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456/1

MATHEMATICS

Paper 1

2024

2 hours

SAYIDINA ABUBAKAR SECONDARY SCHOOL

MATHEMATICS DEPARTMENT

S.3 END OF CYCLE ASSESEMENT

MATHEMATICS

Paper 1

2 hours

INSTRUCTIONS TO STUDENTS:

- Attempt **item 4** and **2** other items
- Answer **three** 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 use them where necessary.
- Silent, non-programmable scientific calculators and mathematical tables with a list of formulae may be used.

Answer any **three** items in all (**item 4 is compulsory**).

Item 1.

An investor wishes to buy a piece of land (family land) from your father to construct a factory. Your father and the whole family members have already accepted to have this land sold to this investor. The land is rectangular in shape and measures **150m by 100m** in size. One longest side of this land is having its boundary covered by a water body. The investor is to pay each square meter of this land Uganda **shs. 300000** according to the agreed terms and conditions regarding land price negotiation in this community. The investor is to fence the land immediately after payment.

Task.

- a) As a senior three student, help your father and the whole family to determine the amount of money they should accept to receive from this investor for the whole piece of land (offer them understandable explanation where necessary).
- b) If the investor is to fence this piece of land with barbed wire excluding or leaving out the side bounded by the water body and each roll of a barbed wire covers a distance of **25 meters** in fencing and cost Uganda **shs. 100000**. Advise this investor on the amount of money he should have in order to fence this land.

Item 2

A group of uneducated tourists came to visit Lira city in Uganda. Having reached the capital Kampala, they got confused onto what distance they are suppose to cover and the amount of fuel to fill in the vehicle tank to cover this distance(from Kampala to Lira city) yet they were even provided with the scale map shown in fig. 1 below. The map clearly shows the location of these two cities.

The map is drawn on a scale of **1 cm** representing **60km (1:60)** .



Fig 1. Shows part of the scale map given to tourist by the tourist guides on reaching Kampala.

Task

- a) The tourist are to follow a **direct route** from Kampala to Lira. As a senior three student you have been instructed to guide these tourists basing on the scale map they have been given (**refer to fig 1**). In your guidance use their map to determine and explain to them the actual distance they are to cover in travelling from Kampala to Lira.
- b) In each kilometer a diesel engine tourist vehicle consumes $\frac{1}{4}$ liter of fuel and a petrol engine tourist vehicle consumes $\frac{1}{2}$ liter of fuel. Determine the amount of fuel the tourist will have to fill in the vehicle tank in order to complete the journey from Kampala to Lira if they are to use:
- i) A diesel engine tourist vehicle.
 - ii) A petrol engine tourist vehicle.
- c) If each liter of petrol cost **shs. 2500** and each liter of diesel cost **shs. 6000**. Advise the tourist which vehicle is most suitable for their journey and why?

Item 3

The government of Uganda is to set up a project in Kabasanda village, Butambala district. For this project to be set up, a group of villagers is to be displaced from their own land and compensated in cash money in order to relocate themselves to other places. The table below shows the affected villagers and pieces of land in hectares they own that are to be compensated.

Names	Land (in hectares)
1. Kateregga	2
2. Kirunda	3
3. Wasswa	1
4. Katende	4
5. Ssebagala	3

Table 1

Task

- a) i) If in each hectare of land, a villager is to be given a compensation fee of **shs. 2000000** and **added** a settlement allowance of **shs. 800000**. Form a mathematical function showing the relationship between the pieces of land (in hectares) and the total amount of money to be received in compensation. Taking x as pieces of land (in hectares) and $f(x)$ as the total amount of money to be compensated.

(ii) Using the relationship derived in a (i) above represent the above information on an arrow diagram. Show clearly the amount each villager will get in compensation.

- b) Kirunda has just bought a piece of land in this village (3 hectares) at **shs. 4000000** but unfortunately is amongst the people to be displaced as shown in **table 1** above. Determine whether Kirunda will lose his land with a profit or loss **and by how much**.
- c) Mr. Higenyi have **15 hectares** of land in the same village. Determine by calculation how much he would have received in compensation if the whole of his land was to be covered up by the project set up plan.

Item 4(a)

In an attempt to have some s.3 girls (suspected to be pregnant) tested for pregnancy at Sayidina Abubakar Secondary School, the school nurse decided to first measure the weight (kgs) of each suspected girl. The results for the weights were obtain and recorded as follows; 40, 42, 45, 50, 40, 36, 60, 42, 50, 40, 36, 55, 45, 45. She is to use this data to decide whether these girls should undergo through the pregnancy test or not.

Task

- a) i) Summarise for the school nurse the above information (data collected) in a frequency distribution table.
- ii) According to the school nurse, if the average weight of these girls exceed 50kg, all of them are to go through the pregnancy test. Help the school nurse to decide whether to continue with this exercise (pregnancy test) or not. Give a reason.

- iii) Determine the difference in weight between the heaviest girl and the lightest girl recorded by the school nurse
- iv) What weight is being shared by many girls according to your frequency distribution table

Item 4(b)

Sayidina Abubakar Secondary School has just bought a new school bus a few weeks ago and the school stakeholders need to know the amount of fuel consumed by this bus per week for proper adjustment on the school budget. In an attempt to respond to this concern, the head teacher provided the committee with the information summarised in **table 2**. Unfortunately he couldn't recall the right amount of fuel this bus consume every Wednesdays and Thursdays ; all he could remember correctly is that this bus uses the **same amount** of fuel on Wednesday and on Thursday and that on average, fuel consumption of this bus for the whole week is **10 liters**

Days	Mon	Tue	Wed	Thu	Fri	Sat	Sun
Fuel (liters)	10	7			8	12	15

Table 2

Task

- i) From the information the head teacher has given, help the secretary of this committee to determine the amount of fuel the bus consume on Wednesday and Thursday
- ii) If each liter of fuel cost **shs. 3500**. Advice this committee on the amount to be budgeted if this bus is to run for **4 consecutive weeks** without resting even a single day.

*****END** SUCCESS! SUCCESS!**

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