Name..... Sign.....

COMPETENCE BASED CURRICULUM

END OF YEAR EXAMINATIONS 2023

UGANDA LOWER SECONDARY CERTIFICATE OF EDUCATION

MATHEMATICS

SENIOR THREE

2 hours

INSTRUCTIONS:

- **Attempt all questions**

SECTION A (40 marks)

1. In a Geography lesson, Alex learnt about the following places; Mount Longonot, Mount Elgon, Mount Meru, Mount Kilimanjaro, Mount Rwenzori, Kenya, Tanzania and Uganda.

(a) Draw an arrow diagram to show the relation amongst the places listed.

(b) What is the domain and the range from your relation?

2. Simplify $(5-\sqrt{3})(2+\sqrt{3})$. Give your answer in the form $a+b\sqrt{3}$. Identify the value of a and b.

3. A number which is a multiple of 3 is chosen at random from a set of even numbers between 1 and 20. What is the probability of choosing the number?

4. There are two screws; one at the top of the sign post and the other in the middle. One of these two screws securing the STOP road sign post dropped. The sign post then hang upside down as shown in figure. If the remaining screw is the center of rotation,

(i) Which of the two screws would be the centre of rotation?

5. A flower garden in the form of a square has an area of X^2-6x+9.

(a) Work out the length of the side.

(b) If the flower garden has an area of 100 square metres, workout the value of x.

6. Mariam and Peter take 30 and 40 minutes respectively to run round a circular track. If they started their race at 8:00 am from the same starting point;

(a) What is the earliest time they will be at the starting point together?

(b) After how many hours will they be at the starting point together?

7. (a) At the class assembly, Senior 3 learners form a pattern of 4 rows by10 columns.

(a) Determine the number of learners at the class assembly?

(b) From your answer obtained in (a) illustrate with the aid of a diagram,

how many possible rectangular patterns you can make?

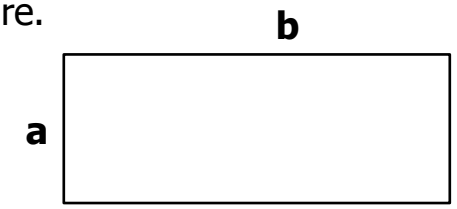
8. A translation described by vector ***T*** transforms a point A (3, -2) to A' (5, 2).

(a) What is the vector translation **T**?
(b) Use the translation obtained in (a) to work out the coordinates of the image of point B (2, 4).

9. A camera price that long stayed in a supermarket was reduced by 20%, then by 25% and finally by 40%. If the final price was 216,000, what was the original price?

SECTION B (60 Marks)

10. A garden of beans is rectangular in shape with length as ***b*** metres and width ***a***
metres as shown in the figure.



(a) Explain how the area of the triangle can be obtained from the rectangular garden if it is divided into two triangles?
(b) Write an expression in terms of the area (A), ***a*** and ***b*** for the area of the triangular portion of the garden.
(c) Copy and draw the rectangle and shade the portion that is represented by the expression you obtained in (b).

(d) The area of the portion you shaded in (c) is $464.52m^2$, the length is $15.24m$. What is the dimension of the width?

11. Two learners were given a task of plotting the following points on the grid. A(0, 4) B (2, 2), C (4, 2), D (2, 0), E (4, -2), F (0, -1), G (-4, -2), H (-2, 0), I (-4, 2)
and J (- 2, 2). Before they plotted the points, Jane told Musa that when plotting, for point A you move 4units to the right of the origin and no

movement along the y-axis from the origin. For point C you move 2 units to the right of the origin and 4 units parallel to the y-axis in the positive direction. Musa said no for point A there is no movement along the x-axis, you only move 4 units along the y–axis. While for point C you move 4 units from the origin on the x- axis, then two units parallel to the y–axis.

(a) Comment with reasons on Jane's explanation of plotting the points.

(b) Using Musa's explanation, plot the coordinates.

(c) Join the points to form a polygon. State the equation of the line of symmetry

12. In a class of 53 members,20 members speak English (E),24 speak Kiswahili(K) and 18 speak French(F),5members speak English and Kiswahili only,3members speak English and French only while 4 members speak Kiswahili and French only,7members do not speak any of the languages

a) Represent this information on a venn diagram.

b) How many people speak all the three languages.

c) Define the number of members who speak English only, Kiswahili only, and French only.

END