

# MATHEMATICS

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## Item 1

A camping site attracts visitors among which include children, men and women. On a certain day, the manager of the site recorded the attendance as ratios. Men : Women = 5:4 and Women: Children = 3 :7. In total 448 children visited the camping site that day. However, the manager was not sure of the number of men and women who visited the site that day.

In 2024, the cost of a ticket to the campsite for children was at half price that for adults and that a ticket for adults cost UGX30,000. In order to attract more customers, the manager instructed the attendants to set the ticket charges for 2025 such that their cost is less by 20%. However, the attendants were not sure of the exact costs to set for 2025.

### Task:

- (a) Help the manager to find the total number of men and women who visited the camping site that day.
- (b) Determine the amount of money collected by the camping site on that day.
- (c) Determine the cost for the tickets for children and in 2025.

## Item 2

Your uncle wants to start rearing a chicken. He wants to put up a cage. The dimensions of the cage are in such a way that the length is 20 metres more than the width. He has an available space of 6300 square meters and he wants establish the exact dimensions of the cage and he needs your help.

The cost of raring hens on a poultry farm depends on the number of hens present on a farm. The table below shows the number of hens and the corresponding cost of raring them.

|                |           |           |            |
|----------------|-----------|-----------|------------|
| Number of hens | 50        | 120       | 300        |
| Cost (shs)     | 2,370,000 | 5,520,000 | 13,620,000 |

The farm manger has a target of raring 500 hens and he wants to determine the cost he will incur in raring them.

**Task:**

- (a) Determine the exact dimensions of the cage.
- (b) Write down a mathematical relationship between the Number of hens and the total cost of raring the hens.
- (c) Determine how much he needs to rare the 500 hens.

**Item 3.**

Joshua is tasked to take company goods from a factory to three trading Centers. The car is going to use has 20 liters and it uses 1 liter of fuel for every 15 km. He left the factory to the first trading Centre which is 70 km away on a bearing of  $N60^{\circ}E$ . He then move eastwards at an average speed of 60 km/hr. for 30 minutes to the second trading Centre. From this Centre he took a bearing of  $200^{\circ}$  and move a distance of 50 km to the third trading Centre.

At this centre he was shown a direct- route that would take him back to the factory but was not sure whether the remaining fuel in the car was enough for the journey since he did not know the distance.

**Task:**

Help Joshua to determine;

- (a) The distance of the direct-route from the third trading center to the factory.
- (b) Whether the remaining fuel in the car will be enough for journey using the direct- route.

#### Item 4

In a certain school there are 50 students who play three games, namely Chess, Tennis and Volleyball, 24 play Chess, 26 play Tennis and 29 play Volleyball, 9 play both chess and volleyball, while 13 play both tennis and volleyball, 11 play both Chess and Tennis. Each of these students play at least one of the three games. The sports master wants to establish the chance that a student selected at random who plays more than one game is more than 50% so the he can forward their names for the sports bursary.

#### Task:

- (a) Represent the above information on a Venn diagram.
- (b) Find the number of students who play more than one game.
- (c) Will the students be considered for bursary? Justify your answer.

