

## Mathematics

**STUDENT'S NAME:** \_\_\_\_\_ **STREAM.....**

☐ Answer all the questions in section A and write the answers in the spaces provided.

Answer **any four QUESTIONS** from section B and each question in this section carries 15marks

1. Elon Musk, this month of October 2022 paid 44 billion dollars to purchase twitter. If he got 45% of the money from selling his assets and rest from a bank loan. What is the value of money he got from selling his assets and Bank in figures?

Sell of his assets	Bank

(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. Given that the inflation rate according to the Bank of Uganda increased by 6.8%, implying that the price of commodities have increased by that mentioned rate? If the price of posho is now 4500/= what is the original price of the commodity?

4. A farmer said he annually spends at least shs 8000 per acre on spraying, weeding shs 24,000 per acre and shs 20,000 on pruning per acre. What is the spending on a farm of 20 acres? (4marks)

5. The sum of two numbers is 27. If one of the numbers is twice the other. Find the numbers. (4marks)

6. Using a relation that  $3x^2 - 2$ , what is the domain if the range is  $\{4, 10, 16, 22\}$

7. Rationalize  $\frac{\sqrt{4} + \sqrt{3}}{\sqrt{4} - \sqrt{3}}$  (04 marks)

8. At the market, Marion had 80,000. She spent  $\frac{1}{4}$  of her money on books and a  $\frac{2}{3}$  of the remainder on open shoes. How much money did she remain with after her spending with transport of 5000? (4marks)

9. Simplify  $\sqrt{98} + 2\sqrt{50} - 14\sqrt{18}$  (4 marks)

10. A promo costs sh.50,000 for equipment and 10,000 per person's costume. If an MTN promo has 20 people participating in it. Form an equation and use it to find the overall cost of the promo? (4marks)

## **SECTION B**

***Answer only four questions from this section***

11. (a) A rectangular garden has a short road passing through its diagonal. The garden is 3km long and 5km wide. What is the length of the road (2marks)
- b) Okello is making a small triangular roof of sides 4cm for his hut. what is the length of the middle pillar.(leave your answer in surd form) (3marks)
- (c) Find the area of the square of side  $(5\sqrt{2} + \sqrt{3})$ cm (5marks)
- (d) Simplify  $\frac{7+2\sqrt{11}}{\sqrt{5}+2}$  (5marks)
12. (a) On the same graph, represent the following inequalities and shade the unwanted regions.
- (i)  $x > -1$
- (ii)  $2y + 3x < 6$
- (iii)  $y \geq 2x - 2$  (11 marks)
- (b) Solve the inequalities below and represent your solutions on a number line.
- (i)  $-3 < 3(x-5)$  (4marks)
- (ii)  $3(2y + 6) < 8y + 10$
13. (a) A rectangular tray measures by 125cm by 75cm. How many cakes can fit on the tray if each cake has a circular base of uniform diameter of 6cm. (9marks)
- (b) Find the radius of the circle given that its area is
- (i)  $17.6\text{cm}^2$  (ii)  $2464\text{dm}^2$  (6marks)
14. The caterer of a school located in Kira Municipality is required to buy food stuffs for a school party. The foodstuffs to be bought include: 100 kg of rice, 150kg of meat and 200kg of Irish potatoes. The cost is UGX 4000, UGX18,000, and UGX1500 per kg of rice, meat and Irish potatoes respectively in Kyaliwajara market. The same items cost UGX. 2500, UGX. 14,000 and UGX. 1,200 per kg of rice, meat and Irish potatoes respectively, in Gayaza market. To hire a pick-up from Kyaliwajara market to school costs UGX 50,000 while a pick-up hire from Gayaza farmers' market is UGX100,000.
- a) Using the information provided above, how would the caterer decide on where to do the shopping from? Justify your answer. (15 Marks)
15. In Uganda, many are worried about the fire problem in schools which is becoming a threatening hazard. Research experts have carried out a survey to investigate the likely cause of the rampant fires in Education institutions. Findings showed that, three categories of stake holders were found to be responsible for the fire outbreaks in Education institutions. 50 respondents said they are learners, 50 respondents said they are parents and 40 respondents said they are school administrators. 10 respondents attributed it to all categories. 15 attributed it to learners and parents, 20 attributed it to parents and school administrators and 15 attributed it to learners and school administrators.
- a) Help the expert researchers to summarize their report and be able to establish number of respondents who attributed it to;
- i. Learners only
- ii. Parents only
- iii. School Administrators only

- b) Find the total number of the respondents in the survey.
- c) What is the probability that the fire problem in schools is attributed to learners? (15 marks)

16. Poor performance in Mathematics was observed among learners. The school administration through academic board came up with strategies to improve on the learner's performance. Some of the strategies are that a prize is given to learners scoring above 70% and a remedial exam be given to learners

scoring at most 45%. A Mathematics examination was given to S. 3 learners and marks were obtained as below;

38	74	28	32	10	31	49	34	50	19
30	56	50	42	38	64	24	64	09	77
18	35	12	52	41	27	08	48	22	21
42	43	52	59	72	70	15	79	29	28

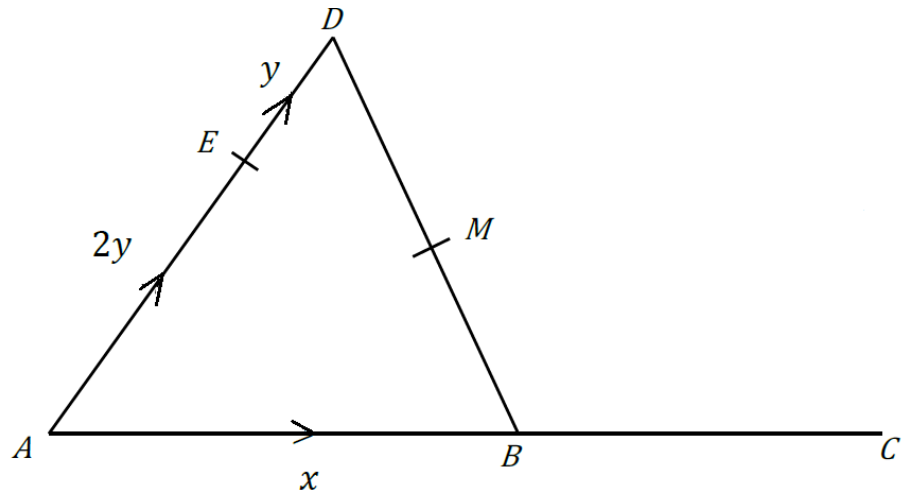
Using a classes with equal class width of 10 marks and starting with a class having the lowest class mark of 1;

a) Help the administration to find;

- The number of learners to be awarded prizes,
- The number of learners to be given remedial examination.

b) What is the average performance of the class? (15 marks)

17. In the triangle ABD,  $\mathbf{AB} = \mathbf{x}$ ,  $\mathbf{AE} = 2\mathbf{y}$  and  $\mathbf{ED} = \mathbf{y}$ . E is a point on  $\mathbf{AD}$ , B is the midpoint of AC and M is the midpoint of DB.



(a) Find, in terms of  $x$  and  $y$ , the vectors which represent:

(i)  $\vec{DA}$ . (ii)  $\vec{DB}$ . (iii)  $\vec{AM}$ .

(b) Show that points  $E$ ,  $M$  and  $C$  lie on a straight line. (15marks)

END