

**P456/1**

**MATHEMATICS**

**Paper 1**

**APRIL, 2023**

2 hours: 10 minutes



## **SHAPTA JOINT ASSESSMENT BOARD**

**Uganda Lower Secondary Certificate of Education**

**S.3 MATHEMATICS**

**Paper 1**

2 hours: 10 minutes

### **INSTRUCTION TO LEARNERS**

*Attempt all questions.*

Show all your working clearly

Neat work is a must

1. Use a difference of two squares to evaluate

a.  $63^2 - 37^2$  (3 mks)

b.  $9k^2 - y^2$  (3 mks)

2. Factorize:  $d^2 + 10d + 25$  completely and hence find values of d. (4 mks)

3. Expand:  $(x - 1)(y - 1)$  (4 mks)

4. Fatuma is three times as old as Tom, but the sum of their ages is not more than 32 years. Calculate their greatest possible ages (4 mks)

5. A square of area  $16 \text{ cm}^2$  is enlarged to square of area  $A_2$ . If the linear scale factor is 4. Find are  $A_2$ . (4 mks)

6. Given two sets  $A=\{3,4,5,6,7\}$  and  $B = \{20,21,24,35,36\}$   
(a) Draw a papyrogram for set A to show the relation “is greater than”.  
(3mks)

(b) Draw an arrow diagram to show the relation for two sets “is a factor of” (3mks)

7. Represent  $x \leq 2$  on a number line and state the solution set (4mks)

8. Given the function  $f(x) = 2x + 4$ .

Find (i)  $f(1)$

(2mks)

(ii)  $f(1/2)$

(2mks)

(iii)  $f(x)^{-1}$

(3mks)

9. A circle of area  $81\text{cm}^2$  and radius  $9\text{cm}$  is mapped on to a circle of area  $16\text{cm}^2$  and a diameter  $d$ . calculate the value of  $d$ . (4mks)

10.  $A(1, 3)$ ,  $B(5, 2)$ ,  $C(3, 6)$  are vertices of a triangle  $ABC$ .

- $EFG$  is the image of  $ABC$  under enlargement of scale factor  $-1$  and the center of enlargement  $(4, 1)$ .
- $E'F'G'$  is the image of  $ABC$  under enlargement of scale factor  $-2$  and center of enlargement  $(4, 1)$ .
- $X'Y'Z'$  is the image of  $ABC$  under enlargement of scale factor  $-1.5$  and center of enlargement  $(0, 0)$ . State the coordinates of the triangles.

(Use a graph paper)

- $EFG$
- $E'F'G'$
- $X'Y'Z'$

(12 marks)

11. The mathematics department has organized an exhibition. Your class lacks drawings, sketches to display on that day.

Support: pencil, paper, classroom

Resources: knowledge of similar figures.

Knowledge of enlargement.

Task:

You have been chosen to represent your class in this exhibition. Sitting in your position, draw the following objects in your class room in their actual proportions.

a) Chalkboard

b) Window

c) Door

(12 mks)

**END**