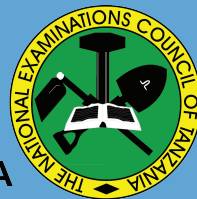




THE UNITED REPUBLIC OF TANZANIA
MINISTRY OF EDUCATION, SCIENCE AND TECHNOLOGY
NATIONAL EXAMINATIONS COUNCIL OF TANZANIA



PUPILS' ITEM RESPONSE ANALYSIS REPORT ON THE STANDARD FOUR NATIONAL ASSESSMENT (SFNA), 2024

MATHEMATICS



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04E MATHEMATICS

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FOREWORD

The Mathematics Pupils' Items Response Analysis report on Standard Four National Assessment (SFNA) 2024 has been prepared to enable pupils, teachers, curriculum developers, policy makers and other education stakeholders to understand how pupils responded to the assessment questions.

The report has four sections which are the introduction, analysis of the pupils' performance in each question, analysis of the pupils' performance in each competence, conclusion and recommendations.

In this report, factors that contributed to the pupils' performance in each question are outlined. The analysis of data shows that in 2024, the pupils' performance was good because 71.40 percent of the 1,530,456 pupils passed the assessment. The good performance was contributed by the pupils' ability to answer correctly at least four out of five parts of each question in the specific competencies assessed.

However, 1,063,514 pupils equivalent to 69.49 percent had weak performance on the specific competence of Applying Number relations to Solve Problems in Different Contexts. The weak performance was due to pupils' failure to read hours and minutes, add hours and minutes, add Tanzanian shillings, multiply Tanzanian shillings and inability to master the skills of Writing and Arithmetic.

Further analysis shows that pupils had a good performance on *Applying the concepts of Shapes and Figures to Solve Different problems*, *Applying the Concept of Numbers to Communicate Ideas and Concepts in Different Contexts* and *Applying Statistical Skills to Present Different Information*. Therefore, the recommendations provided in this report will enable education stakeholders in improving pupils' performance on the assessed specific competencies in the future.

The National Examinations Council of Tanzania would like to express its appreciation to the Examinations Officers and other experts who participated in preparing this report.



Prof. Said A. Mohamed
EXECUTIVE SECRETARY

1.0 INTRODUCTION

The Standard Four National Assessment in Mathematics subject was conducted on 24th October 2024. A total of 1,633,272 pupils were registered, of whom 1,530,560 equivalent to 93.71 percent, participated in the Mathematics assessment.

The analysis of the 2024 Mathematics assessment results shows that 1,092,786 pupils equivalent to 71.40 percent, passed. In 2023, 834,119 pupils, equivalent to 54.00 percent, passed. This shows a 17.40 percent increase in pupils’ performance when compared to the 2023 results. The comparison of the pupils’ performances in the year 2024 and 2023 assessment across different grades is as indicated in Figure 1.

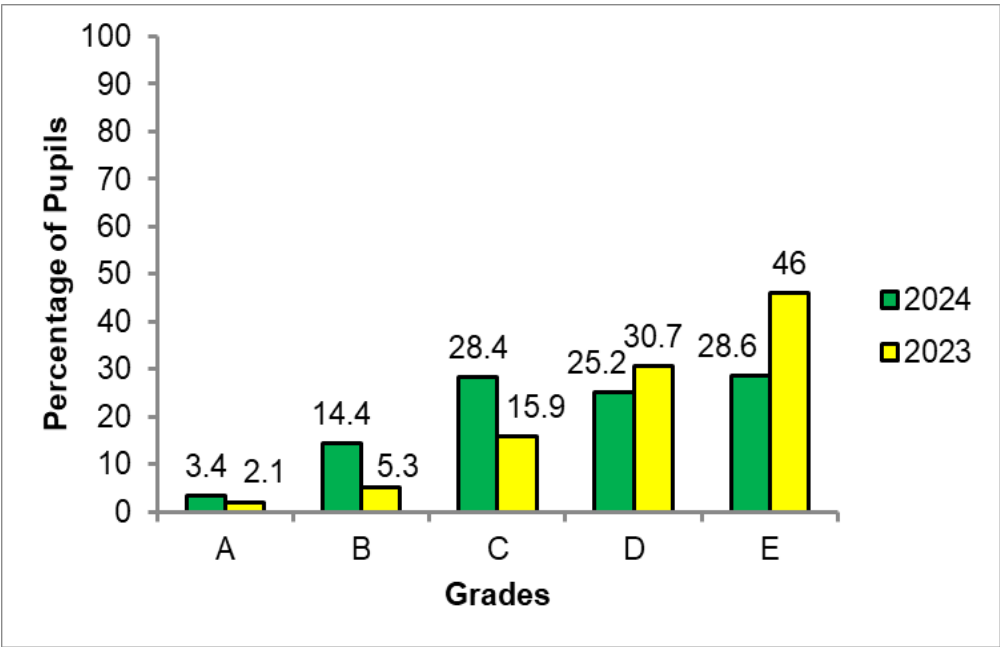


Figure 1: Comparison of pupils’ grades in 2024 and 2023

The mathematics assessment paper consisted of five (5) questions. Each question had five (05) parts namely (a), (b), (c), (d), and (e). The correct answer in each part was awarded two (02) marks. Thus, each question weighed ten (10) marks, making a total of 50 marks for the entire paper.

The pupils' responses to each question have been analysed to identify why they passed or failed. Samples of some pupils' responses have been presented to illustrate how they responded to the questions.

The pupils' responses to each question are analyzed in order to identify the reasons that made them pass or fail. Samples of Extracts from some of the pupils' responses have been presented to show how they responded to the questions.

The percentage of pupils who passed each question has been used to determine the performance levels. In the analysis, the performance levels for each question are divided into four categories as follows: 10 marks is "very good performance," 8 marks is "good performance," 4 to 6 marks is "average performance," and 0 to 2 marks is "weak performance." On the other hand, the performance levels for each specific competence assessed was done based on the percentage of pupils who passed that particular specific competence, where; 67 – 100 indicates good performance, 34 – 66 indicates average performance, and 0 - 33 is a weak performance.

2.0 ANALYSIS OF PUPILS' RESPONSES TO EACH QUESTION

In this report, statistics of the pupils' performance on each question or specific competence have been presented using charts or tables to show the pupils' performance on each question. Furthermore, green,

light green, yellow, and red colours have been used to represent the performance levels, namely “very good”, “good”, “average”, and “poor”, respectively.

Generally, the analysis of the pupils' responses shows that the pupils' performance was good in questions 4, 1, and 5, average in question 2, and weak in question 3. In this section, each question is analysed based on the pupils' performance. Sample extracts have been used to support the pupils' responses on each question.

2.1 Question 1: Applying the Concepts of Numbers to Communicate Ideas and Concepts in Different Contexts

This question had five parts that assessed the pupils' competence in applying the concepts of whole numbers to communicate in different contexts, as follows:

(a)
$$\begin{array}{r} 78 \\ + 11 \\ \hline \end{array}$$

(b)
$$\begin{array}{r} 746 \\ + 437 \\ \hline \end{array}$$

(c) Write the following number in short form:
 $300+60+5 =$

(d) Write 345 in expanded form.

(e) Write XXV in Arabic numbers.

This question assessed the pupil's ability in: (a) adding two-digit numbers vertically, (b) adding three-digit numbers vertically, (c) writing the sum of 300, 60, and 5 in short form, (d) writing the number 345 in expanded form, and (e) writing XXV as an Arabic number.

The statistical analysis shows that pupils' performance on this question was good, with 1,209,492 pupils (79.02%) scoring 4 to 10 marks. Among them, 35.11 percent scored all 10 marks. However, 321,066 pupils (20.98%) had weak performance, and among them, 144,330 pupils (9.7%) did not score any marks. A summary of the performance levels for question 1 is shown in Figure 2.

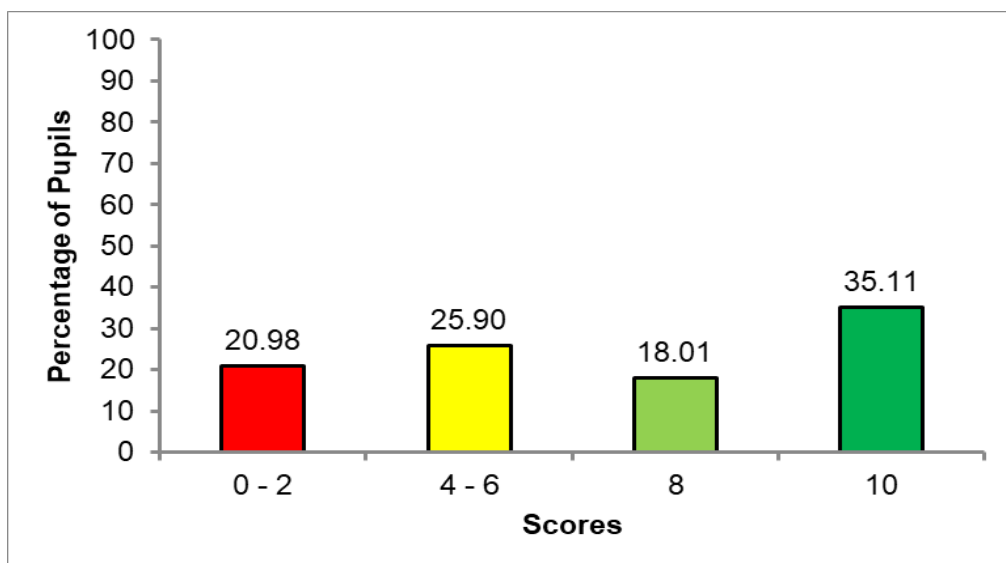


Figure 2: *Pupils' performance on Question 1*

Figure 2 shows that more than one third of pupils (35.11%) scored all ten marks. These pupils were able to correctly use the concept of numbers to communicate in different contexts. In part (a), they

managed to add the two-digit numbers and recognize the position of digits, resulting in 89. In part (b), they successfully added the three-digit numbers and identified the positions of the digits to obtain 1,183.

In part (c), they correctly added 300, 60, and 5 to get 365, which is the short form of the number $300 + 60 + 5$. In part (d), they successfully expanded 345 to get $300+40+5$. In part (e), they correctly wrote the number 25 after recognizing the value of each character used to form the Roman numeral XXV. A sample of correct responses for question 1 is shown in Extract 1.1.

No	Question	Working Space	Answer
1. (a)	$\begin{array}{r} 78 \\ + 11 \\ \hline \end{array}$	$\begin{array}{r} 78 \\ + 11 \\ \hline 89 \\ \hline \end{array}$	=89
(b)	$\begin{array}{r} 746 \\ + 437 \\ \hline \end{array}$	$\begin{array}{r} 746 \\ + 437 \\ \hline 1183 \\ \hline \end{array}$	=1183
(c)	Write the following number in short form: $300+60+5 =$	$\begin{array}{l} = 300 + 60 + 5 = \\ = \text{to arrange in vertical way} \\ \begin{array}{r} 300 \\ 060 \\ + 005 \\ \hline 365 \end{array} \end{array}$	=365

(d)	Write 345 in expanded form.	hundred tens ones $300 + 40 + 5$	$300 + 40 + 5$
(e)	Write XXV in Arabic numbers.	$XXV = 25$	25

Extract 1.1: A sample of the correct response to Question 1

In Extract 1.1, a pupil demonstrated mastery in answering questions by correctly applying the concept of numbers to communicate in different contexts.

On the other hand, 20.98 percent of pupils scored 0 to 2, which indicates weak performance. The pupils' poor performance was due to the pupils' inability to use the concept of numbers to communicate in different contexts. In part (a), they had insufficient knowledge of adding two-digit numbers vertically. These pupils added and subtracted numbers that were given at the same time. For instance, several pupils wrote $78 + 11$ equals 69, instead of 89.

In part (b), the pupils were unable to add three digits numbers vertically due to lack of skills in placing digits to thousands, hundreds, tens, and one's places. Therefore, most failed to place 1 in the thousands position. For instance, a number of pupils responded to $746 + 487$ by providing incorrect answers such as 183, 283 and 1831.

In part (c), some pupils were unable to distinguish between writing numbers in short form and in words. For example, one pupil wrote $300 + 60 + 5$ is equal to three thousand sixty-five instead of 365. Others combined 300, 60, and 5 incorrectly to get 300,605 without following the rule for adding three numbers horizontally.

In part (d), they failed to combine 300, 40 and 5 using addition operation to get the expanded form of 345 which is $300+40+5$. For example, one pupil added a zero to 300 and 40 to get $345 = 3,000 + 400 + 5$. In part (e), they were unable to add the value of each of the Roman numbers in XXV to get 25. For instance, several pupils combined the value of each letter in XXV locally to get 10,105 instead of 25. A sample of incorrect responses from the pupil who answered question 1 is shown in Extract 1.2.

(d)	Write 345 in expanded form.		There fore form is 543
(e)	Write XXV in Arabic numbers.		There for Arabic number is 65

Extract 1.2: A sample of an incorrect response to Question 1

Extract 1.2 shows the incorrect responses of a pupil who failed to use the concept of numbers to communicate ideas and concepts in different contexts. In part (d), the pupil failed to place 3, 4 and 5 in the thousands, hundreds and ones place respectively. In part (e), the pupil failed to write XXV as an Arabic number as they did not recognize the value and position of each digit in the Roman numeral.

2.2 Question 2: Applying the Concepts of Patterns to Solve Real life Problems

The question had five parts that assessed the pupils' competence in applying the concepts of patterns to solve real life problems. The question was as follows:

- (a) Write the next number in the following sequence of numbers: 1, 3, 5, 7, _____.
- (b) Arrange the following numbers starting from the smallest to the largest: 23, 12, 34, 21, 32, 43, 18.
- (c) Write the missing number in the following sequence of Roman numbers: XII, XIV, XVI, _____, XX.
- (d) Fill in the missing number in the following sequence of numbers: 998, 999, 1000, _____.
- (e) Nguvumali village harvested maize for 5 years. Each year had an increase of 50 sacks. If 300 sacks were harvested in the first year, how many sacks were harvested in the fifth year?

This question assessed the pupils' ability in: (a) identifying the missing number in a sequence of numbers increasing by 2, (b) arranging numbers in ascending order from smallest to largest, (c) writing the missing number in a sequence of Roman numerals, (d) filling in the missing number in a sequence of numbers decreasing by 1, and (e) solving a word problem involving a sequence of numbers increasing by 50.

The analysis of the data shows that 1,530,558 pupils attempted this question. Among them, 627,924 pupils equivalent to 41.02 percent

scored 0 to 2, 578,878 pupils equivalent to 37.83 percent scored 4 to 6, 261,953 pupils equivalent to 17.11 percent scored 8, while 61,803 pupils equivalent to 4.04 percent scored 10. In this question, the overall pupils' performance was good because 79.02 percent of pupils scored 4 to 10. A summary of their performance is shown in Figure 3.

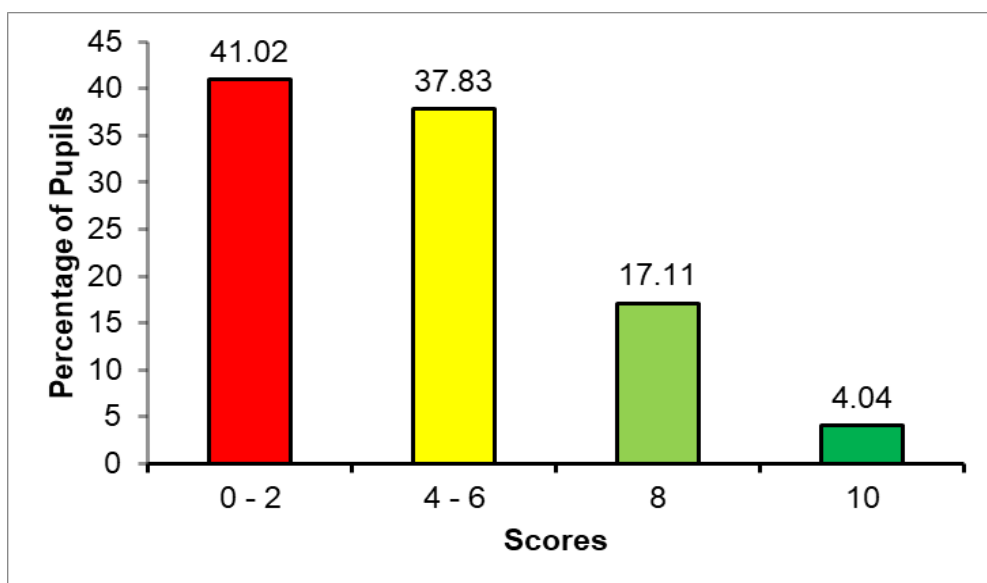
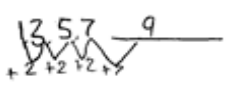
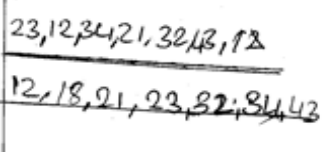
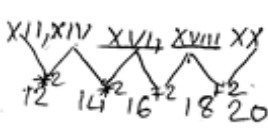
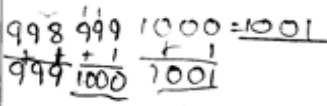
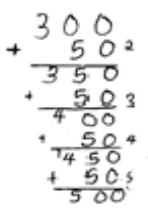


Figure 3: *Pupils' Performance on Question 2*

Figure 3 shows that a majority of the pupils performed well. In part (a), they were able to recognize that the numbers in the provided sequence differ by 2. Therefore, they added 7 and 2 to get the correct answer, which is 9. In part (b), they arranged the numbers in a sequence from smallest to largest and got 12, 18, 21, 23, 32, 34 and 43. In part (c), they were able to determine that the missing number from the given sequence of Roman numerals is XVIII.

In part (d), they recognized that the numbers in the sequence 998, 99, 1000, ___ differ by 1. As a result, they added 1000 and 1 to obtain 1001. In part (e), they used the data in the given word problem to form

the sequence 300, 350, 400, 450, 500. From this, they deduced that in the 5th year, the villagers harvested 500 sacks. A sample of the correct responses is shown in Extract 2.1.

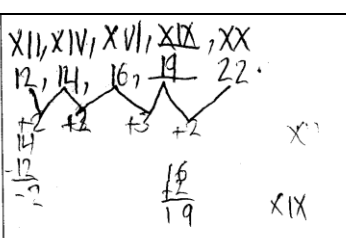
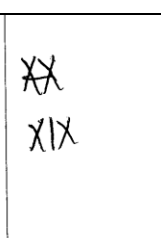
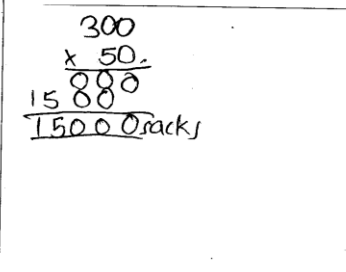
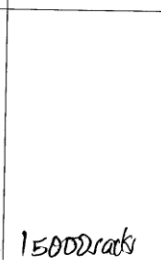
2. (a)	Write the next number in the following sequence of numbers: 1, 3, 5, 7, _____.		9
(b)	Arrange the following numbers starting from the smallest to the largest: 23, 12, 34, 21, 32, 43, 18.		<u>12, 18, 21, 23, 32, 34, 43</u>
(c)	Write the missing number in the following sequence of Roman numbers: XII, XIV, XVI, ____, XX.		<u>XVIII</u>
(d)	Fill in the missing number in the following sequence of numbers: 998, 999, 1000, ____.		<u>1001</u>
(e)	Nguvumali village harvested maize for 5 years. Each year had an increase of 50 sacks. If 300 sacks were harvested in the first year, how many sacks were harvested in the fifth year?		= 500 sacks.

Extract 2.1: A sample of the correct responses to Question 2

In Extract 2.1, the pupil provided correct answers to all parts of the question.

Conversely, 378,953 pupils (24.76%) did not score any marks. In part (a), they failed to identify that the numbers in the given sequence were odd numbers. For example, several pupils wrote 8. Others combined 9 and 11 to get 911. In part (b), many pupils arranged the given numbers

from largest to smallest, writing 43, 34, 23, 21, 18, 12 instead of 12, 18, 21, 23, 32, 34, 43. In part (c), they failed to identify the missing Roman numeral in the given sequence of Roman numerals. For example, many pupils combined "I" and the Roman numeral before the blank space to get XVII. Others wrote the missing number in Arabic numerals (18) contrary to the requirements of the question. In part (d), many pupils combined 1000 and 1 to get 10001. In part (e), many pupils multiplied 300 and 50 to get 15,000 instead of 500. Extract 2.2 shows part of the pupil's incorrect responses to question 2.

(c)	Write the missing number in the following sequence of Roman numbers: XII, XIV, XVI, ____, XX.		
(e)	Nguvumali village harvested maize for 5 years. Each year had an increase of 50 sacks. If 300 sacks were harvested in the first year, how many sacks were harvested in the fifth year?		

Extract 2.2: A sample of incorrect responses to Question 2

Extract 2.2 shows that in part (c), the pupil had the misconception that the numbers in the given sequence differ by 3 instead of 2. In part (e), the pupil did not understand the requirements of the question.

2.3 Question 3: Applying Number Relations to Solve Problems in Different Contexts

This question had five parts, which assessed the ability of pupils to apply the concepts of basic mathematical operations to solve problems. The question was as follows:

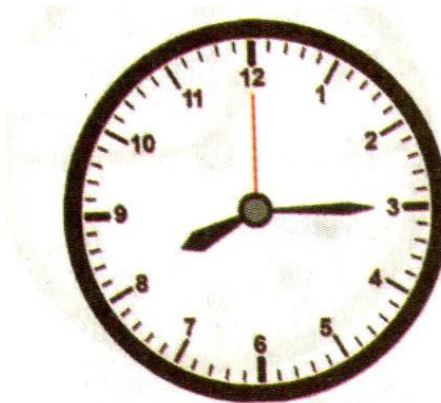
(a) Add; sh. 2150 + sh. 950 =

(b) Multiply;

Sh. 250

× 30

(c) Write the time indicated on the clock in words.



(d) Write quarter to two in numerals.

(e) Hours minutes

4 30

+2 45

This question assessed pupils' ability in: (a) adding money horizontally, (b) multiplying money by a number vertically, (c) writing the given time

on a clock, (d) writing the given time in numerals, and (e) adding time in hours and minutes.

The analysis of data shows that 1,530,558 pupils attempted this question. Among them 1,063,514 pupils equivalent to 69.49 percent scored 0 to 2, with 715,936 pupils (46.78%) scoring 0. Further analysis shows that 336,588 pupils (21.99%) scored 4 to 6 marks and 45,742 pupils (2.99%) scored 10 marks. Figure 4 presents a summary of the pupils' performance on question 3.

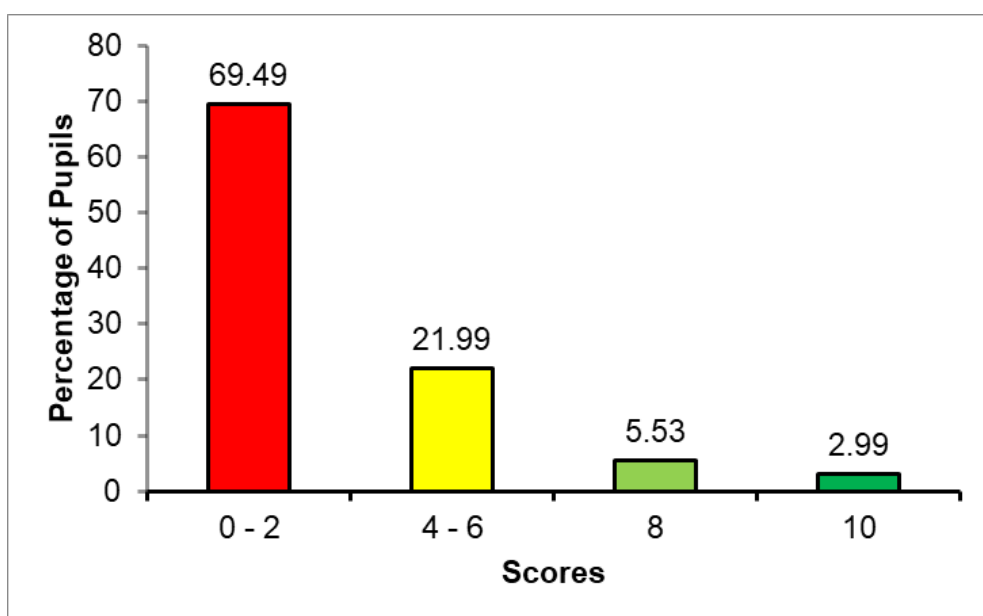


Figure 4: *Pupils' Performance on Question 3*

As shown in Figure 4, most pupils performed poorly. The pupils' poor performance was due to their inability to apply number relations to solve problems in different contexts. In part (a), they failed to add the given amounts of money correctly. For example, many pupils added 2,150 and 950 shillings and got 2,100 instead of 3,100 shillings. In part (b), they failed to multiply money by a two-digit number. For instance,

one pupil multiplied 250 shillings by 30 and got 280 shillings. Another pupil got 80 instead of 7500 shillings.

In part (c), they failed to read the time shown on the clock diagram that they were given. These pupils had insufficient knowledge about the types of hand on the clock and the theory behind the hour hand and the minute hand. For example, several pupils wrote “two o’clock and three minutes,” others wrote eight three,” while some wrote “eight o’clock and three minutes,” instead of “eight o’clock and fifteen minutes.” In part (d), they failed to write the given time in numbers. For example, one pupil wrote “2:45” instead of “1:45.” In part (e), they failed to add hours and minutes correctly. For instance, many pupils were unable to move the extra hour from the minutes to the hours side and thus wrote 75 instead of 15. A sample of an incorrect answer provided by one of the pupils is presented in Extract 3.1.

No	Question	Working Space	Answer
(c)	Write the time indicated on the clock in words. 	half past eight	
(d)	Write quarter to two in numerals.		

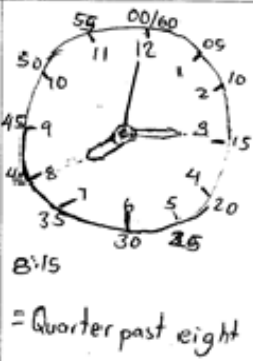
(d)	Write quarter to two in numerals.																								
(e)	<table border="1"> <thead> <tr> <th>hours</th> <th>minutes</th> </tr> </thead> <tbody> <tr> <td>4</td> <td>30</td> </tr> <tr> <td>+2</td> <td>45</td> </tr> <tr> <td colspan="2"> </td> </tr> <tr> <td colspan="2"> </td> </tr> </tbody> </table>	hours	minutes	4	30	+2	45					2:42:15 <table border="1"> <thead> <tr> <th>hour</th> <th>Minutes</th> </tr> </thead> <tbody> <tr> <td>4</td> <td>30</td> </tr> <tr> <td>2</td> <td>45</td> </tr> <tr> <td>6</td> <td>75</td> </tr> </tbody> </table>	hour	Minutes	4	30	2	45	6	75	2:15 <table border="1"> <thead> <tr> <th>h</th> <th>m</th> </tr> </thead> <tbody> <tr> <td>6</td> <td>75</td> </tr> </tbody> </table>	h	m	6	75
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Extract 3.1: A Sample of an incorrect response to question 3

In Extract 3.1, in part (c), a pupil failed to identify and write the time in words as indicated on the clock. In part (d), a pupil failed to convert the given hours from words to numerals. In part (e), a pupil failed to understand the relationship between hours and minutes, specifically that 1 hour is equal to 60 minutes.

Despite the pupils' poor performance, 45,742 pupils (2.99%) scored all ten marks. These pupils were able to correctly add 2150 and 950 shillings to get 3,100 shillings in part (a). In part (b), they correctly multiplied 250 shillings by a two-digit number (30) to get 7500 shillings. In part (c), they were able to identify that the short hand is used to read the hours and long hand is used to read the minutes, thus they correctly wrote the time shown on the clock as "quarter past eight." Others used the hour hand for minutes and the minute hand for hours, thus writing three o'clock and eight minutes instead of eight o'clock and fifteen minutes. In part (d), they correctly wrote 1:45 in numeral to represent quarter to two. In part (e), they correctly added hours and minutes. Additionally, they successfully moved the extra 1 hour from

the minutes side to the hours side, resulting in a total of 7 hours and 15 minutes. A sample of a correct response from one of the pupils who attempted the question is shown in Extract 3.2.

3. (a)	Add; sh. 2150 + sh. 950 =	$\begin{array}{r} 2150 \\ + 950 \\ \hline 3100 \end{array}$	<u>3100sh</u>
(b)	Multiply; Sh. 250 x 30 _____	$\begin{array}{r} \text{Sh. } 250 \\ \times 30 \\ \hline 7500 \\ \hline 7500\text{sh} \end{array}$	<u>7500sh</u>
(c)	Write the time indicated on the clock in words. 	 8:15 = Quarter past eight	= Quarter past eight
(d)	Write quarter to two in numerals.	Quarter to = 45 Two = 2 = 2:45 = 1:45	= 2:45 = 1:45
(e)	hours minutes 4 30 +2 45 _____ _____	Hours minutes 4 30 + 2 45 ----- 6 75 +1 -60 ----- 7 15	= Hr Min 7 15

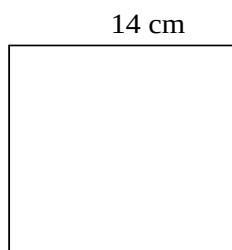
Extract 3.2: A sample of the correct response to Question 3

In Extract 3.2, the pupil was able to add and multiply money in parts (a) and (b). In part (c), the pupil correctly wrote the time shown on the clock in words. In part (d), the pupil represented the given time in numeral correctly.

2.4 Question 4: Applying the Concepts of Shapes and Figures to Solve Different Problems

Question 4 had five parts that assessed pupils' competence in applying the concepts of shapes and figures to solve different problems as follows:

- (a) How many angles are there in a square?
- (b) Draw a shape with three angles.
- (c) Find the perimeter of the following square:



- (d) A dispensary room has a shape of a rectangle with perimeter of 54 m. If its length is 17 m, find the width of the room.
- (e) The perimeter of the triangle is 70 cm. If the length of the first side is 24 cm and the second side is 25 cm, find the length of the third side.

This question assessed pupils' ability in applying shape and figures skills in mathematical contexts as follows: (a) stating the total number of angles in a square, (b) being able to draw a shape with three angles,

(c) finding the perimeter of a square, (d) solving a problem involving the perimeter of a rectangle, and (e) solving a problem related to the perimeter of a triangle.

The statistical analysis shows that a total of 1,591,702 pupils attempted this question. Among them, 1,240,275 (81.03%) pupils scored 4 to 10 marks, and therefore they performed well. However, 290,083 (18.97%) pupils had poor performance in this question, scoring 0 to 2 marks. A summary of the pupils' performance in question 4 is shown in Figure 5.

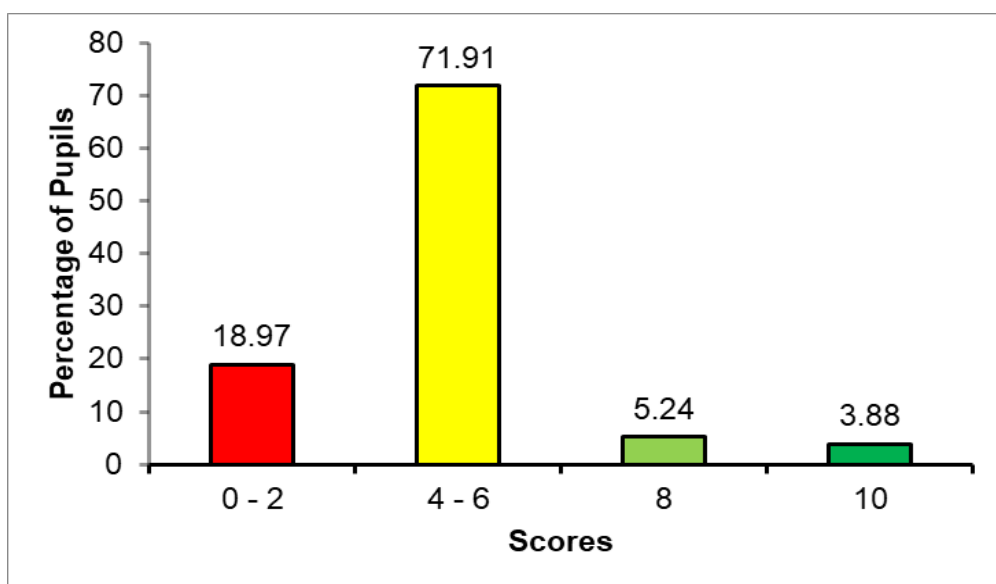
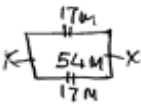


Figure 5: *Pupils' Performance in Question 4*

A total of 59,393 pupils equivalent to 3.88 percent who scored all ten marks understood that a square has four angles in part (a). In part (b), they were able to draw a diagram with three angles. In part (c), they correctly calculated the perimeter of a square with a length of 14 m and got 56 cm. In part (d), they were able to solve the given word problem by using the formula for calculating the perimeter of a rectangle, which

is perimeter = (length+width)×2, and obtained 10 metres which is the length of the rectangle. In part (e), they correctly used the given perimeter of the triangle, which is 70 cm, the length of the first side (24 cm), and the second side (25 cm), along with the formula for calculating the perimeter (perimeter of a triangle = length + length + length). Furthermore, they correctly computed the third side of the triangle as 21 cm. A sample of the correct response for question 4 is shown in Extract 4.1.

No	Question	Working Space	Answer
4. (a)	How many angles are there in a square?		4 angles
(b)	Draw a shape with three angles.		
(c)	Find the perimeter of the following square: 14 cm 	$P = 5 + 5 + 5 + 5$ $P = 14 + 14 + 14 + 14$ $P = 28 + 28$ $P = 56 \text{ cm}$	56 cm

(d)	A dispensary room has a shape of a rectangle with perimeter of 54 m. If its length is 17 m, find the width of the room.	 $ \begin{aligned} w &= \frac{p - 2l}{2} \\ w &= \frac{54 - 17 - 17}{2} \\ w &= \frac{54 - 34}{2} \\ w &= \frac{20}{2} \\ w &= 10 \end{aligned} $	$w = 10 \text{ m}$
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Extract 4.1: A sample of the correct response to Question 4

In Extract 4.1, the pupil had sufficient skills in various types of shapes in parts (a) and (b). In parts (c), (d) and (e), the pupil was competent in using the formulae for calculating the perimeter of various shapes such as a square, rectangle and triangle.

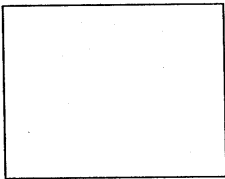
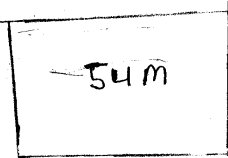
On the other hand, 141,976 pupils (9.28%) did not score any mark. In part (a), they were unable to state the number of angles in a square. For example, one pupil drew a triangle and then stated that the number of angles in the drawing is 3. Another pupil drew a drawing with three adjacent angles. In part (b), they failed to draw a shape with three angles. For instance, several pupils wrote “3” while others wrote incorrect answers such as a square, rectangle and triangle.

In part (c), they failed to recall the formula for calculating the perimeter of a square. For example, one pupil multiplied the length of one side 14 cm by 2 and got 28 cm instead of 56 cm. Another pupil added the lengths of the four sides of the square and got 30 cm instead of 56 cm.

In part (d), they failed to solve a word problem that required the use of the formula for calculating the perimeter of the rectangle. For example, some pupils added the perimeter and the length of the square and got

71 metres. Other pupils calculated the difference between the perimeter and the length of the rectangle as $(\text{length} + \text{width}) \times 2$, but they incorrectly regarded the perimeter as the length and the length as the width i.e, $(54+17) \times 2 = 142$.

In part (e), they failed to use the formula for calculating the perimeter of a triangle to calculate the length of the third side. For instance, some pupils drew a triangle and wrote 24, 25 and 70 on the three sides of the triangle respectively. Others assumed that the lengths of the sides of the triangle differ by 1 cm, so they added 25 cm and 1 cm, getting the length of the third side equal to 26 cm. Other pupils correctly recalled the formula for calculating the perimeter for a triangle $(a+b+c)$, but they mistakenly treated the perimeter as part of the length of the triangle. Therefore, they added 70, 24 and 25 and got 119 cm. A sample of a pupil's incorrect response is shown in Extract 4.2.

(c)	Find the perimeter of the following square:  14 cm	$\begin{array}{r} 14 \\ 14 \\ 14 \\ 14 \\ \hline 56 \end{array}$ $\begin{array}{r} 34 \\ 48 \\ \hline 82 \end{array}$ $\begin{array}{r} 56 \\ \hline 42 \end{array}$ $\begin{array}{r} 41 \\ 14 \\ \hline 55 \end{array}$	41
(d)	A dispensary room has a shape of a rectangle with perimeter of 54 m. If its length is 17 m, find the width of the room.	 54 m $\begin{array}{r} 17 \\ 17 \\ \hline 34 \end{array}$ $\begin{array}{r} 34 \\ 17 \\ \hline 51 \end{array}$	34 m 3

Extract 4.2: A sample of an incorrect response to Question 4

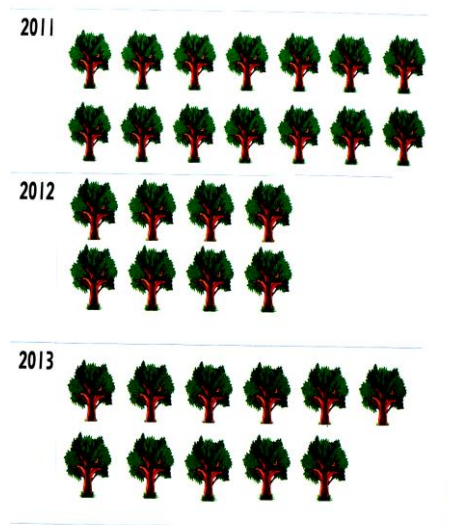
Extract 4.2 shows that in part (c), the pupil incorrectly summed the four sides of the square to 41 instead of 56. In part (d), the pupil multiplied the length of a rectangle by 2 to get 34 cm instead of 54 cm. In part (e), the pupil added the lengths of the sides of a triangle.

2.5 Question 5: Applying Statistical Skills to Present Different Information

This question had five parts which assessed the pupils' competence in applying the concepts of statistics to present different pieces of information.

The question was as follows:

Use the data in a picture to answer the questions that follow:



- (a) How many trees were planted in 2011?
- (b) Which year had the smallest number of trees?
- (c) What is the difference in the number between the trees planted in 2011 and 2012?

- (d) Which year had the largest number of trees been planted?
- (e) How many trees were planted in all three years?

This question assessed the pupils' ability to: (a) calculate the total number of trees planted in 2011, (b) identify the year in which fewer trees were planted, (c) calculate the difference in the number of trees planted in 2011 and 2012, (d) determine the year in which the most trees were planted, and (e) calculate the total number of trees planted over the three years.

The analysis shows that 378,749 pupils (24.75%) scored 0 to 2 marks; 395,607 pupils (28.15%) scored 4 to 6; 471,140 pupils (28.48%) scored 8 marks, and 285,062 pupils (18.62%) scored all ten marks. Overall, the pupils performed well, as 1,151,809 pupils (75.25%) scored 4 to 10 marks. Figure 6 summarizes their performance on Question 5.

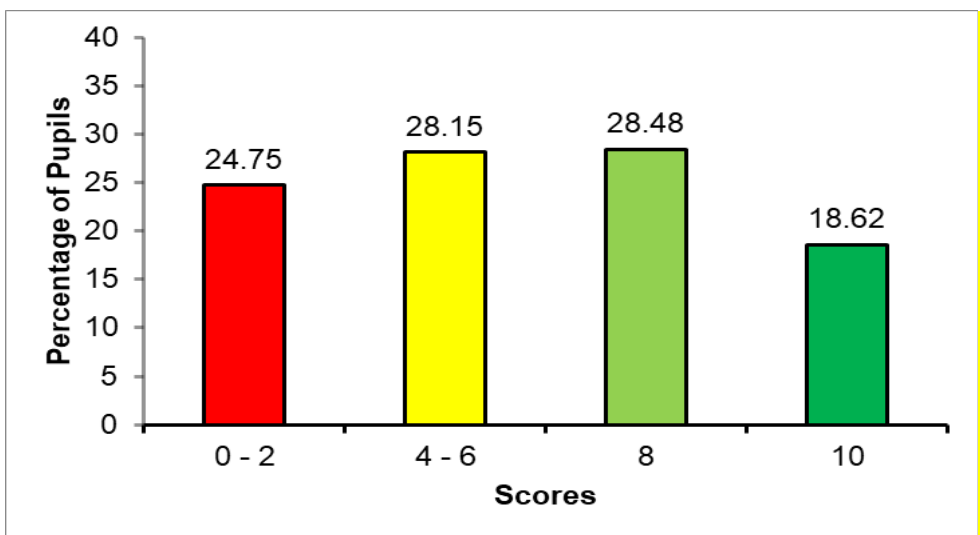


Figure 6: *Pupils' Performance on Question 5*

As it is observed in Figure 6, 35.11 percent of the pupils who answered this question provided correct responses. In part (a), they were able to correctly calculate the number of trees planted in 2011 and obtained 14. In part (b), they correctly identified that 2012 was the year when fewer trees were planted. In part (c), they were able to count the trees planted in 2011 and 2012, getting 14 and 8 respectively. They then subtracted 8 from 14 and obtained 6, which is the difference in the number of trees planted in 2011 and 2012. In part (d), they correctly identified that 2012 was the year when the most trees were planted. In part (e), they correctly added 14, 8, and 11, which represent the number of trees planted in 2011, 2012, and 2013 respectively, and then found that the total number of trees planted over the three years was 33. Extract 5.1 is a sample of correct responses of one of pupils who responded question 5.

No	Question	Working Space	Answer
	2011  = 14 2012  = 8 2013  = 11		
(a)	How many trees were planted in 2011?	14 trees	14 trees
(b)	Which year had the smallest number of trees?	2012	2012
(c)	What is the difference in the number between the trees planted in 2011 and 2012?	$\begin{array}{r} 14 \\ - 8 \\ \hline 6 \end{array}$	6 trees

(d)	Which year had the largest number of trees been planted?	2011	2011
(e)	How many trees were planted in all three years?	$ \begin{array}{r} 14 \\ 8 \\ \hline 11 \\ 33 \end{array} $	33 trees

Extract 5.1: A sample of a correct response to question 5

Extract 5.1 shows that the pupil used correctly the pictures representing the number of trees that were planted in 2011, 2012 and 2013 and also provided the correct answers to all five parts of Question 5.

Despite the pupils' good performance, there were 288,813 pupils equivalent to 18.62 percent, who did not score any marks. In part (a), they failed to calculate the number of trees planted in 2011. For example, one pupil wrote that only one tree was planted. In part (b), they failed to analyse the number of trees planted in 2011, 2012, and 2013, and then identify the year in which fewer trees were planted.

In part (c), they failed to understand the requirements of the question. For example, a number of pupils added the years mentioned and got 4023 instead of 8 trees. In part (d), they failed to identify the year in which many trees were planted. Many wrote 14, which was the number of trees planted, instead of the correct year. Furthermore, some gave answers that did not abide by the question's requirements. For example, one pupil wrote Thursday and Saturday. In part (e), they failed to understand the requirements of the question. For example, a large number of pupils added the years 2011, 2012, and 2013, getting 6036 instead of finding the total number of trees planted over all three years. Extract 5.2 shows parts of incorrect answers to this question.

(a)	How many trees were planted in 2011?	$\begin{array}{r} 2010 \\ +2013 \\ \hline 4024 \end{array}$	<u>4024</u>
(b)	Which year had the smallest number of trees?	trees = <u>2011</u>	<u>2011</u>
(c)	What is the difference in the number between the trees planted in 2011 and 2012?	$\begin{array}{r} 2011 \\ +2012 \\ \hline 4023 \end{array}$	4023 <u>4023</u>
(d)	Which year had the largest number of trees been planted?	2013 tree	<u>2013 tree</u>
(e)	How many trees were planted in all three years?	$\begin{array}{r} 2012 \\ +2013 \\ \hline 4025 \end{array}$	45 <u>45025</u>

Extract 5.2: A sample of incorrect responses to Question 5

Extract 5.2 shows that in part (a), the pupil added 2011 and 2013 to get 4,024 instead of 14 trees. In part (b), the pupil wrote the year with the largest number of trees. In part (c), the pupil added 2011 and 2012 to get 4,023, contrary to the requirements of the question. In part (d), the pupil wrote 2013 instead of 2011. In part (e), the pupil failed to find the total number of trees planted over the years, writing 45,025 instead of 33.

3.0 ANALYSIS OF PUPILS' PERFORMANCE ON EACH COMPETENCE

The mathematics assessment paper had five (5) questions that assessed the specific competencies in *Applying the Concepts of Numbers to Communicate Ideas and Concepts in Different Contexts*, *Applying the Concepts of Patterns to Solve Real life Problems*, *Applying Number Relations to Solve Problems in Different Contexts*, *Applying the Concepts of Shapes and Figures to Solve Different Problems* and *Applying Statistical Skills to Present Different Information*.

The statistical analysis shows that three (03) specific competencies had good performance, one specific competence in *Applying Number Relations to Solve Problems in Different Contexts* had weak performance. Additionally, the comparison of pupils' performance in the 2024 and 2023 Standard Four National Assessments (SFNA) shows that the pupils' performance in *Applying the Concepts of Shapes and Figures to Solve Different Problems*, *Applying the Concepts of Numbers to Communicate Ideas and Concepts in Different Contexts*, *Applying Statistical Skills to Present Different Information* and *Applying Number Relations to Solve Problems in Different Contexts* increased by 62.90, 22.88, 13.16, 35.74 and 9.54 percent respectively. (See Appendices A and B)

4.0 CONCLUSION

The analysis of the 2024 Mathematics assessment results shows that 1,092,786 pupils, equivalent to 71.4 percent, passed with grades ranging from A to D. Additionally, the overall performance in the three main assessed competencies was as follows: Using mathematical language to present ideas to solve real-life problems (77.14%), Using

reasoning and proof in the real-life situation (70.00%), and solving mathematical problems in different situations (30.51%).

However, the pupils' performance in each specific competence shows that the specific competence on Applying the Concepts of Shapes and Figures to Solve Different Problems, Applying the concepts of numbers to communicate ideas and concepts in different context, and Applying Statistical Skills to Present Different Information had good performance with 81.03, 79.02, and 75.25 percent, respectively. Furthermore, pupils had average performance on the specific competence of Applying the concepts of patterns to solve real life problems (58.98%). However, they performed poorly on the specific competence of Applying Number Relations to Solve Problems in Different Contexts (30.51%).

The weak performance on the specific competence on Applying Number Relations to Solve Problems in Different Contexts was due to pupils' inability to read time in hours and minutes, add hours and minutes, add money, multiply money and lack of mastery in the skills of Writing and Arithmetic.

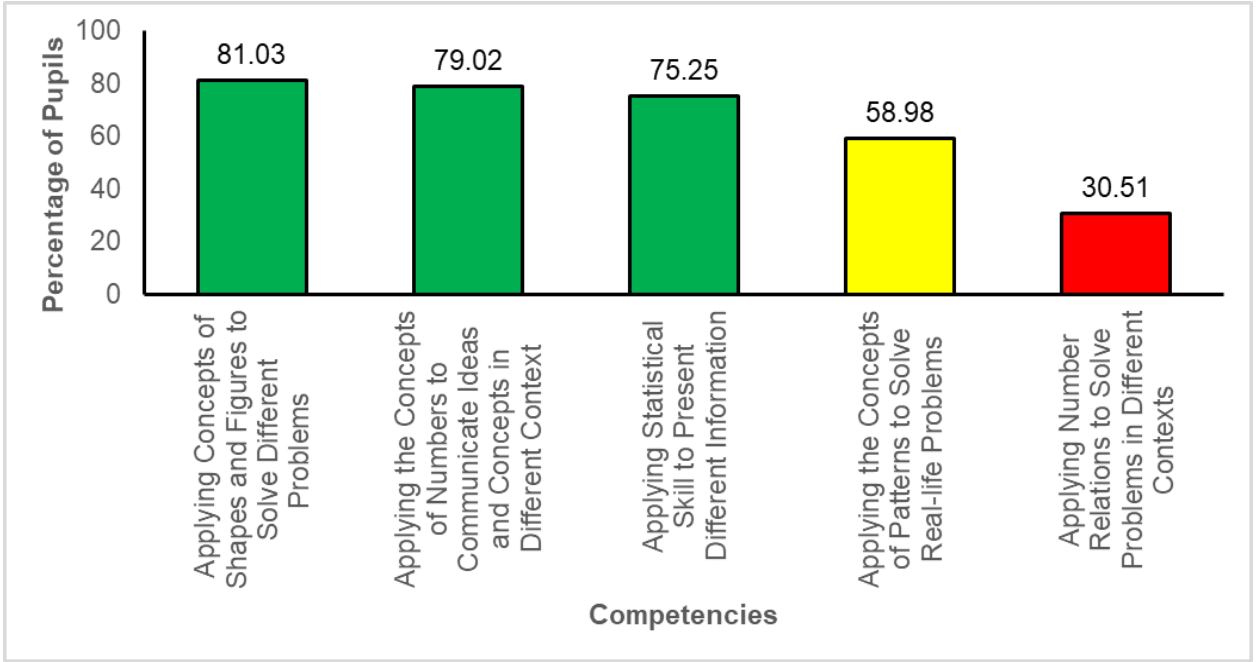
5.0 RECOMMENDATIONS

To improve the performance of the Standard Four Pupils in the specific competence where their performance was weak, the following are recommended:

- (a) Using diagrams and clocks, teachers should demonstrate the relationship between hours and minutes and emphasize this relationship when adding and subtracting hours and minutes.

- (b) Pupils should be engaged in games related to reading time in order to identify different times in both words and numerals.
- (c) Pupils should be encouraged to wear wristwatches with both short and long hands so they can correctly read the time, such as seven o'clock, half past seven, quarter to seven, etc.

Appendix A: Pupils’ Performance on each competence SFNA 2024



Appendix B: Comparison of Pupils' performance on each competence in SFNA 2024 and SFNA 2023

