

MATHEMATICS

Item 1

Tom has seven hundred fifty thousand Uganda shilling. He plans to use part in the shop and part in the boutique in the ratio of 3:2 respectively. He wants to spend UGX. 210, 000 to buy shirts and UGX. 120, 000 to buy trousers. However he is not sure if his budget for the boutique will be enough.

From the shop, he is to buy 24 packets of cooking oil, 12 packets of sugar and 30 packets of salt. All of these are to be used to make packages for some of his family members in the village. He wants each package to have an equal number of items in it. He needs to know the highest numbers of packages he can make from them.

Tom keeps his money in the safe box which he closes with a secret pin in base three. He re-wrote it as 57 in base eight and placed this new pin on top of the box. His cousin has come to attend to the shop but he wants to get the actual pin to give balance to the customers.

Task:

- (a) Will the money he plans to use in the boutique be enough for what he plans to buy? Justify your answer.
- (b) Determine how many packages will he make from the items he plans to buy?
- (c) Help Tom's cousin to access the original pin.

Item 2.

Mr Kintu is a candle maker who has received an order to make 500 candles. He has a block of candle wax in the shape of a cuboid measuring 45cm by 30cm by 20cm. He is to melt the wax block completely to make to form liquid wax and each candle requires 50cm^3 of the candle wax. He wants to determine if the available block of wax is enough for the candles he plans to buy.

Task

Determine if the available block of wax is enough for the candles he plans to buy.

Item 3

A chapatti seller wants to address the sunshine that is affecting his customers, she has decided to purchase identical triangular tables with each of the tables having two of its sides, each measuring 10 m and intersecting at a 75° angle. The tables will feature a central hole to accommodate a circular umbrella, providing shade for her customers. The tables will be used to serve delicious chapattis to her loyal customers.

Tasks:

- (a) What minimum radius is required for a circular umbrella to fit around the vertices of the triangular tables?
- (b) What will be the total cost of 80 tables with the applicable discounts?

Item 4

Your school is organizing a 50 years celebration run. They plan to draw a map to be given to the participants. They have chosen the school as the starting point and from here, they are to take the road which is in the direction $E30^{\circ}S$ for 7km to a check point. From this check point, they will move in the direction 240° and run a distance of 9km to junction C which will be the finishing point. From here, the runners will then just walk back to school using a direct route from the junction to school.

The school is to hire a vehicle for filming the event. This vehicle consumes 1 liter of fuel per 2km and 1 liter costs sh 5000. The hiring cost for the vehicle is sh 400,000 and the school is to fuel the vehicle.

Task

- (a) Make a sketch map that will be given to the participants
- (b) What is the distance that the participants will just walk?
- (c) How much will the school spend on the vehicle?

