

MATHEMATICS

SECTION A:

1. Simplify: i) $1\frac{1}{4} + 2\frac{1}{2} - 1\frac{3}{4}$ ii) $2\frac{1}{2} \times 3\frac{2}{3} \div 1\frac{5}{6}$ (4marks)
2. Find the value of a and b such that
$$\begin{bmatrix} 3 & b \\ 4 & a \end{bmatrix} \begin{bmatrix} 7a \\ 2 \end{bmatrix} = \begin{bmatrix} 43 \\ 30 \end{bmatrix}$$
 (4marks)
3. Solve the equation: $x = \frac{15 - x^2}{2}$ (4marks)
4. Use logarithm tables to evaluate $\frac{22.60}{47.80 \times 0.329}$ (4marks)
correct to 2 decimal places.
5. Express the recurring decimal 0.383838.... as a fraction. (4marks)
6. In a home work marked out of 12, a group of pupils obtained the following marks, 15, 20, 18, 17, 8, 18, 16, 20, 18, 17, 12 and 19. Find the mode and median marks. (4marks)
7. On a map of Mukono drawn to scale of 1 : n , a Vanilla Estate is represented by a rectangle measuring 7.5 mm long and 2.4 mm. If the actual estate area is $72 \times 10^4 \text{m}^2$, find the value of n . (4marks)
8. Find the solution set of the equation $(x - 3)^2 = 4^2$ (4 marks)
9.
$$\begin{bmatrix} 1 & 0 \\ 3 & 1 \end{bmatrix} \begin{bmatrix} x \\ y \end{bmatrix} = \begin{bmatrix} -2 \\ 4 \end{bmatrix}$$

Find the values of x and y . (4marks)
10. Given $\tan \theta = \frac{5}{12}$ and θ is an acute angle, calculate without using tables or calculator, the value of $\cos \theta - \sin \theta$. (4marks)

SECTION B:

11. a) i) Plot on a graph the triangle ABC whose vertices are (1, 1), (3, 2) and (2, 4)

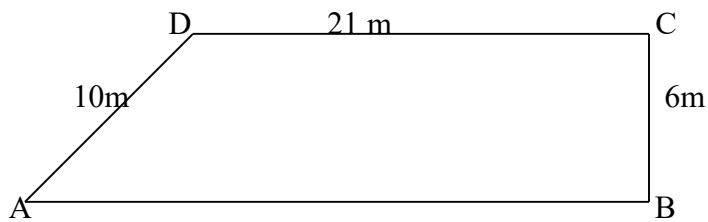
respectively.

- ii) On the same graph, enlarge the triangle ABC using $(-1, -1)$ as the center of enlargement and a scale factor of 2 to obtain its image $A^1B^1C^1$
- iii) State the coordinates of $A^1B^1C^1$ the image of triangle ABC.
- b) Using your graph, find the area of the triangle ABC. Hence, determine the area of the triangle $A^1B^1C^1$.
12. A poultry farm has three poultry units; A, B and C. Unit A produces 30 trays of eggs and 20 broilers every month. Unit B produces 40 trays of eggs and 15 broilers and unit C, 35 trays of eggs and 10 broilers during the same period. If a tray of eggs costs Shs. 6,000= and a broiler Shs.15,000=,
- i) represent the above information in matrix form of order 3×2 for the eggs and broilers,
- ii) form a 2×1 cost matrix produced on the farm for the eggs and broilers.
- iii) find the sales of the farm if all eggs and broilers were sold. (12marks)
13. A sports club of 100 playing members fields three teams A, B and C. The table below shows the number of members who played for the various teams during the season.

A	B	C	A and B	B and C	C and A
50	40	60	20	18	18

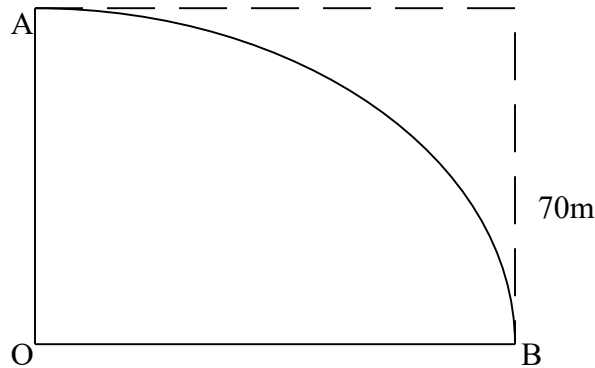
- a) Represent this information on a venn diagram.
- b) Find,
- i) how many members played for all teams?
- ii) how many played for team C only.

14.



The figure ABCD shows a plot of land in form of a trapezium. Lengths $BC = 6\text{m}$, $CD = 21\text{m}$ and $DA = 10\text{m}$.

- a) Find the;
 i) length AB of the plot, ii) area of the plot. (6)
- b) The diagram below shows road AO intersecting road OB at 90° at point O. The two roads are also connected to A and B by an arc- like shape road measuring a quarter of a circle 70m in radius.



Find the distance saved by a motorist who goes through the arc – shaped road instead of going through AO and OB. (6)