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Mathematics
Paper 1
July /August 2024
2 ¼ hours



KAYUNGA SECONDARY SCHOOLS EXAMINATIONS COMMITTEE (KASSEC)
JOINT MOCK EXAMINATION 2024
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 one

In Kiwanga village, Mr. Kamuto had six children; Kitoyi, Mpanga, Kyaka, Tawaka, Manana and Nampanga. He made his will and kept it with a religious leader who is a good friend. After his death, children were fighting for the property as the elder son wanted to claim 50% as the heir. The lawyer saved the situation by reading the will. Nampanga was given 10% of the property. The remaining property was shared among the boys and the wife. Kitoyi was given $\frac{1}{5}$, Mpanga was given 15%, Kyaka was given 20%, Tawaka was given 5% and Manana was given 20%. The remainder was given to the wife.

Task

- Help the family administrator to know how much property will each take given that Mr. Kiwanga had property worth Ugsh60, 000,000.
- What percentage of Mr. Kiwanga's property was allocated to his wife?

Item two

You are an outdoor cook and a decorator to cook a particular type of rice you notice that for 0.5 kg you put 2.5 cups of water, for 1 kg you put 4.5 cups of water and for 2kg of rice you put 8.5 cups of water. You have been called by your known customers to cook 50kg of the same type of rice at a certain party. The customer also wants two fifty-seater tents and 100 chairs and you want to give her both at a minimum cost of shs.400000 since she is your known customer. However, you always want to rent out each chair shs.1000 at most and each 50 people seater tent at shs.250000 at most.

Task

- What mathematical relationship exists between the amount of water use and quantity of rice and why say so?
 - Create the relationship
 - Use the relationship developed to determine the amount of water you will use to cook the quantity of rice you are called to cook
- Create mathematical relationships describing the situation of 50 people tent and chairs, cost of hiring chairs and the tents each and the total cost of hiring them
 - Using the mathematical relationships decide on the possible amounts you will charge the customer.
 - Which amounts will you choose to charge amongst the above and why choose that?

SECTION B

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

Answer **one** item from this part

Item three

Mbale District organized a sports tournament amongst the top four Secondary Schools in Mbale district; Elgon high school, Mbale progressive, Mbale high school and Nabumali high school. The district sports department has budgeted Ug. sh 10,000,000/= to be shared amongst the four schools as follows;

There were four games to participate in and the houses 'performance was shown below;

SCHOOLS	Points			
	Netball	Football	Athletics	Handball
Elgon high school	3	7	22	3
Mbale Progressive	5	6	18	4
Mbale high school	7	7	13	7
Nabumali high school	6	5	23	5

Conditions for awards

Position	Percentage share
1	50%
2	30%
3	15%
4	Reminder

Task:

- Help Kayunga district sports department to share the money based on the performance amongst the participating schools.
- In your opinion, how does the district benefit from sports program?

Item four

Kabumba College School Head teacher is thinking of how he can boost the English department in the school. He can either add another teacher or head the department himself or both. He has decided that he will do both if the average performance for this year's performance for the 50 students is lower than that of the previous year which was 64. The Headteacher asked the department to give an item assessment test and below were the student's scores.

25	32	26	50	52	47	35	71	48	86
45	46	44	56	52	52	76	27	89	38
88	32	30	68	58	89	51	73	56	90
69	95	87	67	66	48	49	92	66	62
92	39	57	74	43	36	69	64	26	54

TASK

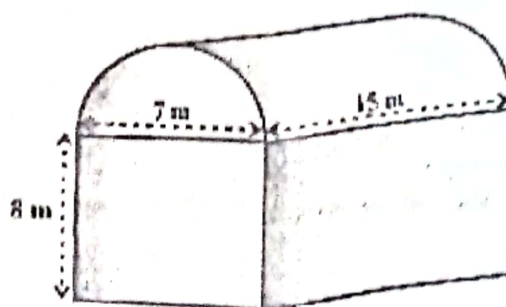
- Determine whether there was a good performance in the subsequent assessment and why say so?
- If the score was 70% how many learners failed?
- Advise the school on the measures to improve the performance of English in the institution.

Part II

Answer **one** item from this part

Item five

Mr Kyanda's neighbour runs an industry in a shed that is in the shape of a cuboid surmounted by a half-cylinder. The dimensions of the cuboid base are 15 m by 7 m, and the height is 8 m.



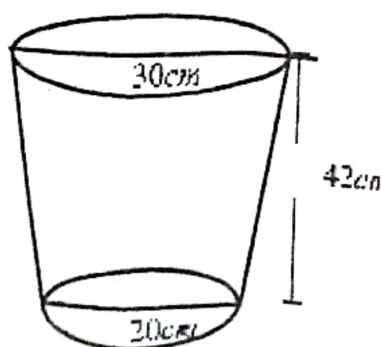
Your neighbour wants to install air conditioning units in the shed. The installation company wants two types of units: Type A and Type B. Each Type A unit costs \$2,500 and each Type B unit costs \$3,200. The Type A unit covers $100m^3$ of air, while the Type B unit covers $150m^3$ of air. For bulk purchases, the company offers a 5% discount on the total cost for every 10 Type A units purchased and a 7% discount on the total cost for every 8 Type B units purchased. The neighbor plans to buy enough units to cover the entire volume of the shed. He intends to borrow money from a bank to buy the air conditioning units but is unsure of the amount needed.

Task:

- Find the volume of the air that the shed can hold.
- If the industry requires machinery which would occupy a total space of $300m^3$ and there are 20 workers each of whom would occupy 0.08 space on an average, how much air would be in the shed when it is working?
- Calculate the number of air conditioning units required for both Type A and Type B units based on the usable air volume.
- Estimate the total cost and the amount of money your neighbor needs to borrow for purchasing the required air conditioning units for both Type A and Type B.
- Advise your neighbor, with reasons, on the type of air conditioning units to buy.

Item SIX

Nakawa business institute has a task of painting its two lecture rooms, the institute hired a painter. A painter has to buy paints which are sold in buckets in the shape of a frustum with an open top end of diameter 30 cm and a bottom diameter of 20 cm and 42 cm deep. The in charge of the task told the painter to also purchase cylindrical tank of diameter 1.8m and height 1.2m for mixing the paints and that once the paints fill the cylindrical tank, it would be enough to paint the whole two rooms.



Task.

Help the In charge to find out the number of buckets of paint he should buy enough to complete painting the two rooms.

END