

END OF YEAR ASSESSMENT 2022

Mathematics S.2

Paper 1

2 hours

LEARNER'S NAME: _____

LEARNER'S NUMBER: _____

THIS PAGE IS FOR EXAMINER'S USE ONLY

Do not write in the boxes on this page. The examiner will use them to keep a record of your marks.

Question	1	2	3	4	5						Total
Marks scored											

INSTRUCTIONS

1. Answer all the questions in this paper.
2. Graph paper may be provided.
3. Pay attention to the number of marks available for each question.
4. This paper consists of 80 marks.
5. Show all the working and explanation on the answer sheets provided.

Turn Over

1. (a).(i). Explain why $\sqrt{3}$ is irrational

(ii). Evaluate the expression

$$\frac{2^8 Z^{10}}{2^6 Z^3}$$

(04 marks)

(b).Fatima is saving for a birthday present for his mother and he already has UGX 27,000. Given that he plans to spend at least UGX 180,000 on the present and the birthday is in five weeks, what is the least amount he should save per week?

(04 marks)

2. (a).In a Geography lesson, Alex learnt about the following places: Mount Longonot, Mount Elgon, Mount Meru, Mount Kilimanjaro, Mount Rwenzori, Kenya, Tanzania and Uganda.

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

(ii). What is the domain and the range from your relation? **(04 marks)**

(b).At the class assembly, Senior 2 learners lined up according to their age from the youngest. The first six learners were {Joan, Michael, Regan, Samantha, Peter, Catherine}. It's found that Samantha is 17 years old, Peter is 2 years young than Samantha but one year older than Regan. Joan is 5 year older than Peter, Catherine is 18 years old and Michael is one year older than Catherine.

(i). Show how these learners were standing on the assembly. **(02 marks)**

(ii). Represent the set of these learners on a papygram. **(03 marks)**

(c).Given the mapping $x \rightarrow 2x - 4$, for which $x \in \{-3, 0, 2, 4\}$,

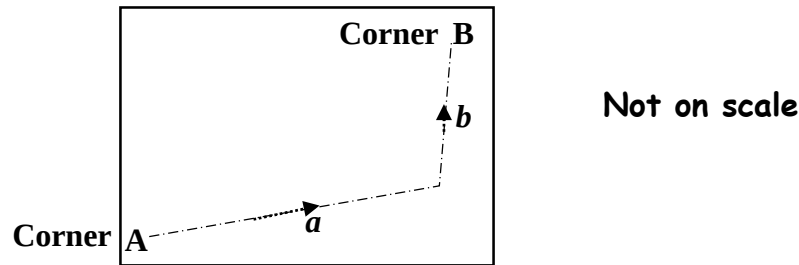
(i). Represent the relation on an arrow diagram. **(04 marks)**

(ii). State the type of mapping and whether the mapping is a function. Give reason. **(02 marks)**

3. The shape **A** has corners at the points with coordinates (4, 2), (4, -1), (6, -3) and (6, 0).

(a). Plot the shape on a graph and name the shape. **(04 marks)**

- (b). The shape is translated along the vector $\begin{pmatrix} 4 \\ -2 \end{pmatrix}$ to give shape **B**.
- (i). Draw shape **B** on these plane and state the coordinates of B.
- (ii). Muwonge drew a reflecting on the x - axis, on your graph, show the reflection line and the image of B with the line.
- (ii). From your graph, indicate a congruent point as Q (06 marks)
- (b). Omal walked from corner A to corner B of the class taking two directions, **a** then **b** to reach B as shown.

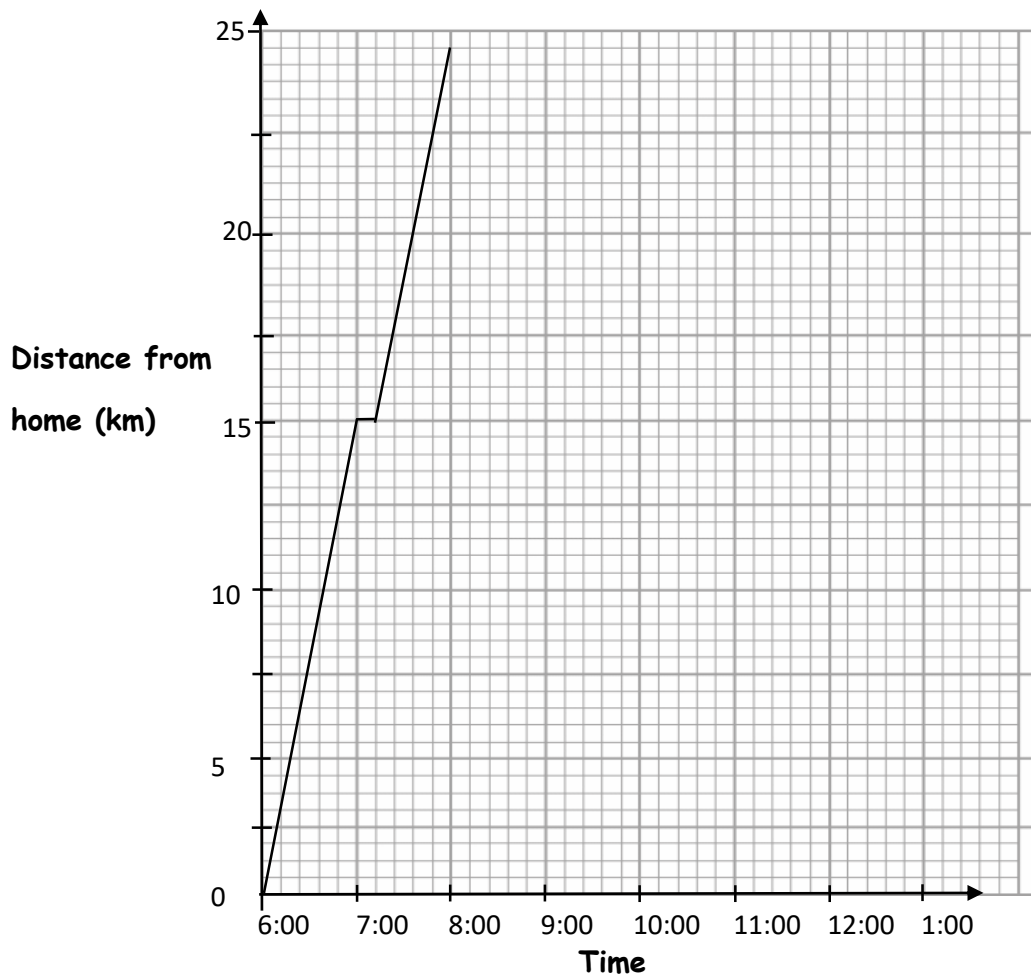


- (i). Omal said in order to **B** from **A**, he moved direction vector $a + b$. Is Omal right, and Why is **a** and **b** a vector. (02 marks)
- (ii). If $a = \begin{pmatrix} 3 \\ -5 \end{pmatrix}$, and $b = \begin{pmatrix} 0 \\ 4 \end{pmatrix}$, represent $a + b$ and $a - b$ on same graph paper. (04 marks)
- (c). Determine the length **AB** moved be Omal. (02 marks)
4. A senior two went to a tailor to sew a new long - sleeved shirt for his uniform. The tailor took the learner's measurements as below.

Part	Measurement (area) in m ²
Collar Band	0.05
Collar	0.08
Pocket	0.55
Sleeve	1.20

- (a). What can you say about the Zero in the measurements of a Collar and that in the measurements of the Sleeve. (02 marks)
- (b). State the number of decimal places and significant figures has the measurements of Collar band, Pocket, and Sleeve. (03 marks)

5. Joram left home at 6:00am to cycle to a park. On His way to school, he stopped at a friend's house and then continued his journey to the school. Below is the distance - time graph for his journey to the school.



- (a). On his journey to school, did Joram cycle at a faster speed before or after he stopped at his friend's house? Give reason for your answer. **(02 marks)**
- (b). Joram stayed at the School for 45 minutes. He then cycled, without stopping, at a constant speed of 16 km/h from the School to his home. Show all this information on the distance - time graph above. **(03 marks)**
- (c). Calculate Joram's average cycling speed, in kilometres per hour, for the complete journey to the school and back home. (Do not include the times when she was not cycling in your calculation. **(04 marks)**

END