golden set out from his cabin at his home, walking towards a scenic viewpoint located $600m$ away on a direction of $030°$. After enjoying the view, he decided to explore further and walked $400m$ on a direction of $150°$ to reach a nearby waterfall. The teacher also doubles as an interior floor designer. When designing a new floor, he uses a coordinate grid to represent the room. A client wants a rectangular tile insert in the floor of the room. The coordinates for three of the corners of the insert are $A(-7,-4), B(1,6)\ and\ C(6,2)$. Mr. Golden wants to make sure that the rectangular tile insert is well positioned by turning it through $+270°$ about the origin and later ensure that it is big enough by making it three times bigger using the point **(0,0).**

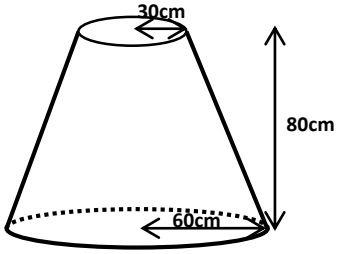
Task

a) how far is the waterfall from home using the direct route? (**answer:**721m)
b) As a student who has learnt vectors, determine the coordinates of the fourth corner of the rectangular tile insert. (**answer:** $D(-2,-7)$)
c) Using a suitable illustration or otherwise, write down the coordinates of the bigger rectangular tile insert. (**answer:** $A''(-12,21), B''(18,-3), C''(6,-18), D''(-21,6)$)

Item 6

Turn Over

Miriam has just bought a new bucket from Kamdini market to help her in fetching the water from the nearby spring and washing clothes. The bucket has base radius 30cm and top radius of 60cm. The bucket is shown below



Marriam has a circular space on her compound where she sits whenever she wants to wash her clothes. The circular space covers $154m^2$ of space of the compound.

Task

a) Calculate the amount of water that the bucket can hold. (**answer:** $527787.5658cm^3$)

b) Find the distance from the centre of the circular space to its edge. (**answer:**7m)

END

Prepared by Sam Ogwang Otema;