



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



# **PUPILS' ITEM RESPONSE ANALYSIS REPORT FOR THE STANDARD FOUR NATIONAL ASSESSMENT (SFNA) 2020**

## **MATHEMATICS**



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## **04 MATHEMATICS**

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## FOREWORD

The Pupil's Response Analysis Report for Standard Four National Assessment (SFNA) in 2020 has been prepared to give feedback to pupils, teachers, curriculum developers, policy makers and other education stakeholders on how the pupils answered the assessment questions in Mathematics subject. The general performance was good since 70.85 of the pupils passed.

The analysis of the Pupils' responses shows that, some of the reasons that contributed to pupils' failure to answer questions correctly include; failure to identify the requirements of the question, making errors when performing mathematical operations, inability to read data from graphs, failure to identify the relationship in metric and weight measurements, lack of arithmetic skills of writing and counting as well as lack of knowledge in solving word problems.

The National Examinations Council of Tanzania believes that, the analysis presented in this report will suggest ways that will help to improve the pupils' competences in Arithmetic in future. If the Standard Four pupils become competent in the tested competences, they will eventually have a strong foundation and interest in Mathematics subject. This can be maintained even when they go to higher levels of education.

Lastly, the National Examinations Council of Tanzania would like to acknowledge all examination officers and other stakeholders who took part in preparing this report.



Dr. Charles E. Msonde  
**EXECUTIVE SECRETARY**

## 1.0 INTRODUCTION

The National Assessment for Standard Four Pupils in Mathematics subject was held on 25<sup>th</sup> and 26<sup>th</sup> November 2020. A total of 1,828,265 pupils were registered. Out of those 1,702,737 pupils, equivalent to 93.15 percent sat for the assessment in Mathematics subject.

The analysis of the assessment results in 2020 in Mathematics subject shows that, 1,206,531 pupils, equivalent to 70.85 percent, passed. While in 2019, a total of 1,664,210 pupils, equivalent to 93.14 percent, were assessed and out of those 1,231,640 pupils, equivalent to 74.02 percent passed. These results show that, the performance in 2020 has decreased by 3.16 percent compared to the performance in 2019.

The Mathematics Assessment paper consisted of five (5) questions. Each question had five parts; (a), (b), (c), (d) and (e). The correct answer in each part was awarded two (2) marks. So, each question weighed ten (10) marks making a total of 50 marks for the whole paper.

The pupils' responses in each question are analysed in order to identify the reasons that made them pass or fail. In addition, the analysis involved the pupils' answer sheets for each question, and each question was provided with a sample of extracts from some of the pupils to show how they responded to the questions.

The percentage of pupils who passed each question was used to determine the performance standards. The analysis of performance for each question was categorized into four groups as follows: from 8.5 to 10 marks "*very good performance*", from 6.5 to 8 marks "*good performance*", from 2.5 to 6 marks "*average performance*" and from 0 to 2 marks "*weak performance*". On the other hand, the standards of performance by Competences was done by considering the percentage of pupils who passed in each competence where; 67 – 100 indicates *very good performance*, 34 – 66 *average performance* and 0 – 33 for *weak performance*.

## 2.0 ANALYSIS OF PUPILS' RESPONSES

### 2.1 Analysis Criteria

The analysis of the pupils' responses has been done in each assessed item basing on the number and percentage of the pupils' performance as follows:

- (a) Those who failed to answer correctly any item or answered correctly one item of the question; (0 to 2 marks).
- (b) Those who answered correctly two or three items of the question; (2.5 to 6 marks).
- (c) Those who answered correctly four items of the question; (6.5 to 8 marks).
- (d) Those who answered correctly all the five items of the question; (8.5 to 10 marks).

### 2.2 Question 1:

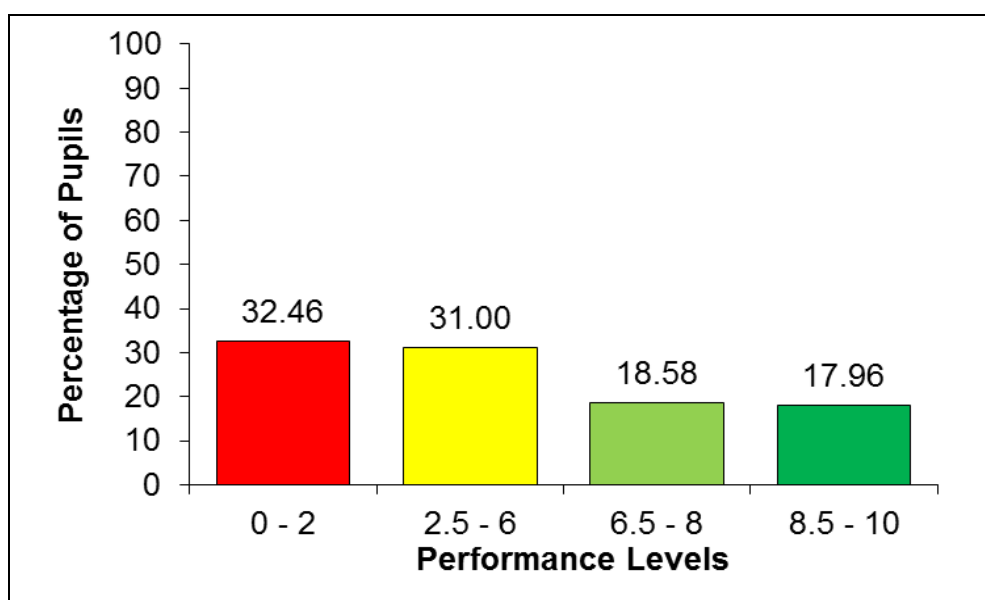
- (a) Write the number 12,659 in words.
- (b) Write eleven thousand one hundred and eleven in numerals.
- (c) Write the fraction three over four in numerals.
- (d) Write the fraction of the shaded part in the following figure;



- (e) Musa has 40 years. Write the age of Musa by using roman numbers.

This question had five parts which assessed skills on competence in applying the concepts of whole numbers to communicate in different contexts. Part (a) assessed the pupils' ability to write the number in words, part (b) assessed the pupils' ability to write the given number stated by words into digits and part (c) assessed the pupils' knowledge on writing a fraction given in words using numerals. Moreover, part (d) assessed the pupils' ability to write a fraction of a part of given figure and part (e) assessed the pupils' ability to write Roman numbers.


The data shows that the performance of the pupils in this question was good because a total of 1,150,054 pupils, equivalent to 67.54 percent scored from 2.5 to 10 marks, among these pupils, 305,952 pupils, equivalent to 17.96 percent scored from 8.5 to 10 marks and 316,328 pupils, equivalent to 18.58 percent scored 6.5 to 8 marks. However, 552,683 pupils, equivalent to 32.46 percent failed to answer this question correctly as they scored from 0 to 2 marks. The summary of the pupils' performance for this question is shown in Figure 1.



**Figure 1:** *Pupils' Performance in Question 1*

The analysis of statistics shows that, many pupils ((67.54%) were able to answer question three to five parts of this question. In part (a) they were able to write the number 12,659 in words. In part (b), they were able to write the number stated in words into numerals as they were competent on the concept of numbers. Moreover, in part (c) they were able to write the given fraction in numerals, that is  $\frac{3}{4}$ . In part (d) they wrote the fraction corresponding to the shaded part correctly. In part (e) they wrote the required Roman number correctly. Extract 1.1 shows the sample of the correct answer from one of the pupils.



No	Question	Working Space	Answer
1. (a)	Write the number 12,659 in words.	12,659	TWELVE THOUS AND, SIX HUN DRED AND FIFTY NINE
(b)	Write eleven thousand one hundred and eleven in numerals.	$  \begin{array}{r}  11,000 \\  100 \\  + \quad 11 \\  \hline  11,111  \end{array}  $	= 11,111
(c)	Write the fraction three over four in numerals.	$\frac{3}{4}$	= $\frac{3}{4}$
(d)	Write the fraction of shaded part in the following figure: 	$\frac{2}{3}$	$\frac{2}{3}$
(e)	Musa has 40 years. Write the age of Musa by using roman numbers.	$  \begin{array}{r}  XL \\  50 \\  - 10 \\  \hline  40  \end{array}  $	= XL

**Extract 1.1:** sample of the correct answer for question 1.

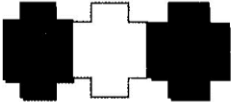
Extract 1.1 shows that, the pupil was able to read, understand and write the correct answers in all parts of the question.

On the other hand, the analysis of data shows that, out of 552,683 pupils who failed to answer this question, a total of 343,089 pupils, equivalent to 20.15 percent scored a 0 mark. These pupils failed to answer this question correctly due to reasons such as; failure to write the number in correct words in part (a). For example, instead of writing *twelve thousand six hundred fifty nine*, some of these pupils wrote *two thousand six hundred and fifty-nine*.

In part (b) pupils failed to write the given number which was in words into numerals. For instance, some pupils wrote 21111, 1111, 10111

and 111011. In part (c) pupils were unable to write the fraction stated in words into numerals. For instance, one drew a square and divided into 4 parts shading one of them.

Furthermore, in part (d), the pupil failed to identify and write the fraction of shaded part of the given figure. Some examples from pupils are  $\frac{1}{3}$  and  $\frac{2}{4}$ . In part (e), the pupils failed to write 40 which was the age of Musa which was given in Arabic numbers into Roman numbers. For instance, some of these pupils wrote LX, XXXX and XXXIII. Extract 1.2 shows the sample of an incorrect answer of one of the pupils.

No	Question	Working Space	Answer
1. (a)	Write the number 12,659 in words.		
(b)	Write eleven thousand one hundred and eleven in numerals.	Twelve thousand Six hundred 1101,11	1101,11
(c)	Write the fraction three over four in numerals.	3,4	3,4
(d)	Write the fraction of shaded part in the following figure: 	$\frac{1}{3}$	$\frac{1}{3}$
(e)	Musa has 40 years. Write the age of Musa by using roman numbers.	40 = XXXX	40 = XXXX

**Extract 1.2:** A sample of incorrect response from a pupil in question 1.

Extract 1.2 shows that, in part (a), the pupil could not complete to write the number, in part (b) the pupil failed to relate the words and numerals, in part (c) wrote decimal number instead of fraction. In part

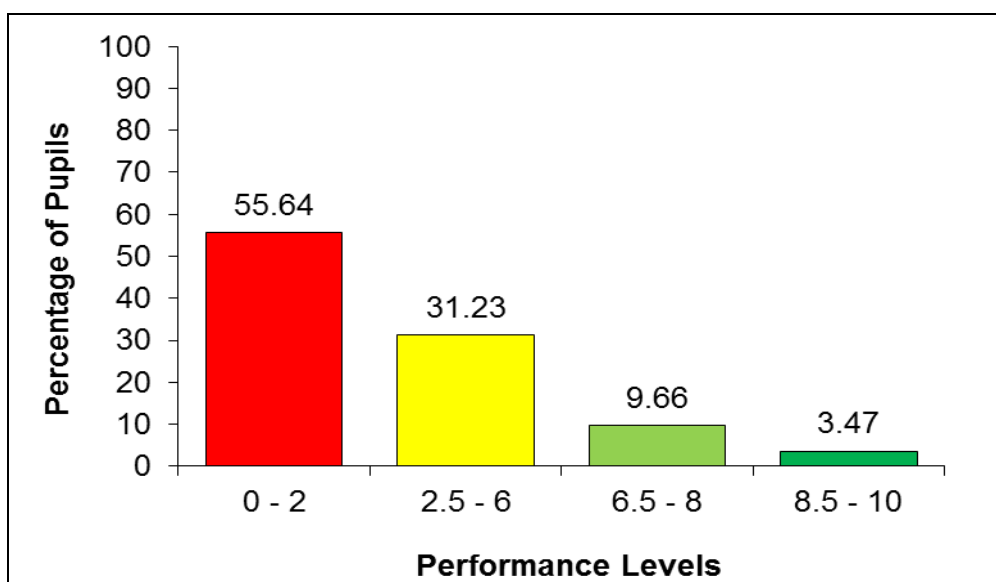
(d), the pupil wrote the fraction of the unshaded part of the figure, and in part (e) wrote the number XXXX which instead of XL.

### 2.3 Question 2:

- (a) Arrange the following numbers in sequence starting from the largest to the smallest: 125, 78, 111, 89, 305, 32, 120.
- (b) Write the missing number in the following sequence: 36,33,30, \_\_\_\_,24
- (c) Write the next two numbers in the following sequence X, XV, XX, XXV....
- (d) Four trees differ in length according to the following sequence: 5m, 8m, 11m, 14m. What will be the length of the fifth tree in same pattern?
- (e) Agnes counted numbers by reducing ten to get the next number. If the first number was 80, find the sixth number.

This question assessed skills on the competence of *Applying the Concepts of Numbers in Different Contexts*. Part (a) assessed the pupils' ability to arrange numbers in a meaningful sequence from the largest to smallest, part (b) assessed the pupils' ability to identify and write the missing number in the given sequence, part (c) assessed the pupils' ability on writing sequentially the Roman numbers, part (d) assessed the pupils' ability to detect the next number in the pattern and part (e) assessed the pupils' ability to arrange numbers in descending order by reducing ten repeatedly in order to get the sixth number.

The analysis shows that 59,072 (3.47%) scored from 8.5 to 10 marks out of 10, and 164,464 equivalent to 9.66 percent scored 6.5 to 8 marks. Furthermore, 531,800 (31.23%) pupils scored 2.5 to 6 marks while 947,401 (55.64%) pupils scored 0 to 2 marks. The pupils' performance in this question was average because 755,336 (44.36%) pupils scored 2.5 to 10 marks. The summary of the performance is shown in Figure 2.



**Figure 2:** *The Pupils' Performance in Question 2*

Further analysis shows that, out of 745,488 (57.3%) pupils who scored from 2.5 to 10 marks in this question, 56,924 pupils, equivalent to 3.34 percent were able to answer 2 to 5 parts of the question. In part (a) they were able to arrange correctly the given numbers. In part (b) they identified correctly the missing numbers. Moreover, in part (c) they correctly filled in the spaces the missing numbers. Likewise in part (d) they could determine the height of the fifth tree which is the fifth number in the sequence. Also, in part (e) they correctly arranged the numbers from 80 reducing by 10 six steps to get 30. Extract 2.1 shows a sample of correct answers in this question.

No	Question	Working Space	Answer
2.(a)	Arrange the following numbers in the sequence starting from the largest to the smallest. 125, 78, 111, 89, 305, 32, 120.	305, 125, 120, 111, 89, 78, 32	305, 125, 120, 111, 89, 78, 32
(b)	Write the missing number in the following sequence: 36, 33, 30, ____, 24.	36, 33, 30, <u>27</u> , 24 $\begin{array}{r} 36 \\ -3 \\ \hline 33 \end{array}$ $\begin{array}{r} 33 \\ -3 \\ \hline 30 \end{array}$ $\begin{array}{r} 30 \\ -3 \\ \hline 27 \end{array}$ $\begin{array}{r} 27 \\ -3 \\ \hline 24 \end{array}$	27
(c)	Write the next two numbers in the following sequence: X, XV, XX, XXV, ____, ____.	X, XV, XX, <u>XXV</u> , <u>XXX</u> 10, 15, 20, 25, <u>30</u> , <u>35</u> X, XV, XX, XXV, XXX, XXXV	XXX, XXXV
(d)	Four trees differ in length according to the following sequence: 5m, 8m, 11m, 14m. What will be the length of the fifth tree in the same pattern?	5, 8, 11, 14, 17 $\begin{array}{r} 5 \\ +3 \\ \hline 8 \end{array}$ $\begin{array}{r} 8 \\ +3 \\ \hline 11 \end{array}$ $\begin{array}{r} 11 \\ +3 \\ \hline 14 \end{array}$ $\begin{array}{r} 14 \\ +3 \\ \hline 17 \end{array}$	17 M
(e)	Agnes counted numbers by reducing ten to get the next number. If the first number was 80, find the sixth number.	$\begin{array}{r} 80 \\ -10 \\ \hline 70 \end{array}$ $\begin{array}{r} 70 \\ -10 \\ \hline 60 \end{array}$ $\begin{array}{r} 60 \\ -10 \\ \hline 50 \end{array}$ $\begin{array}{r} 50 \\ -10 \\ \hline 40 \end{array}$ $\begin{array}{r} 40 \\ -10 \\ \hline 30 \end{array}$	30

**Extract 2.1:** A sample response of a pupil who answered this question correctly.

In extract 2.1, the pupil gave correct answers in part (a) through (e) while showing all the required procedures.

On the other hand, the analysis of data shows that, out of 947,401 pupils who had weak performance, 645,219 pupils equivalent to 37.89

percent scored a 0 mark. These pupils lacked ability to arrange the numbers in sequence starting from the largest to the smallest in parts (a). In parts (b) and (c), they lacked the ability to identify the missing numbers in the given sequence; hence they failed to write the required missing number.

Moreover, in part (d), the pupils failed to deduce the correct value for the length of the fifth tree. They were required to study the series 5, 8, 11, 14,... then identify that these numbers differ by 3. Thus, the next number should be 17. This indicates that they had insufficient knowledge on how to formulate the sequence from the word problem.

In part (e), the pupils failed to establish the numbers in descending order. They were required to start from 80 and keep on reducing it by 10 to get the sixth number which was 30. Extract 2.2 shows a sample of incorrect answers provided by one of the pupils.

No	Question	Working Space	Answer
2. (a)	Arrange the following numbers in the sequence starting from the largest to the smallest. 125, 78, 111, 89, 305, 32, 120.	111, 89, 78, 32 305, 125, 120,	= 32
(b)	Write the missing number in the following sequence: 36, 33, 30, __, 24.	<u>FIND THE DIFFERENCE</u> $36 - 33 = 3$  36, 33, 30, <u>27</u> , 24 -3   -3   -3   -3 $30 - 3 = 27$	= 27
(c)	Write the next two numbers in the following sequence: X, XV, XX, XXV, ____, ____.	10, 15, 20, 25, <u>30</u> , <u>35</u> +5   +5   +5   +5	= 30 and 35
(d)	Four trees differ in length according to the following sequence: 5m, 8m, 11m, 14m. What will be the length of the fifth tree in the same pattern?	15 11 4 8 5 + 4 62	= 62
(e)	Agnes counted numbers by reducing ten to get the next number. If the first number was 80, find the sixth number.	$\frac{80}{10} = 20$	= 20

**Extract 2.2:** A sample of incorrect response in question 2.

In Extract 2.2 there is a response of a pupil who chose the smallest number in the sequence in part (a), made wrong subtraction in (b), wrote Arabic numbers in part (c), added the numbers of the sequence in (d) and performed a wrong division in (e), which were not the requirements of the question.

## 2.4 Question 3:

- (a) Multiply;

$$\begin{array}{r} 282 \\ \times 17 \\ \hline \\ \hline \end{array}$$

- (b) A father gave Juma 10 coins of five hundred shillings each. How much money was given to Juma?

- (c) Subtract;

$$\text{sh } 2,750 - \text{sh } 120 =$$

- (d) Janeth bought the following items in the market: 6 oranges @ sh 200, one exercise book at sh 2,000 and 3 pens @ sh 700. How much did she pay?

- (e) Add;

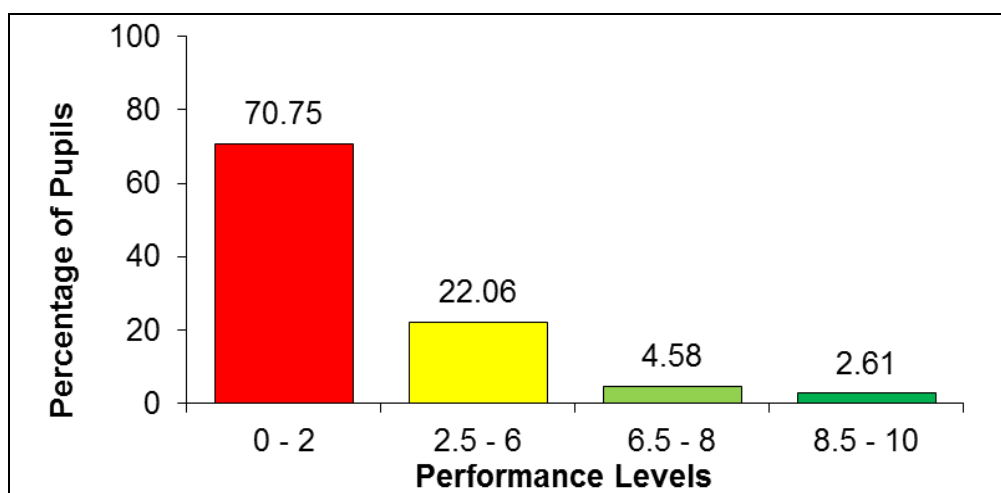
Hours	Minutes
5	38
+ 3	45
<hr/>	
<hr/>	

The five parts of the question assessed the pupils' skills on addition, subtraction and multiplication of whole numbers. The assessment based on the pupil's ability to add whole numbers of different values, in part (a) and (b) the question assessed the pupils' ability to use multiplication operation for whole numbers involving two or three digits. Part (c) assessed the pupils' capacity to perform subtraction on whole numbers of two or three digits. Moreover, part (d) examined the ability of the pupils to apply both multiplication and addition operations in solving word problems while part (e) assessed the capacity of pupils to use the skill of addition in solving problems on time consisting of hours and minutes.

The analysis of data shows that 1,702,737 pupils attempted this question. Among them 44,376 (2.61%) scored 8.5 to 10 marks, 78,007 (4.58%) pupils scored 6.5 to 8 marks, 375,670 (22.06%) pupils 2.5 to 6 while 1,204,684 (70.75%) score 0 to 2. Therefore, the pupils'



performance in this question was weak. Figure 3 shows the percentage of pupils and their scores for each category of performance.



**Figure 3:** *The Pupils' Performance in question 3*

Further analysis shows that, the pupils failed to answer this question correctly due to different reasons as follows; in part (a), there were pupils who failed to get the correct answer due to insufficient knowledge and skills in multiplying numbers involving different number of digits. They failed to arrange the digits in groups of ones, tens and hundreds before multiplying.

In part (b), the pupils showed to lack knowledge on how to solve word problems concerning notes and coins. Some made incorrect multiplication such as  $10 \text{ coins} \times \text{sh } 500 = \text{sh } 500$  instead of  $10 \text{ coins} \times \text{sh } 500 = \text{sh } 5000$ . In part (c), the pupils failed to subtract the given money because they lacked knowledge and skills on arranging the position of the values before subtraction. For example, the pupils did not comply with the given amount, that is; instead of subtracting sh 120/= from sh 2,750/= they subtracted sh1, 200 from sh 2,750/=. In part (d), the pupils failed to use both multiplication and addition in the same question, since they were required to multiply 6 by sh 200 and 3 by sh 700, before adding the results to sh 2,000.

In part (e), these pupils failed to get the correct answer because they lacked knowledge and skills to add time which is given in a mixed measurement of time; hours and minutes. For example, some of the

pupils failed to know that in 83 minutes there is 1 hour and 23 minutes. Thus the required total was 9 hours and 23 minutes. Extract 3.1 shows the sample answers of a pupil who failed to respond this question correctly.

No	Question	Working Space	Answer
3. (a)	Multiply; <div><div>282</div><div>x 17</div><div><div></div><div></div><div></div></div></div>	<div><div>282</div><div>x 17</div><div><div></div><div>1954</div><div></div></div></div> <div>+ 282</div> <div>478 4</div>	= 4784
(b)	A father gave Juma 10 coins of five hundred shillings each. How much money was given to Juma?	1000	= 1000
(c)	Subtract; sh. 2,750 – sh. 120 =	<div><div>sh 2750</div><div>sh - 120</div><div><div></div><div>2870</div><div></div></div></div>	= 2870
(d)	Janeti bought the following items in the market: 6 oranges @ sh. 200, one exercise book at sh. 2,000 and 3 pens @ sh. 700. How much did she pay?	<div><div>2,000</div><div>200</div><div>+ 700</div><div><div></div><div>2900</div><div></div></div></div>	= 2900
(e)	Add; <div><div>hoursminutes</div><div>538</div><div>+ 345</div><div><div></div><div></div><div></div></div></div>	<div><div>HOURS</div><div>8</div></div> <div><div>MINUTES</div><div>1</div></div>	<div><div>HOURS</div><div>8</div></div> <div><div>MIN</div><div>1</div></div>

**Extract 3.1:** A sample of an incorrect response from a pupil in question 3.

In Extract 3.1 the pupil made wrong calculations in each part of question 3. the pupil did not carry in part (a), multiplied 10 by one 100 in part (b), added instead of subtracting in part (c) and added the prices in part (d).

On the other hand, 29.25 percent were able to answer 2 to 5 parts of the question. These pupils had adequate knowledge and skills on Number Relationships as shown in Extract 3.2.

No	Question	Working Space	Answer
3. (a)	Multiply; <div><div>282</div><div>x 17</div><div><div></div><div></div><div></div></div></div>	<div><div>5</div><div>282</div><div>x 17</div><div><div>1974</div><div>282</div><div>4794</div></div></div>	4794
(b)	A father gave Juma 10 coins of five hundred shillings each. How much money was given to Juma?	<div><div>500</div><div>x 10</div><div><div>000</div><div>+ 500</div><div>5000</div></div></div>	5000 SHILLING
(c)	Subtract; sh. 2,750 – sh. 120 =	<div><div>2750</div><div>- 120</div><div><div></div><div>2630</div></div></div>	2630 SHILLINGS.
(d)	Janeti bought the following items in the market: 6 oranges @ sh. 200, one exercise book at sh. 2,000 and 3 pens @ sh. 700. How much did she pay?	<div><div><div><div>200</div><div>x 6</div><div><div>1200</div></div></div><div><div>700</div><div>x 3</div><div><div>2100</div></div></div><div><div>2100</div><div>+ 2000</div><div><div>1200</div><div>5300</div></div></div></div></div>	5300 SHILLINGS
(e)	Add; <div><div>hours</div><div>minutes</div><div><div>5</div><div>38</div></div><div><div>+ 3</div><div>45</div></div><div><div></div><div></div><div></div></div></div>	<div><div><div>HOURS</div><div>5</div></div><div><div>MINUTES</div><div>38</div></div></div> <div><div><div></div><div>3</div></div><div><div></div><div>45</div></div></div> <div><div><div></div><div>9</div></div><div><div></div><div>83</div></div></div> <div><div><div></div><div>23</div></div></div>	<div><div>HOURS</div><div>9</div></div> <div><div>MINUTES</div><div>23</div></div>

**Extract 3.2:** A sample answer of a pupil who answered this question correctly.

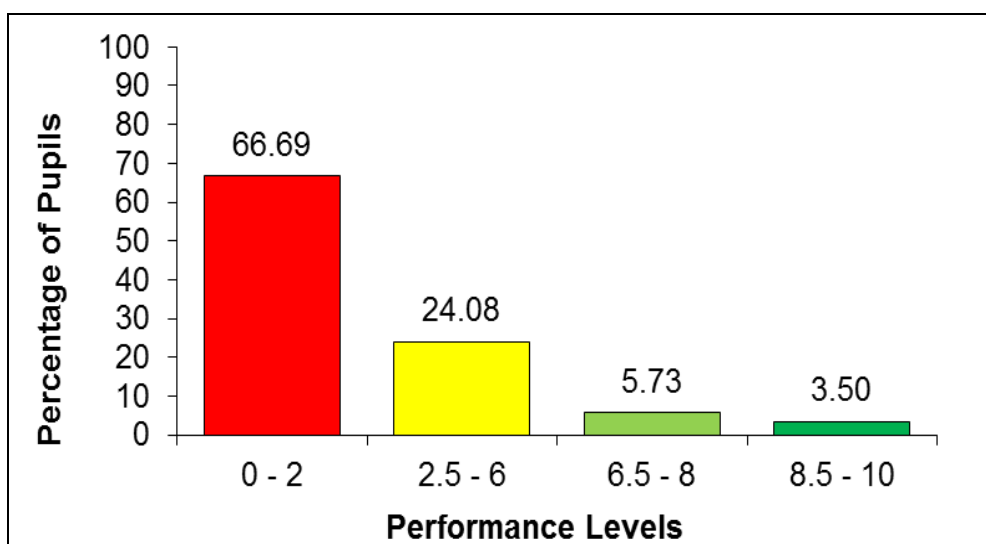
In Extract 3.2 the pupil answered correctly all parts of this question.

## 2.5 Question 4:

- (a) The figure which each of its sides have equal length is called  
\_\_\_\_\_
- (b) 10 half litres of water is equivalent to how many litres of water?
- (c) Change 16,000 grams into kilograms.
- (d) The length of a school garden is 25 m. What is this length in centimetres?
- (e) Chatanda primary school is 2 km away from the main road. What is the distance of this school in metres from the main road?

The question consisted of five parts; in part (a) the pupils were assessed their knowledge on identifying various shapes and figures. In part (b), the question assessed pupils' knowledge about measurement of volumes. In part (c), (d) and (e) the pupils were assessed about their ability to convert units like grams into kilograms, metres into centimetres and kilometres into metres, respectively.

The analysis of statistics shows that 1,702,737 pupils attempted this question. Among them 59,607 (3.50%) pupils scored 8.5 to 10 marks, 410,020 (24.08%) pupils scored 6.5 to 8; 97,618 (5.73%) scored 2.5 to 6 while 1,135,492 (66.69%) pupils scored 0 to 2. Thus, the pupils' performance in this question was weak. Figure 4 shows the distribution of percentage of pupils and their corresponding scores in question 4.



**Figure 4:** *Pupils' Performance in Question 4*

The analysis shows that most of the pupils were not able to answer 2 to 5 parts of this question. The pupils who failed to answer this question correctly lacked skills in different concepts that were tested as follows; in part (a), some of the answers they wrote includes; a rectangle, isosceles triangle, equilateral triangle and a circle which are incorrect.

In part (b), the pupils did not know the relationship between a litre and a half of the litre, in parts (c), (d) and (e) the pupils failed to perform the required calculations because they lacked knowledge about conversion of various units which are used in daily life. For example, they failed to know that 1 kilogram is equal to 1000 grams, 1 metre is equal to 100 centimetres and 1 kilometre is equivalent to 1000 metres. This knowledge could have helped them to convert the given measurements into the required units. Extract 4.1 shows the examples of incorrect response from one of the pupils.

No	Question	Working Space	Answer
4. (a)	The figure which each of its sides have equal length is called _____	The Figure which each of its sides have equal length is called	
(b)	10 half litres of water is equivalent to how many litres of water?	$1 \text{ half} = 4 \text{ half Litres}$ $10 \text{ half} = x$ $\begin{array}{r} 10 \\ \times 4 \\ \hline 40 \end{array}$ Litres	= 40 Litres
(c)	Change 16,000 grams into kilograms.	$1 \text{ kg} = 1000 \text{ g}$ $16 \text{ kg} = 16$ $1000 \times 16 = 2000 \text{ g}$	= 2000 g
(d)	The length of a school garden is 25 m. What is this length in centimeters?	$\begin{array}{r} 25 \\ + 10 \\ \hline 35 \end{array}$ cm	= 35 cm
(e)	Chatanda primary school is 2 km away from the main road. What is the distance of this school in metres from the main road?	$\begin{array}{r} 2 \text{ km} \\ 2 \text{ km} \\ 2 \text{ km} \\ + 2 \text{ km} \\ \hline 8 \text{ km} \end{array}$	8 km

**Extract 4.1:** A sample of incorrect response from a pupil in question 4.

Extract 4.1 shows that, the pupil only copied the question in part (a); multiplied by 4 instead of dividing by 2 in part (b), multiplied wrongly in part (c), added the numbers instead of multiplying them in part (d) and added 2 four times instead of multiplying 2 by 1000 to get the number of metres required.

On the other hand, the pupils who scored 2.5 to 10 marks were able to answer correctly 2 to 5 parts of the question. These pupils were able to; identify the figure whose sides have equal length as a square or equilateral triangle in part (a); calculated the correct number of litres of water asked in part (b) and converted correctly the given measurements in parts (c), (d) and (e). Extract 4.2 shows a sample answer of a pupil who answered this question correctly.

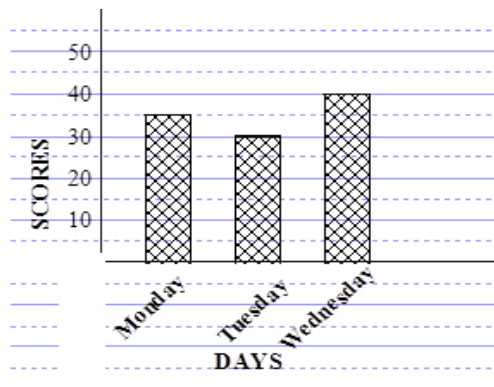
4. (a)	The figure which each of its sides have equal length is called _____	SQUARE	SQUARE
(b)	10 half litres of water is equivalent to how many litres of water?	$0\frac{1}{2} \quad 20+1=21$ $11115\overline{)10}$ $21\overline{)10}$	5 LITRES OF WATER
(c)	Change 16,000 grams into kilograms.	$1\text{ kg} = 1000\text{ g}$ $1 \times 16000 = 16000$ $16$ KILOGRAMS	16 KILOGRAMS
(d)	The length of a school garden is 25 m. What is this length in centimeters?	$1\text{ m} = 100$ $25\text{ m}$ $\begin{array}{r} 100 \\ \times 25 \\ \hline 500 \\ +2000 \\ \hline 2500 \end{array}$ CENTIMETRES	2500 CENTIMETRES
(e)	Chatanda primary school is 2 km away from the main road. What is the distance of this school in metres from the main road?	$1\text{ km} = 1000\text{ m}$ $2\text{ km} = ?$ $\begin{array}{r} 1000 \\ \times 2 \\ \hline 2000 \end{array}$ METRES	2000 METRES

**Extract 4.2:** A sample answer of a pupil who managed to answer correctly all parts of question 4.

In Extract 4.2 the pupil was able to calculate correctly the number of litres, kilograms, centimetres and metres correctly. Furthermore, the pupil knew that the rectangular figure with all sides equal and all angles equal is a square.

## 2.6 Question 5:

- (a) Anold did a Mathematics test in three days of a week that is Monday, Tuesday and Wednesday. If the scores that he obtained are shown on the following histogram,



Which day did he get the highest score?

- (b) The following table shows the number of standard three pupils who passed a monthly test at Kazamwendo primary school.

Month	Number of Pupils
February	68
March	74
April	52
May	69

In which month did most of the pupils pass the monthly test?

- (c) The sales of pens in Kapeto shop in four days are shown in the following table:

Day	Sales
Monday	sh. 22,000
Tuesday	sh. 21,000
Wednesday	sh. 23,000
Thursday	sh. 20,000

How much was the lowest sale?

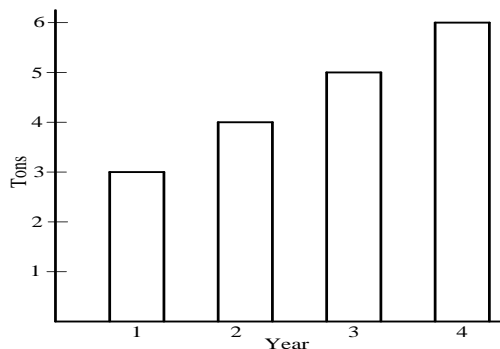


- (d) The number of books for reading that were provided by the government in four years at a certain school was as follows:

Year	Number of Books
2002	132
2003	145
2004	142
2005	124

How many books were provided by the government in four years?

- (e) The tons of rice that were harvested from the farmer's plantation increased equally in each year for four years progressively and the tons were represented on the following histogram:

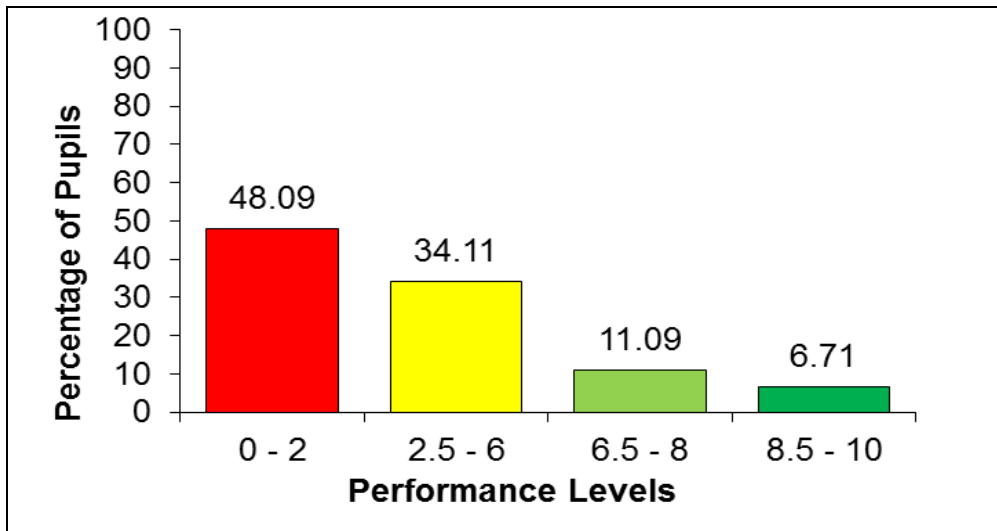


What is the total number of tons harvested in the four years?

This question comprised of five parts. In part (a) pupils were assessed on their ability to read and interpret various graphs. In part (b), they were assessed about their knowledge on statistical interpretation and how to present correctly the data related to their daily life. Part (c) tested the pupils' knowledge about the concepts of buying and purchasing goods and identifying the difference between high and low sales. In part (d) pupils were assessed on their knowledge about word problems which involves whole numbers while part (e) assessed the

pupils' ability on interpreting various records and events through graphs (histogram).

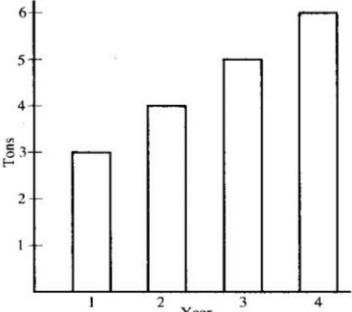
The analysis of data shows that 1,702,737 attempted this question. A total of 114,216 (6.71%) pupils scored 8.5 to 10 marks, 188,867 (11.09%) pupils scored 6.5 to 8, 580,879 (34.11%) pupils scored 2.5 to 6 while 818,775 (48.09%) pupils scored 0 to 2. The pupils' performance in this question was average. The performance of pupils in this question is shown in Figure 5.



**Figure 5:** *The Percentage of Pupils and their Marks in Question 5*

The analysis of data shows that out of 883,962 pupils who had an average performance, 112,756 pupils, equivalent to 6.62 percent were able to answer this question correctly and scored all 10 marks. These pupils were able to determine the highest score in part (a), the month in which most of the pupils passed the test in part (b), the lowest sales in part (c), total number of books provided by the government to a school in part (d) and the total number of tones harvested in the four years in part (e) as shown in Extract 5.1.

(b)	<p>The following table shows the number of standard three pupils who passed a monthly test at Kazamwendo primary school.</p> <table><tr><th>Month</th><th>Number of Pupils</th></tr><tr><td>February</td><td>68</td></tr><tr><td>March</td><td>74</td></tr><tr><td>April</td><td>52</td></tr><tr><td>May</td><td>69</td></tr></table> <p>Which month did most of the pupils pass the monthly test?</p>	Month	Number of Pupils	February	68	March	74	April	52	May	69	<u>MARCH</u>	MARCH
Month	Number of Pupils												
February	68												
March	74												
April	52												
May	69												
(c)	<p>The sales of pens in Kapeto shop in four days are shown in the following table:</p> <table><tr><th>Day</th><th>Sales</th></tr><tr><td>Monday</td><td>sh. 22,000</td></tr><tr><td>Tuesday</td><td>sh. 21,000</td></tr><tr><td>Wednesday</td><td>sh. 23,000</td></tr><tr><td>Thursday</td><td>sh. 20,000</td></tr></table> <p>How much was the lowest sale?</p>	Day	Sales	Monday	sh. 22,000	Tuesday	sh. 21,000	Wednesday	sh. 23,000	Thursday	sh. 20,000	<u>SH 20,000</u>	20,000 SHILLING WAS THE LOWEST SALES.
Day	Sales												
Monday	sh. 22,000												
Tuesday	sh. 21,000												
Wednesday	sh. 23,000												
Thursday	sh. 20,000												
(d)	<p>A number of books for reading that were provided by the government in four years at a certain school was as follows:</p> <table><tr><th>Year</th><th>Number of Books</th></tr><tr><td>2002</td><td>132</td></tr><tr><td>2003</td><td>145</td></tr><tr><td>2004</td><td>142</td></tr><tr><td>2005</td><td>124</td></tr></table> <p>How many books were provided by the government in four years?</p>	Year	Number of Books	2002	132	2003	145	2004	142	2005	124	$\begin{array}{r} 11 \\ 145 \\ 142 \\ 132 \\ 124 \\ \hline 543 \end{array}$	543 BOOKS
Year	Number of Books												
2002	132												
2003	145												
2004	142												
2005	124												

(e)	<p>The tons of rice that were harvested from the farmer's plantation increased equally in each year for four years progressively and the tons were represented on the following histogram:</p>  <p>What is the total number of tons harvested in the four years?</p>	$6 + 5 + 4 + 3 =$ $\begin{array}{r} 6 + 5 = 11 \\ + 4 \\ \hline 15 \\ + 3 \\ \hline 18 \end{array}$	18 TONS
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**Extract 5.1:** A sample answer of a pupil who managed to answer question 5 correctly.

Extract 5.1 shows the responses of a pupil who demonstrated the correct answers in all parts due to correct interpretations of the given word problems as well as adequate knowledge.

On the other hand, the data shows that, many pupils (66.69%) failed to answer 2 to 5 parts of the question with 539,468 (31.68%) scoring a 0 mark in this question. These pupils failed to answer the question correctly due to different reasons as follows; in part (a), the pupils got wrong answer due to failure to deduce the requirement of the given question. Some of the pupils in this category calculated the average of 30, 35 and 40 after reading them from the histogram instead of picking a day with the highest score which was Wednesday.

In part (b), the pupils failed to get the correct answer due to lack of knowledge and skills in interpreting the word problem. They failed to know the requirement of the question that the highest number of pupils who passed was to be identified directly from the table. For instance, although the answer was March from the table some of them

calculated the sum of four months and divided it by four to get the average number of the pupils contrary to the requirement of the question.

Similarly, in part (c), the pupils could not identify the highest and lowest sales. Moreover in part (d) the pupils were not able to add the number of books that were provided in the 4 years, and in part (e) the pupils failed to add the given number of tones of the harvest. Generally, the pupils showed to lack ability to understand the word problems. Extract 5.2 shows the answer of one of the pupils who failed to answer correctly question 5.

(b) The following table shows the number of standard three pupils who passed a monthly test at Kazamwendo primary school.

Month	Number of Pupils
February	68
March	74
April	52
May	69

Which month did most of the pupils pass the monthly test?

May

May

(c) The sales of pens in Kapeto shop in four days are shown in the following table:

Day	Sales
Monday	sh. 22,000
Tuesday	sh. 21,000
Wednesday	sh. 23,000
Thursday	sh. 20,000

How much was the lowest sale?

22000  
21000  
23000  
20000  
Sh.86,000

Sh.86,000

(d) A number of books for reading that were provided by the government in four years at a certain school was as follows:

Year	Number of Books
2002	132
2003	145
2004	142
2005	124

How many books were provided by the government in four years?

$$\begin{array}{r} 145 \\ 142 \\ 132 \\ + 124 \\ \hline 553 \end{array}$$

553 YEARS

(e) The tons of rice that were harvested from the farmer's plantation increased equally in each year for four years progressively and the tons were represented on the following histogram:

Year	Tons
1	3
2	4
3	5
4	6

What is the total number of tons harvested in the four years?

17 YEARS

17 YEARS

**Extract 5.1:** A sample of incorrect response in question 5.

Extract 5.1 shows the answer of a pupil who interpreted incorrectly the given word problems and gave wrong responses in all parts of the question.

### 3.0 ANALYSIS OF PUPILS' PERFORMANCE IN EACH COMPETENCE

The Mathematics paper had five (5) questions which required either mentioning different mathematical concepts or calculating and writing the answers in the spaces provided. The competences that were assessed included; *Application of the Concept of Numbers to*

*Communicate in Different Contexts; Application of the Concept of Pattern of Numbers to Solve Problems in Everyday Life; Application of Mathematical operations on Numbers; Application of the Concept of Number Relations to Solve Problems in Different Contexts, Application of the Concept of Measurements in Different Contexts and Application of Statistical Data to Present Different Information.*

The analysis of the performance of the pupils for each competence in SFNA 2020 showed that, *Application of the Concept of Numbers to Communicate in Different Contexts* was the only competence that had good performance. All other competences that were assessed had average performance (see Appendix A and B).

The analysis shows that among the competences which were assessed for SFNA in 2019 and 2020, in the competence on *Application of the Concept of Numbers to Communicate in Different Contexts* and *The Application of the Concept of Pattern of Numbers to Solve Problems in Everyday Life* the performance has increased while in the competence about *Application of the Concept of Number Relations to Solve Problems in Different Contexts* and *Application of the Concept of Pattern of Numbers to Solve Problems in Everyday Life* the performance has decreased (see Appendix B).

#### **4.0 CONCLUSION**

The general analysis of the results in Mathematics showed that, the overall performance was good because most of the competences had average scores. This is shown in appendix A. The green colour shows the good performance while yellow and red colours show average and weak performances respectively. However, the red colour is not there because there was no weak performance in all of the tested competences in SFNA 2020.

The analysis shows that; *Application of the Concept of Numbers to Communicate in Different Contexts* is the only competence that had good performance of 67.54%. The competences of *Application of Statistic data to present different information* (51.91%), *Application of the Concept of Pattern of Numbers to Solve Problems in Everyday Life* (44.36%), *Application of the Concept of Measurements in different*

*contexts* (33.31%) and *Application of Mathematical operations on Numbers* (29.25%), had average performance.

Further analysis of pupils' responses showed that, some of the reasons that contributed to pupils' failure to perform well in the questions which had average performance include; inadequate competence to perform mathematical operations correctly; inability to apply various arithmetic facts and correct formulae in answering questions; failure to understand the requirements of the question and insufficient knowledge on mathematical language for solving word problems.

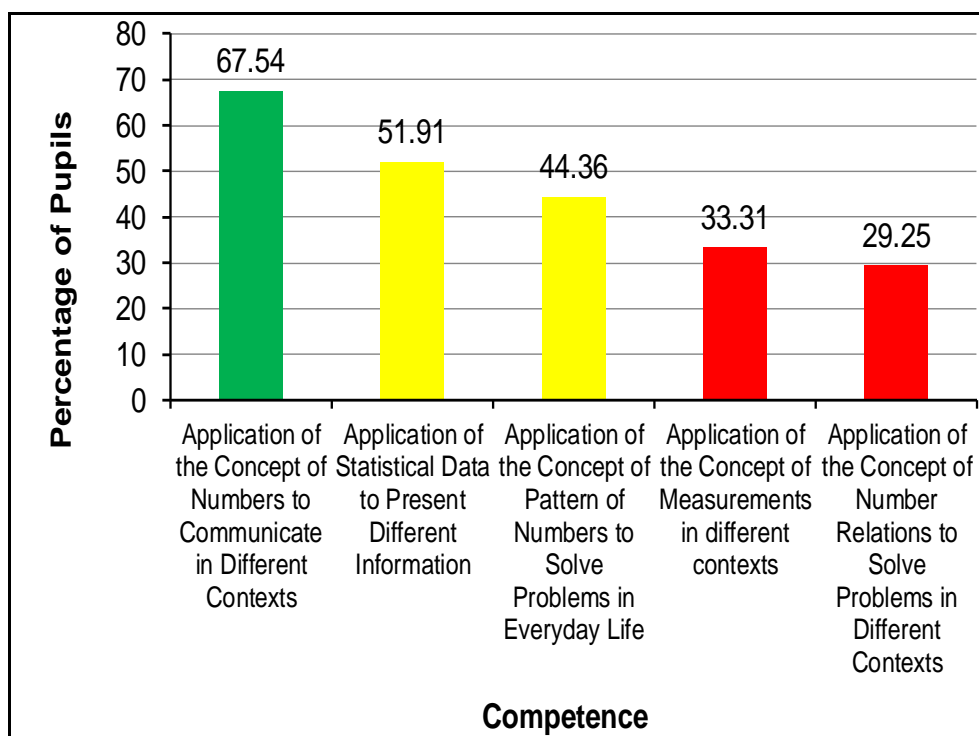
## **5.0 RECOMMENDATIONS**

In order to facilitate the Standard Four Pupils to be competent especially in the competence of *Application of the Concept of Numbers to Communicate in Different Contexts* and *Application of the Concept of Measurements in different contexts* which had weak performance, the following measures are recommended:

- (a) Teachers should provide many exercises to pupils on the competence of *Application of the Concept of Numbers to Communicate in Different Contexts, money and time*. They should also apply teaching aids such as coins and notes for teaching currency. Small and large analogy and digital watches should be used in teaching time so as to enhance better understanding to pupils.
- (b) Teachers should provide many exercises to the pupils on the competence of *Measurement* in order to enable them to answer the questions involving length, weight and volume measurements. In this competence, teaching aids such as rules of 15 cm, 30 cm and 100 cm can be used. Moreover, in this competence teaching aids such as balances, tins, a litre, a half-litre, and other measurements may be used in teaching and learning measurements of weight.



**SUMMARY OF PERFORMANCE IN EACH COMPETENCE IN  
SFNA 2020**



**COMPARISON OF PERFORMANCE IN EACH COMPETENCE IN  
SFNA 2019 AND SFNA 2020**

