BLESSED VICTORS SECONDARY SCHOOL BUWALULA

S3 mid term 3

Mathematics

2 hours

**STUDENT NAME: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_**

**INSTRUCTIONS**

Answer all the questions in both sections.

Show all the working and explanation on the answer sheets provided.

**Section A (40 MARKS)**

1. Draw an abacus and illustrate this expression 4 × 84 + 2× 82 + 4×80 on it.

2. 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?

3. Simplify (5-√3) (2+3). Give your answer in the form a+b√3. Identify the value of a and b.

4. 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?

5. Find the total cost of painting a conical tank of radius 7m and slanting length of 8m if the cost of painting two square meters is she 20,000.

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;

What is the earliest time they will be at the starting point together again?

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

7. 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 boy 1.5 m tall sees a bird at an instant at an angle of elevation of 45 degrees. If the bird is flying at a height 17.5 m determine how far horizontally the bird is from the boy.

10. Four wooden poles with lengths of 168cm, 238cm, 140cm and 210cm are out into pieces which are all of the same length.

Find the greatest length possible for these pieces, if no wood is left over.

**Section B (60 Marks)**

11. 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 464.52*m2*,the length is 15.24*m*. What is the dimension of the width?

12. 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.

13. A regular pyramid with a square base, has a circle inscribed on the base of the pyramid. The edges of the square base of the pyramid are tangent to the circle. If the radius of the circle is 5cm, and each of the slant edges of the pyramid is 13cm;

.a) Sketch a diagram represented by the information provided.

.b) Work out the height of the pyramid.

.c) Find the volume of the pyramid.

.d) Find the area of the part not covered by the circle on the base of the pyramid.

14. Okot wants to paint his room. The floor of the room is 5*m* long and 4*m* wide. The room is 3*m* high. The room has two doors each fixed in the walls that are opposite to each other, both 2*m* high and 75*cm* wide. It has one window in one of the longer walls. It is 1m square.

.a) Draw a sketch of Okot’s room. Indicate the measurements of the floor, height, doors and window.

.b)A painter charges UGX 800 per square meter. How much money will Okot pay for the painter?

.c) A 4-litre tin of paint costs UGX 70,000 and it paints 12*m* square of the wall. The walls already have an undercoat paint.

.i) How many tins would Okot need to buy in order to paint his room?

.ii) How much money will Okot require to paint his room?

A PROBLEM IDENTIFIED IS A PROBLEM SOLVED