THE NATIONAL EXAMINATIONS COUNCIL OF TANZANIA

CANDIDATES' ITEMS RESPONSE ANALYSIS REPORT FOR THE PRIMARY SCHOOL LEAVING EXAMINATION (PSLE) 2017

MATHEMATICS

THE NATIONAL EXAMINATIONS COUNCIL OF TANZANIA

CANDIDATES' ITEM RESPONSE ANALYSIS REPORT FOR THE PRIMARY SCHOOL LEAVING EXAMINATION (PSLE) 2017

MATHEMATICS

Published by:
The National Examinations Council of Tanzania,
P.O Box 2624,
Dar es Salaam, Tanzania.

CONTENTS

FOREWORD

The Report on Candidates’ Response Analysis for the Primary School Leaving Examination (PSLE) in the year 2017 has been prepared to give feedback to teachers, pupils, curriculum developers, policy makers and other educational stakeholders on how the candidates answered the examination questions.

The analysis of the candidates’responses shows that there are topics which were well performed. These topics are *Whole Numbers*, *Squares and Square Roots*, *Coordinate Geometry*, *Decimals* and *Roman Numbers*. Other topics such as *Fractions*, *Percentages*, *Statistics*, *Integers*, *Geometry*, *Algebra* and *Money* were averagely performed, while only *Units* had weak performance.

The analysis of the candidates’ responses shows that, the following have attributed to their failing to attempt the examination questions correctly: lack of knowledge and skills on specific topics, lack of understanding of the intended facts, use of incorrect formula, lack of skills and logical concepts in mathematical operations, choosing more than one option or failure to answer some of the questions.

The National Examinations Council of Tanzania (NECTA) believes that this report should be useful to teachers, pupils, curriculum developers, policy makers and other educational stakeholders in taking appropriate measures on how to improve the candidates’ performance in mathematics examinations in the future. The responsible authorities are strongly advised to take into account the proposed recommendations.

Lastly, the National Examinations Council would like to thank all the Examinations Officers and other experts who participated in preparing this report. The National Examinations Council will highly appreciate comments and suggestions from educational stakeholders, on how to improve future reports on the analysis of the candidates’ responses for Primary School Leaving Examinations.

Dr. Charles E. Msonde
EXECUTIVE SECRETARY

1.0 INTRODUCTION

The Primary School Leaving Examination in Mathematics subject was held on 6th September 2017. A total of 916,885 candidates were registered, out of which 909,888 (99.24%) candidates sat for Mathematics examination. The analysis of Mathematics subject examination results show that 492,257 (54.10%) candidates passed the examination. In 2016, a total of 789,404 candidates sat for Mathematics examination, where 367,866 (46.61%) candidates passed the examination. This shows that, the performance in 2017 has risen by 7.49 percent when compared to 2016.

The Primary School Leaving Examination in Mathematics for 2017, had a total of 50 questions which were divided into three main sections: Section A: Mathematical Operations, Section B: Figures and Section C: Word Problems. The candidates were required to answer all the questions in all the three sections. Moreover, the candidates were instructed to solve each question and then shade the letter of the correct answer in the special answer sheets (OMR) provided.

The candidates' responses in each question have been analysed and categorised in three classes according to the percentages of the candidates who answered the questions correctly as follows: $60-100$ is good performance, $40-59$ is average performance and $0-39$ is weak performance. The students who either did not respond to the question, or did not follow the given instructions, were denoted by the word "*others*" in the analysis tables. Also, in the analysis tables the letter that stands for a correct answer is denoted by asterisk (*).

Finally, the report has shown the comparison of candidates' performance by topic in 2016 and 2017 and recommendations for improving their performance in future Mathematics examinations.

2.0 ANALYSIS OF THE CANDIDATES' RESPONSES

This section provides an analysis of the candidates' responses on the examined multiple choice items on mathematical operations, figures and word problems. Each item had five options from which the candidates were to choose the correct answer after working out for the answer. The analysis of the candidates' responses was done basing on the number of those who gave the correct answers. Also the analysis was based on the candidates who chose the distractors, those who omitted the questions and those who did not follow the given instructions.

2.1 Section A: Mathematical Operations

Question 1: 68.9 + 57.5 =
A. 116.3 B. 125.4 C. 126.4 D. 115.3 E. 126.3

Candidates' Responses

Option	A	B	C*	D	E	Others
No. of Candidates	17,538	41,436	825,068	9,165	15,276	8,600
% of Candidates	1.91	4.52	89.97	1.00	1.67	0.94

This question tested the candidates' ability to add two numbers of which each had one decimal place. About 825,068 (89.97%) candidates were able to add those numbers and choose the correct answer C (126.4).

On the other hand, 83,415 (9.1%) candidates chose the incorrect answers A, B, D and E. These candidates lacked the knowledge of adding decimal numbers correctly. For instance, they added 5 and 9 to get 13 instead of 14. Also, they failed to carry 1 from the tenth which was supposed to be added to the ones place value.

Question 2: 8 + 73 +109 =
A. 189 B. 192 C. 173 D. 190 E. 187.

Candidates' Responses

Option	A	B	C	D*	E	Others
No. of Candidates	32,748	38,625	21,741	798,165	16,320	9,484
% of Candidates	3.57	4.21	2.37	87.03	1.78	1.03

This question tested the candidates' ability to add whole numbers, which have a different number of digits. It was the third question among the best performed questions. It was well performed as 798,165 (87.03%) candidates answered it correctly, and chose the correct answer D (190). The candidates were able to add ones and tens as follows: 8 + 73 +109 = 190 or

$$\begin{array}{r} 109 \\ 73 \\ +\quad 8 \\ \hline 190 \\ \hline \end{array}$$

On the other hand, 109,434 (11.93%) candidates chose incorrect answers A, B, C and E. For example, the candidates who chose distractor A (189), carried 1 instead of 2 in adding ones that exceed the sum of ten, and made errors as follows: 8 + 73 +109 = 189 and those who did it vertically made errors by writing;

$$\begin{array}{r} 109 \\ 73 \\ +\quad 8 \\ \hline 189 \\ \hline \end{array}$$

Question 3: $856-378=$

A. 378 B. 466 C. 477 D. 478 E. 485

Candidates' Responses

Option	A	B	C	D*	E	Others
No. of Candidates	38,006	23,412	28,520	799,964	17,408	9,773
% of Candidates	4.14	2.55	3.11	87.23	1.90	1.07

This question tested the candidates' ability to subtract whole numbers. 799,964 (87.23%) candidates performed well and chose the correct answer D (478). This shows that many candidates were able to use correctly the knowledge of subtracting whole numbers by borrowing.

On the other hand, 107,346 (11.70%) candidates were not able to work out this question correctly. Eventually, they chose incorrect responses A, B, C and E as they missed the calculation strategies of the mathematics related to *borrowing* technique. For example, many of them forgot that when borrowing a number from hundreds, 8 could decrease to 7. Similarly, when borrowing from tens, 5 could decrease to 4.

Question 4: $472+8,939=$

A. 8,301 B. 8,311 C. 9,311 D. 9,301 E. 9,411.

Candidates' Responses

Option	A	B	C	D	E*	Others
No. of Candidates	18,841	26,752	42,342	21,198	797,572	10,378
% of Candidates	2.05	2.92	4.62	2.31	86.97	1.13

This question measured the candidates' ability to add the whole numbers with different number of digits. The performance of this question was good since a total of 797,572 (86.97%) candidates were able to answer this question correctly and hence chose the correct option E (9,411). This indicates that a large number of candidates understood how to add correctly ones, tens, hundreds and thousands digits of the numbers that were given.

However, 109,133 (11.90%) candidates failed to get the correct answer and so they chose distracters A, B, C and D. This was due to the fact that they did not carry the digit after adding to the required place. For example, the candidates who chose the distractor C (9,311) did not carry tens and hundreds to the correct place.

Question 5: $1\frac{3}{8}+2\frac{1}{8}=$

A. $3\frac{1}{2}$ B. $3\frac{1}{4}$ C. 4 D. $3\frac{4}{16}$ E. $\frac{7}{8}$

Candidates' Responses

Option	A*	B	C	D	E	Others
No. of Candidates	544,719	110,163	50,174	157,548	43,106	11,373
% of Candidates	59.40	12.01	5.47	17.18	4.70	1.24

This question tested the candidates' ability to add mixed numbers. The performance of this question was average. A total of 544,719 (59.40%) candidates were able to add and choose the correct answer A $\left(3\frac{1}{2}\right)$.

In order to get the correct answer, some candidates added whole numbers and then fractions as follows:

$$1\frac{3}{8}+2\frac{1}{8}=(1+2)+\left(\frac{3}{8}+\frac{1}{8}\right)=3+\left(\frac{3+1}{8}\right)=3+\frac{4}{8}=3+\frac{1}{2}=3\frac{1}{2}.$$

Other candidates, added the fractions by changing the mixed numbers into improper fractions and finally simplified the answer as follows:

$$1\frac{3}{8}+2\frac{1}{8}=\frac{(8\times1)+3}{8}+\frac{(8\times2)+1}{8}=\frac{11}{8}+\frac{17}{8}=\frac{28}{8}=3\frac{4}{8}=3\frac{1}{2}$$

However, 360,991 (39.36%) candidates were not able to answer the question correctly and chose incorrect responses B, C, D and E. The candidates who chose distractor B $\left(3\frac{1}{4}\right)$ lacked the knowledge of simplifying fractions with the same denominator. They worked out to get $1\frac{3}{8}+2\frac{1}{8}=3+\left(\frac{3}{8}+\frac{1}{8}\right)=3\frac{4}{8}$ and simplified it wrongly to get $3\frac{1}{4}$ instead of $3\frac{1}{2}$. Moreover, the candidates who chose distractors C, D and E had no knowledge of adding mixed numbers. For instance, the candidates who chose distractor D just added incorrectly the corresponding mixed numbers; numerators separately and the denominators seperately. The procedure was as follows:

$$1\frac{3}{8}+2\frac{1}{8}=(1+2)+\left(\frac{3+1}{8+8}\right)=3\frac{4}{16}.$$

Question 6: $2\frac{4}{5}-1\frac{2}{3}=$

A. $1\frac{1}{15}$ B. $1\frac{2}{15}$ C. $1\frac{2}{5}$ D. $1\frac{2}{3}$ E. $1\frac{4}{5}$

Candidates' Responses

Option	A	B*	C	D	E	Others
No. of Candidates	72,690	646,936	81,323	69,228	36,027	10,879
% of Candidates	7.93	70.54	8.87	7.55	3.93	1.19

This question tested the candidates' ability to subtract mixed numbers. It was among the questions which were done well by the candidates. 646,936 (70.54%) candidates were able to subtract and hence chose B$\left(1\frac{2}{5}\right)$ which was the correct answer. That answer was obtained as follows: $2\frac{4}{5}-1\frac{2}{3}=(2-1)\left(\frac{4}{5}-\frac{2}{3}\right)=1\left(\frac{12-10}{15}\right)=1\frac{2}{15}$.

However, a total of 259,268 (28.28%) candidates failed to answer this question and chose incorrect responses A, C, D and E. For example, the candidates who chose distractor A, were able to work out the question, but they failed to subtract numerators in the fractions as follows: $2\frac{4}{5}-1\frac{2}{3}=(2-1)\left(\frac{4}{5}-\frac{2}{3}\right)=1\left(\frac{12-10}{15}\right)=1\frac{1}{15}$. Likewise, those who chose the distractors C $\left(1\frac{2}{5}\right)$ and D$\left(1\frac{2}{3}\right)$ had no knowledge of calculating the Lowest Common Multiple (LCM) and thus they subtracted the numbers as if they had the same denominators, either 5 or 3, and got wrong answers as follows:

$$2\frac{4}{5}-1\frac{2}{3}=(2-1)\left(\frac{4}{5}-\frac{2}{5}\right)=1\left(\frac{4-2}{5}\right)=1\frac{2}{5}$$ using denominator 5 and also

$$2\frac{4}{5}-1\frac{2}{3}=(2-1)\left(\frac{4}{3}-\frac{2}{3}\right)=1\left(\frac{4-2}{3}\right)=1\frac{2}{3}$$ using denominator 3.

Question 7: $-19+\left({}^{-}3+{}^{+}11\right)=$

A. ${}^{-}9$ B. ${}^{-}10$ C. ${}^{-}11$ D. ${}^{+}11$ E. ${}^{+}10$.

Candidates' Responses

Option	A	B	C*	D	E	Others
No. of Candidates	86,080	98,700	522,292	138,473	58,736	12,802
% of Candidates	9.39	10.76	56.95	15.10	6.40	1.40

This question tested the candidates' ability to add integers by using BODMAS rule. This question had an average performance because 522,292 (56.95%) of the candidates were able to work out the question and therefore chose the correct option $C(-11)$. They opened the brackets $({}^{-}3+{}^{+}11)={}^{+}8$, followed by $(-19+{}^{+}8)=-11$.

However, 381,989 (41.65%) candidates worked out the answer without using the correct rules and eventually chose incorrect answers A, B, D, and E. For example, those who chose option D, made an error, while adding the positive and negative numbers in the brackets as follows: -19+$({}^{-}3+{}^{+}11)=-19+8=+11$.This shows that the candidates lacked the knowledge of adding and subtracting positive and negative numbers.

Question 8: $-13-(7-8)=$

A. $^{-}13$ B. 14 C. $^{-}2$ D. $^{+}2$ E. $^{-}12$.

Candidates' Responses

Option	A	B	C	D	E*	Others
No. of Candidates	54,883	162,762	134,632	178,357	373,707	12,742
% of Candidates	5.98	17.75	14.68	19.45	40.75	1.39

This question tested the candidates' ability to use the rule of BODMAS in the concept of integers. The performance in this question was average because 373,707 (40.75%) candidates chose the correct answer E (- 12). These candidates had the knowledge to use rules of negative and positive signs to find the answer as follows:

$-13-(7-8)=-13-(-1)=-13+1=-12.$

On the other hand, 530,634 (57.86%) candidates did not use well the rules of negative and positive signs; and eventually they chose incorrect answers A, B, C and D. For example, the candidates who chose distractor B, managed to perform step one (– 13 – (–1)) of opening the brackets, but failed to work out the last step, that is (– 13 – (–1) =14), and hence got an incorrect answer. This indicates that they added 13 and 1 without considering the negative signs.

Question 9: $1\frac{3}{5}\div 1\frac{1}{4}=$

A. $1\frac{7}{25}$ B. $1\frac{17}{25}$ C. $1\frac{3}{20}$ D. $1\frac{3}{5}$ E. $1\frac{3}{4}$.

Candidates' Responses

Option	A*	B	C	D	E	Others
No. of Candidates	552,912	77,363	131,370	88,556	53,534	13,348
% of Candidates	60.29	8.44	14.32	9.66	5.84	1.46

This question tested the candidates' ability to divide mixed numbers. The general performance of the candidates in this question was good as 552,912 (60.29%) were able to divide the given mixed numbers and choose the correct answer A$\left(1\frac{7}{25}\right)$. Those candidates went through the following steps; firstly, they changed the mixed numbers into improper fractions and finally multiplied the first fraction by the reciprocal of the second fraction, as follows:

$$1\frac{3}{5}\div 1\frac{1}{4}=\frac{(5\times 1)+3}{5}\div\frac{(4\times 1)+1}{4}=\frac{8}{5}\div\frac{5}{4}=\frac{8}{5}\times\frac{4}{5}=\frac{32}{25}=1\frac{7}{25}.$$

On the other hand, 350,823 (38.26%) candidates did not follow the two necessary steps; changing the mixed numbers into improper fraction and multiplying by the reciprocal of the second fraction. Eventually, they chose incorrect responses B, C, D and E. For example, the candidates who chose C multiplied whole number by whole number, numerator by numerator and denominator by denominator, whereas all the steps were incorrect.

$$1\frac{3}{5}\div 1\frac{1}{4}=(1\times 1)(\frac{3}{5}\times\frac{1}{4})=1\left(\frac{3\times 1}{5\times 4}\right)=1\frac{3}{20}.$$

Question 10: $7{,}416 \div 24 =$

A. 219 B. 309 C. 319 D. 39 E. 209.

Candidates' Responses

Option	A	B*	C	D	E	Others
No. of Candidates	56,774	589,199	66,322	154,873	38,051	11,864
% of Candidates	6.19	64.25	7.23	16.89	4.15	1.29

This question aimed to test the candidates' ability to divide whole numbers. As shown in the table, the performance was good as 589,199 (64.25%) candidates were able to divide 7,416 by 24, and got the correct response B (309). The candidates got the correct answer because they used the multiplication tables correctly to complete the steps as follows:

$$\begin{array}{r} 309 \\ 24 \overline{)7{,}416} \\ 72 \\ 216 \\ 216 \end{array}$$

On the other hand, 316,020 (34.46%) candidates failed to divide whole numbers correctly and chose incorrect answers A, C, D and E. For example, there were candidates who failed to use the multiplication table 3 and 9 when dividing 7,416 by 24. Therefore, they got 39 instead of 309, and chose D (39) which was an incorrect answer.

Question 11: $0.2 \times 9.8 =$

A. 1.86 B. 3.4 C. 2.4 D. 0.96 E. 1.96.

Candidates' Responses

Option	A	B	C	D	E*	Others
No. of Candidates	50,818	34,559	36,238	61,869	721,265	12,334
% of Candidates	5.54	3.77	3.95	6.75	78.65	1.34

The question tested the candidates' ability to multiply the numbers which have one decimal place each. This question is one among the questions which were performed well. A total of 721,265 (78.65%) candidates were able to multiply the decimal numbers correctly and chose the correct answer E (1.96). Those candidates understood the steps of multiplying numbers without considering decimals, whereas they got 196 and counted the decimal places from the right side to get 1.96.

However, 183,484 (20.01%) candidates had no knowledge of multiplying numbers that have one decimal place and therefore chose incorrect anwers A, B, C and D. For example, the candidates who chose incorrect responses A and D had no knowledge of carrying numbers after multiplication.

Question 12: Find the value of x in $x-3(12+10)=5$

A. 46 B. 24 C. 25 D. 71 E. 70.

Candidates' Responses

Option	A	B	C	D*	E	Others
No. of Candidates	72,849	182,264	272,241	313,709	59,315	16,705
% of Candidates	7.94	19.87	29.69	34.21	6.47	1.82

This question tested the candidates’ ability in solving the given equation using the concept of BODMAS. The performance of this question was poor because 586,669 (63.97%) candidates failed to find the value of x in the given equation. Thus, they chose the incorrect responses A, B, C and E. The candidates who chose B or C failed to open the brackets. For instance, those who chose C made errors as follows: $x = 3(12+10) = 3+12+10 = 3+22 = 25$.

On the other hand, 313,709 (34.21%) candidates were able to choose the correct answer D (71). These candidates opened the brackets correctly as follows:

$x-3(12+10)=5$, $x-3(22)=5$, $x-3(22)=5$, $x-66=5$,

$x=5+66$ and $x=71$.

Question 13: How many $\frac{1}{4}$ are in 36?

A. 9 B. 40 C. 32 D. 124 E. 144.

Candidates’ Responses

Option	**A**	**B**	**C**	**D**	**E***	**Others**
No. of Candidates	498,263	63,968	77,228	38,053	226,045	13,526
% of Candidates	54.33	6.98	8.42	4.15	24.65	1.47

This question tested the candidates’ ability to divide whole number by fraction. The performance in this question was poorly done as 677,512 (73.88%) candidates chose the incorrect answers A, B, C and D. Those candidates lacked the knowledge to divide whole number by fraction. For example, 498,263 (54,33%) candidates who chose distractor A (9) multiplied $\left(36 \times \frac{1}{4} = 9\right)$ instead of dividing $\left(36 \div \frac{1}{4} = 36 \times \frac{4}{1} = 144\right)$.

However, 226,045 (24.65%) candidates were able to divide whole number by fraction, whereas they chose the correct answer E (144). The candidates were able to obtain the correct answer because they understood the requirement of the question, that is (how many $\frac{1}{4}$ are in 36), the operation is division.

Question 14: If $107 - M = 18$. The value of *M* is
A. 89 B. 88 C. 98 D. 99 E. 86.

Candidates' Responses

Option	**A***	**B**	**C**	**D**	**E**	**Others**
No. of Candidates	590,322	97,981	62,485	98,116	53,633	14,546
% of Candidates	64.37	10.68	6.81	10.70	5.85	1.59

This question tested the ability of the candidates to solve the given equation in order to get the value of *M*. The performance of this question was good as 590,322 (64.37%) candidiates were able to apply the knowledge of solving an equation to find the correct value of *M*. For example, they were able to write $M = 107 - 18 = 89$ and therefore choose the correct answer A (89).

Despite the good performance, yet 312,215 (34.04%) candidates chose incorrect responses B, C, D and E. For example, there were candidates who wrote the given equation as $M = 107 - 19 = 88$, $M = 108 - 18 = 90$ or $M = 107 - 8 = 99$, and eventually got a wrong answer.

Question 15: The square root of $\frac{4}{9}$ is.

A. $\frac{16}{81}$ B. $\frac{2}{3}$ C. $\frac{2}{9}$ D. $\frac{4}{3}$ E. 36.

Candidates' Responses

Option	A	B*	C	D	E	Others
No. of Candidates	184,056	547,811	68,504	37,579	66,612	12,521
% of Candidates	20.07	59.73	7.47	4.10	7.26	1.37

This question tested the candidates' knowledge about the square root of a fraction. The performance in this question was good as 547,811(59.73%) candidates were able to find the square root of $\frac{4}{9}$ and chose the correct answer B $\left(\frac{2}{3}\right)$. In order to get the correct answer, the candidates worked out the square root of the numerator and denominator as follows: The square root of 4 was 2 and the square root of 9 was 3. Therefore, they wrote that the square root of $\frac{4}{9}$ is $\frac{2}{3}$.

On the other hand, 356,751 (38.90%) candidates chose incorrect answers A, C, D or E. For example, 184,056 (20.07%) candidates chose distractor A $(\frac{16}{81})$ because they failed to distinguish between a square and a square root. They performed a wrong step as follows;

$\frac{4}{9} \times \frac{4}{9} = \frac{16}{81}$.

Question 16: The Greatest Common Factor (G.C.F) of 12, 18 and 24 is

A. 2 B. 3 C. 4 D. 6 E. 8.

Candidates' Responses

Option	**A**	**B**	**C**	**D***	**E**	**Others**
No. of Candidates	132,584	56,666	84,340	562,944	68,811	11,738
% of Candidates	14.46	6.18	9.20	61.38	7.50	1.28

The question tested the candidates' ability in finding the Greatest Common Factor (GCF) of the given set of numbers. This question is one among the questions which were performed well. A total of 562,944 (61.38%) candidates were able to find the GCF of the three given numbers and chose the correct answer D (6). They found the factors and selected the greatest common factor of all the numbers. The following table was one of the methods used to get the correct answer by finding the factors of 12, 18 and 24.

Numbers	Factors									
12	1	2	3	4	6			12		
18	1	2	3		6		9		18	
24	1	2	3	4	6	8		12		24

The Greatest Common Factor of 12,18 and 24 was 6, which was identified in option D.

On the other hand, 342,401 candidates, equivalent to 37.34 percent, did not get the correct answer. They lacked the knowledge of finding Greatest Common Factors and chose distractors A, B, C and E. For instance, the candidates who chose the distractor A or B, knew that 2 and 3 were factors of the given numbers 12, 18 and 24 but failed to realise that none of the numbers was the Greatest Common Factor.

Question 17: Change $4\frac{1}{2}\%$ into simple fraction.

A. $\frac{9}{20}$ B. $\frac{9}{200}$ C. $\frac{45}{100}$ D. $\frac{4.5}{10}$ E. $\frac{4.5}{100}$.

Candidates' Responses

Option	A	B*	C	D	E	Others
No. of Candidates	97,487	617,038	101,161	44,592	45,560	11,245
% of Candidates	10.63	67.28	11.03	4.86	4.97	1.23

This question tested the candidates' ability to change the percentage of a mixed number into simple fraction. A total of

617,038 (67.28%) candidates who did this question showed good performance and chose the correct response B $\left(\frac{9}{200}\right)$. The candidates obtained the correct answer through the following steps:

$$4\frac{1}{2}\% = \frac{(2\times 4)+1}{2}\% = \frac{8+1}{2}\% = \frac{9}{2}\% = \frac{9}{200}.$$

On the other hand, 288,800 (31.49%) candidates did not follow the steps to change the percent of a mixed number into a simple fraction. Eventually, they chose incorrect answers A, C, D and E. For instance, 97,487 (10.63%) candidates who chose an incorrect answer A, instead of dividing the mixed number by 100, they divided it by 10 in the last step $\left(\frac{9}{2}\% = \frac{9}{10}\right)$. Hence, they obtained $\frac{9}{20}$ instead of $\frac{9}{200}$ as required.

Question 18: If $6x = -2$, find the value of $\frac{6}{x}$.

A. -3 B. -9 C**.** -18 D. -12 E. -24.

Candidates' Responses

Option	**A**	**B**	**C***	**D**	**E**	**Others**
No. of Candidates	338,225	74,913	216,990	199,091	74,001	13,863
% of Candidates	36.88	8.17	23.66	21.71	8.07	1.51

This question tested the ability of the candidates to find the value of algebraic expression by using the value of x, obtained from the given equation. Statistics reveal that the performance of this question was poor because 686,230 (74.83%) candidates failed to answer it correctly. Those candidates chose the incorrect answers A, B, D or E after failing to find the value of $\frac{6}{x}$ using the given equation $6x=-2.$ For example, those who chose A (- 3), found the value of x from $6x=-2$ and obtained $x=-2,$ which was wrong. Therefore, they incorrectly used it to find the value of algebraic expression $\frac{6}{x}$ and obtained $\frac{6}{-2}=-3.$

Inspite of the poor performance, 216,990 (23.66%) candidates managed to get the correct answer C (-18). For example, they were able to find the value of x correctly, given that $6x=-2$, that is $x=-\frac{2}{6}=-\frac{1}{3}.$ They substituted it in $\frac{6}{x}$ and lastly performed division by writing $\frac{6}{\left(-\frac{1}{3}\right)}=6\times-\frac{3}{1}=-18$.

Question 19: Simplify $(6x)^2 \div 3x$.

A. $2x$ B. $3x$ C. $4x$ D. $6x$ E. $12x$.

Candidates' Responses

Option	**A**	**B**	**C**	**D**	**E***	**Others**
No. of Candidates	142,538	107,628	160,072	57,865	436,030	12,950
% of Candidates	15.54	11.74	17.45	6.31	47.55	1.41

This question tested the ability of the candidates to simplify an expression. It was averagely performed as 436,030 (47.55%)

candidates were able to simplify the given expression correctly and got the correct answer E ($12x$).

On the other hand, 468,103 (51.04%) candidates failed to simplify the given expression correctly. As a result, they opted for incorrect responses A, B, C and D, indicating lack of knowledge to simplify the algebraic expression. For example, there were candidates who wrote $\frac{(6x)^2}{3x} = \frac{6x^2}{3x} = 2x$ and therefore chose response A ($2x$) which was incorrect. This shows that such candidates ignored the use of brackets by thinking that exponent 2 works only for x, that is $(6x)^2 = 6(x \times x) = 6x^2$.

Question 20: Change $\frac{1}{8}$ into percentage.

A. 8% B. 12.5% C. 24.5% D. 25% E. 50%.

Candidates' Responses

Option	**A**	**B***	**C**	**D**	**E**	**Others**
No. of Candidates	272,904	482,272	38,300	75,724	35,335	12,548
% of Candidates	29.76	52.59	4.18	8.26	3.85	1.37

This question tested the candidates'understanding of changing the fractions into percentages. The performance in this question was average since 482,272 (52.59%) candidates were able to change $\frac{1}{8}$ into percentage and chose the correct answer B (12.5%). Those candidates managed to get the answer by multiplying $\frac{1}{8}$ by 100 as follows: $\frac{1}{8} \times 100 = \frac{100}{8} = 12.5\%$.

On the other hand, 422,263 (46.05%) candidates failed to change the fraction into percentage, which resulted to choosing distractors A, C, D or E. For example, those candidates who chose distractor A, just added a percentage sign to the denominator to get 8%, which is not correct.

Question 21: A Standard Seven pupil ran a distance of MCCLVIII meters around the football pitch. In normal numbers this distance is
A. 1,158 B. 1,208 C. 1,257 D. 1,258
E. 1,273.

Candidates' Responses

Option	**A**	**B**	**C**	**D***	**E**	**Others**
No. of Candidates	95,869	60,281	77,098	633,764	37,522	12,549
% of Candidates	10.45	6.57	8.41	69.11	4.09	1.37

The question tested the candidates' knowledge to convert Roman numbers into Normal numbers. This question is among the questions that were well attempted by the majority of the candidates. The candidates who answered this question correctly were 633,764 (69.11%) and they chose the correct response D (1,258). Those candidates had knowledge of changing Roman numbers into Normal numbers.

However, 270,770 (29.52%) candidates did not get the correct answer as they lacked the knowledge of changing Roman Numbers into normal numbers. Therefore, they chose the distractors A, B, C or E. For example, those who chose A, B or C, omitted one letter inaccurately in the given Roman number when converting it into normal numbers. Thus, MCCLVIII was changed to MCLVIII (1157), MCCVIII (1208) or MCCLVII (1257).

Question 22: What is a fraction of 24 m in 36 m?

A. $\frac{2}{3}$ B. $\frac{2}{9}$ C. $\frac{1}{3}$ D. $\frac{3}{2}$ E. $\frac{1}{9}$.

Candidates' Responses

Option	**A***	**B**	**C**	**D**	**E**	**Others**
No. of Candidates	463,188	124,083	163,554	86,205	62,959	17,094
% of Candidates	50.51	13.53	17.83	9.40	6.87	1.86

The question tested the candidates' ability to calculate and write the fraction of 24m in a unit of 36m. This question had an average performance as 463,188 (50.51%) candidates answered it and chose the correct answer A$\left(\frac{2}{3}\right)$. The candidates who got the correct answer, used the knowledge of fraction as follows: 24m in 36m is equal to $24\text{m} \div 36\text{m}$, which was the same as $\frac{24\text{ m}}{36\text{m}} = \frac{24}{36} = \frac{2}{3}$.

On the other hand, 436,801 (47.63%) candidates chose incorrect answers B, C, D or E. This shows how the candidates lacked the knowledge of writing the fraction of 24m in a unit of 36m. For example, 86,205 (9.40%) candidates chose distractor D$\left(\frac{3}{2}\right)$

because they did not understand one between 24m and 36m units was supposed to be numerator or denominator when writing the fraction. Therefore, the language used in the question indicates that 24m was supposed to be the numerator and 36m was supposed to be the denominator.

Question 23: How many prime numbers are there between 13 and 19?

A. 1 B. 2 C. 3 D. 4 E. 5.

Candidates' Responses

Option	**A***	**B**	**C**	**D**	**E**	**Others**
No. of Candidates	475,736	215,988	109,381	45,752	57,771	12,455
% of Candidates	51.87	23.55	11.93	4.99	6.30	1.36

This question tested the candidates' knowledge about the concept of prime numbers. The question had an average performance because 475,736 (51.87%) candidates were able to determine the prime numbers between 13 and 19, and they chose the correct answer A (1). They used listing method and found that the numbers were 14, 15, 16, 17 and 18. These candidates remembered that any prime number must be divisible by 1 and itself. Therefore, 17 was the only number that had that behaviour.

On the other hand, 428,892 (46.77%) candidates failed to obtain the prime numbers between 13 and 19. Therefore, they chose the incorrect responses A, C, D or E. For instance, the candidates who chose B, thought that 15 was also a prime number and therefore the required answers were 15 and 17, which was wrong. They did not have correct concept to identify the prime numbers.

Question 24: Change $12\frac{1}{2}\%$ into decimals.

A. 0.25 B**.** 0.125 C. 0.025 D. 1.25 E. 12.5

Candidates' Responses

Option	**A**	**B***	**C**	**D**	**E**	**Others**
No. of Candidates	171,802	351,967	112,530	86,906	180,428	13,450
% of Candidates	18.73	38.38	12.27	9.48	19.67	1.47

This question tested the candidates' ability to change percentages of mixed numbers into decimals. The performance in this question was poor as 551,666 (60.15%) candidates chose the incorrect responses A, C, D and E. This shows that those candidates failed to distinguish between mixed numbers and percentage. For example, those who chose the incorrect response E (12.5), did not consider the percent but changed the mixed number into decimal as follows:

$$12\frac{1}{2}\% = \frac{(12\times 2)+1}{2} = \frac{24+1}{2} = \frac{25}{2} = 12\frac{1}{2} \text{ or } 12.5.$$

Despite the noted poor performance in this question, 351,967 (38.38%) candidates worked out and chose the correct answer B (0.125). Those candidates followed the following steps to get the answer:

$$12\frac{1}{2}\% = \left[\frac{(12\times 2)+1}{2}\%\right] = \frac{24+1}{2}\% = \frac{25}{2}\% = \frac{25}{200} = \frac{1}{8} = 0.125.$$

Question 25: Multiply 7 m 30 cm by 5. Write the answer in centimeters.

A. 3,635 cm B. 3,530 cm C. 3,630 cm D. 3,550 cm
E. 3,650 cm.

Candidates'Responses

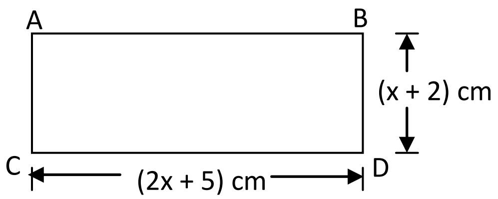
Option	**A**	**B**	**C**	**D**	**E***	**Others**
No. of Candidates	65,943	85,481	81,740	115,638	553,525	14,756
% of Candidates	7.19	9.32	8.91	12.61	60.36	1.61

This question tested the ability of the candidates to multiply the units in metres and centimetres by a whole number and write the answer in centimeters. The performance was good because 553,525 (60.36%) candidates answered this question correctly. The correct answer was obtained through the following steps: Firstly, they multiplied 7 m 30 cm by 5 to get 35 m 150 cm. Secondly, they used the relation $1\text{m} = 100\text{cm}$ to express 35m into centimeters, that is, 35m = 3500cm. Lastly, they calculated the sum, that is, $3500\text{cm} + 150\text{cm} = 3650\text{cm}$ and opted for the correct answer E (3,650cm). Other candidates converted 7 m into 700 cm, then added 700 cm to 30 cm to get 730 cm. Lastly, they multiplied 730 cm by 5 to get E (3,650 cm).

Contrarily, 348,802 (38.03%) candidates failed to answer this question correctly, as a result they opted for the distractors A, B, C or D. These candidates failed to convert and multiply the units of length. For example, the candidates who opted for incorrect response D, converted $(35m \quad 150cm)$ into $3{,}550cm$, which was wrong, whereas others got a wrong product, which is, $730\,cm \times 5 = 3{,}550\,cm$.

2.2 Section B: Figures

Question 26: Find the area of the rectangle ABCD, whose perimeter is 50 cm.



A. 136 cm^2 B. 126 cm^2 C. 146 cm^2 D. 156 cm^2
E. 225 cm^2

Candidates' Responses

Option	**A***	**B**	**C**	**D**	**E**	**Others**
No. of Candidates	366,640	185,579	126,154	107,320	113,733	17,657
% of Candidates	39.98	20.24	13.76	11.70	12.40	1.93

This question tested the candidates' ability to find the area of a rectangle which has the perimeter of 50 cm, whereas the units of length and width were given in algebraic expressions. The performance in this question was average as 366,640 (39.98%) candidates chose the correct answer A (136 cm^2). The candidates used the formula of perimeter to find the length and width as follows: Perimeter = 2(length + width) thus, $50\,\text{cm} = 2((2x+5)\,\text{cm} + (x+2)\,\text{cm})$ $50\,\text{cm} = 2(2x + x + 2 + 5)\,\text{cm}$ and $50\,\text{cm} = 2(3x+7)\,\text{cm}$ then $50 = (6x+14)\,\text{cm}$,

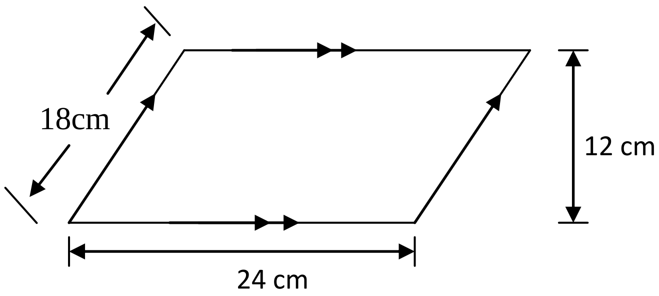
whereas $(50-14)\,\text{cm} = 6x\,\text{cm}$ $36\,\text{cm} = 6x\,\text{cm}$ and $x = \dfrac{36}{6} = 6.$

Therefore,

$Length = (2 \times 6 + 5)\text{ cm} = 17\text{cm}$ and $Width = (6+2)\text{cm} = 8\text{cm}$. The area was obtained by multiplying length and width, that is $17\text{cm} \times 8\text{cm} = 136\text{cm}^2$.

However, 532,786 (58.10%) candidates failed to answer this question and chose the incorrect responses B, C, D and C. The majority of candidates failed to find the length and width by using the given perimeter of the rectangle. For example, the candidates who chose option B, found the length as 17 cm and width as 8 cm, but made errors during the multiplication of ones 7 and 8, whereas instead of carrying 5 they carried 4 to obtain the area as 126 cm^2.

Question 27: Find the perimeter of the following parallelogram.



A. 54cm B. 64cm C. 72cm D. 78cm E. 84cm.

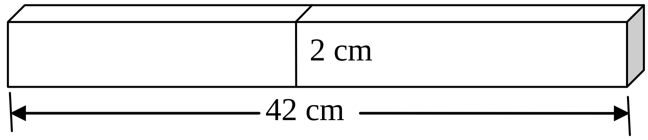
Candidates' Responses

Option	A	B	C	D	E*	Omitted
No. of Candidates	417,342	93,067	104,300	125,989	162,414	13,971
% of Candidates	45.51	10.15	11.37	13.74	17.71	1.52

This question tested the candidates' ability to find the perimeter of the parallelogram. The candidates' performance of this question was poor. A total of 740,698 (80.77%) candidates chose incorrect answers A, B, C and D. For instance, many candidates (417,342 (45.51%)) who did not understand the relationship of the sides of the parallelogram with equal length, added the length of 18 cm, 24 cm and the height of the parallelogram 12 cm to obtain 54 cm, which was an incorrect answer. Others added the length of the sides 18 cm, 24 cm, 24 cm and the height of the parallelogram 12 cm to obtain 78 cm, which was also incorrect. This shows that the candidates had no knowledge about the relationship of the sides of the parallelogram.

However, 162,414 (17.71 %) candidates worked out the question and chose the correct answer E (84 cm) as the perimeter of the parallelogram. The answer was obtained by adding the four lengths of the parallelogram, which were the length $18\,\text{cm} + 24\,\text{cm} + 18\,\text{cm} + 24\,\text{cm} = 84\,\text{cm}$.

Question 28: Ben and Tina shared equally a piece of soap which has a volume of 252 cm^3. If the piece of soap had the length of 42 cm and height of 2 cm, as shown in the figure, find the width of the piece that Ben got.



A. 1 cm B. 2 cm C. 3 cm D. 4 cm E. 5 cm.

Candidates' Responses

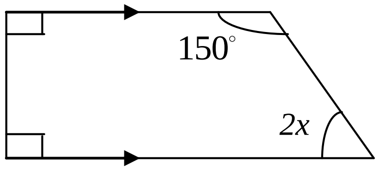
Option	A	B	C*	D	E	Others
No. of Candidates	91,520	229,428	295,019	181,836	100,297	18,983
% of Candidates	9.98	25.02	32.17	19.83	10.94	2.07

This question tested the candidates' ability to find the width of a rectangular piece of soap with a length of 40 cm, height of 2 cm and volume of 252 cm^3 that Ben and Tina shared equally. This question is among the questions whose performance was poor. A total of 603,081 (65.77%) candidates got wrong answers A, B, D and E. For example, the candidates who chose option B, it is obvious that they did not understand even how to use the formula for the volume of a rectangular cylinder which was supposed to be $\text{length} \times \text{width} \times \text{height}$ which could be $\text{volume} = 42 \times 2 \times 2 = 168$. If this step was used, the candidates could have understood that width = 2, width = 1 or width = 4, none of them was correct.

On the other hand, 295019 (32.17%) candidates were able to answer this question correctly and chose the correct option C (3cm). Those candidates had adequate knowledge on how to find the volume of a rectangular cylinder. In order to get the correct answer, the candidates used the following steps:

$Volume = Length \times Width \times Height$ where $252cm^3 = 42cm \times Width \times 2cm$ and $252cm^3 = 84cm^2 \times Width$. So, $Width = \frac{252}{84} = 3cm$ as it is found in the correct option C.

Question 29: Find the value of x in the following figure:



A. 10° B. 15° C. 20° D. 30° E. 45°

Candidates' Responses

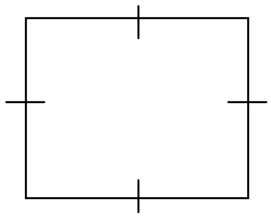
Option	A	B*	C	D	E	Others
No. of Candidates	59,797	467,639	87,091	185,775	100,982	15,799
% of Candidates	6.52	50.99	9.50	20.26	11.01	1.72

This question tested the ability of the candidates to find the size of the angle of a four-sided polygon. The performance in this question was average as 467,639 (50.99%) candidates managed to answer this question and chose the correct option B (15^0). This verifies that the candidates understood that, a four-angled polygon has 360^0 as the total number of degrees. For example, they did as follows: $90^0 + 90^0 + 150^0 + 2x = 360^0$, $330^0 + 2x = 360^0$,

$2x = 360^0 - 330^0 = 30^0$ and $x = \frac{30^0}{2} = 15^0$.

However, 433,645 (47.29%) candidates chose incorrect responses A, C, D and E. Although some of the candidates were able to formulate equation $2x + 150^0 = 180^0$ to get $2x = 30^0$, they calculated $x = 30^0$ which was wrong. This shows that those candidates lacked the knowledge on how to solve the equation.

Question 30: The name of the following figure is



A. a rectangle B. a square C. a triangle D. a circle
E. four lines.

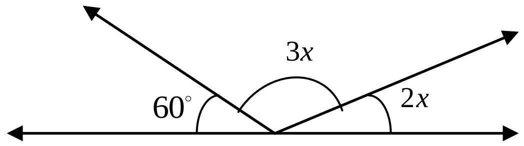
Candidates' Responses

Option	**A**	**B***	**C**	**D**	**E**	**Others**
No. of Candidates	75,718	738,990	22,144	20,205	48,200	11,826
% of Candidates	8.26	80.58	2.41	2.20	5.26	1.29

This question tested the candidates' understanding to identify and give a name of a given quadrilateral. It was the fourth question among other questions which had good performance. The performance of this question was good because 738,990 (80.58%) candidates chose the correct answer B (a square). This shows that they managed to identify the name of the given four-sided polygon.

On the other hand, 178,093 (18.13%) candidates chose the incorrect answers A, C, D and E. For example, 75,718 (8.26%) chose A, as they failed to understand the difference between a rectangle and a square. Others chose option E as they thought that the name of a figure is four lines. This indicates that the candidates did not know the names of the figures in geometry.

Question 31: Find the value of x in the following figure:



A. $10°$ B. $20°$ C. $22°$ D. $24°$ E. 60°.

Candidates' Responses

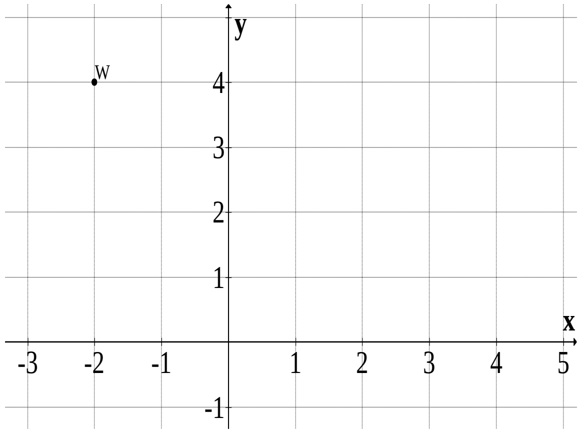
Option	**A**	**B**	**C**	**D***	**E**	**Others**
No. of Candidates	68,811	115,165	71,517	482,821	162,705	16,064
% of Candidates	7.50	12.56	7.80	52.65	17.74	1.75

This question tested the candidates' ability to find the value of *x* using the angles given in a straight line. The performance was average since 482,821 (52.65%) candidates chose the correct answer D ($24°$). This indicates that those candidates knew that the sum of all angles in a straight line is equal to 180°, which is $60^{\circ} + 3x + x = 180^{\circ}$, whereas $x = 24^{\circ}$.

However, statistics show that 418,198 (45.60%) candidates failed to answer this question due to lack of knowledge about the relationship of angles in a straight line. For example, the candidates who opted for the distractor E thought that the sum of all angles in a straight line is equal to 360°, therefore they worked out $60^{\circ} + 3x + x = 360^{\circ}$ and obtained $x = 60^0$.

Also, the candidates who chose distractors A, B and C failed to formulate the equation $60^{\circ} + 3x + x = 180^{\circ}$ using the given information in the figure.

Question 32: Write the coordinates of the point W in the following xy-plane:



A. (0, 4) B. (-2, 4) C. (-2, 0) D. (4, -2) E. (-2, -3).

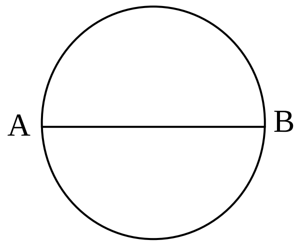
Candidates' Responses

Option	**A**	**B***	**C**	**D**	**E**	**Others**
No. of Candidates	47,648	580,446	47,396	189,012	40,194	12,387
% of Candidates	5.20	63.29	5.17	20.61	4.38	1.35

This question measured the candidates' ability on reading and identifying the coordinates of the point. The analysis of the candidates' responses in this question shows that the performance was good as 580,446 (63.29%) candidates were able to identify the correct coordinates by choosing B(-2,4). These candidates wrote the coordinates of point W by first writing the value of *x,* followed by that of *y*, that is, W(*x,y*).

However, 324,250 (35.36%) candidates chose distractors A, C, D and E. These candidates lacked enough knowledge on reading the coordinates of the point. For example, 189,012 (20.61%) candidates who chose option D (4,-2) did not have the correct concept. Those candidates failed to understand that when reading the coordinates of a point, the value of x comes first followed by that of y, but instead, they interchanged their values.

Question 33: Find the circumference of the following circle whose diameter AB is 200 cm. (Use $\pi = 3.14$):



A. 3.14 cm B. 31.4 cm C. 314 cm D. 414 cm E. 628 cm.

Candidates' Responses

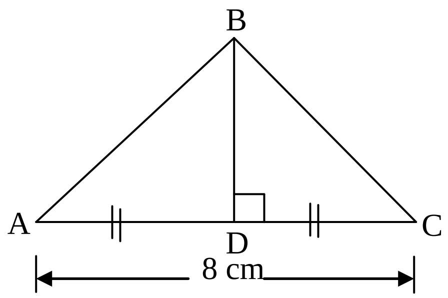
Option	**A**	**B**	**C**	**D**	**E***	**Others**
No. of Candidates	112,127	87,086	123,670	99,176	479,739	15,285
% of Candidates	12.23	9.50	13.49	10.81	52.31	1.67

This question tested the candidates' ability to find the circumference of a circle which has a diameter of 200 cm by using $\pi = 3.14$. The performance of this question was average as 479,739 (52.31%) candidates answered it correctly and chose the correct answer E (628 cm). The candidates' correct answer was obtained through the following steps:

$\text{Circumference} = \pi d$ whereas letter d was a diameter of the circle. Thus, $\text{Circumference} = 3.14 \times 200\,\text{cm} = 628\,\text{cm}.$

However, 422,059 (46.03%) candidates failed to find the circumference of the circle. They chose the incorrect responses A, B, C or D. For example, those who chose the distractors B and C multiplied 3.14 by 10 or 100 wrongly to get 31.4 or 314. In addition, it was surprising to see the candidates choosing A which was equal to $\pi = 3.14$. This indicates the candidates' lack of knowledge of the circumference of a circle.

Question 34: The area of triangle ABC is 36 cm^2. What is the fraction of the area of triangle BCD in the area of triangle ABC?



A. $\frac{1}{2}$ B. $\frac{1}{3}$ C. $\frac{2}{3}$ D. $\frac{1}{4}$ E. $\frac{1}{6}$.

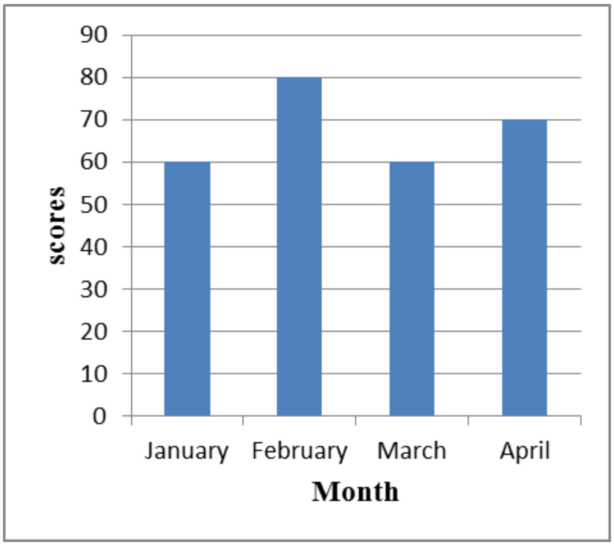
Candidates' Responses

Option	**A***	**B**	**C**	**D**	**E**	**Others**
No. of Candidates	364,970	118,276	136,395	177,192	104,497	15,753
% of Candidates	39.80	12.90	14.87	19.32	11.39	1.72

The question tested the candidates' ability to apply the formula for the area of a triangle and calculate the fraction of the area of triangle BCD in ABC. The candidates' performance in this question was poor as 536,360 (58.48%) candidates chose incorrect responses B, C, D or E. In order to get the correct answer, the candidates were supposed to follow the following steps: To find the height of the triangle ABC which was to be; $\text{Area of } \Delta ABC = \frac{1}{2}bh.$ Thus, $36cm^2 = 4h$ and $36 = 4h\,\text{cm}^2$ whereas $h = \frac{36}{4} = 9\,cm$. Moreover, the area of triangle BCD was to be obtained using the following formula: Area of $\Delta BCD = \frac{1}{2}bh$, thus, $\Delta BCD = \frac{1}{2} \times 4 \times 9 = 18\,cm^2$. Eventually, the fraction of triangle BCD in triangle ABC could be obtained as follows: $\frac{\text{Area of } \Delta BCD}{\text{Area of } \Delta ABC} = \frac{18\,\text{cm}^2}{36\,\text{cm}^2} = \frac{1}{2}$ which was the correct answer.

However, 364,970 (39.80%) candidates applied the formula of finding the area of a triangle and got the correct answer. They found the height of triangle ABC, the area of triangle BCD and finally the ratio or fraction of the two areas as shown above. So, they chose the correct option A $\left(\frac{1}{2}\right)$.

Question 35: The following graph shows the monthly test scores obtained by Juma in a mathematics subject in four months of the first term. Find the average of those scores.



A. 67 B. 67.2 C. 67.5 D. 68 E. 68.5

Candidates' Responses

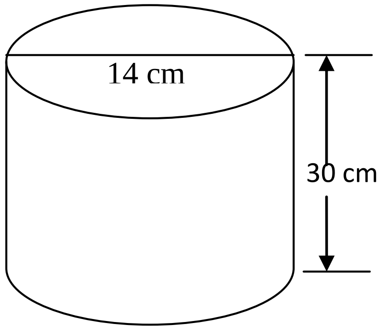
Option	A	B	C*	D	E	Others
No. of Candidates	103,675	125,251	480,556	97,471	95,894	14,236
% of Candidates	11.30	13.66	52.40	10.63	10.46	1.55

This question tested the candidates' ability to find the average of the scores from the histogram. The candidates' performance was average as 480,556 (52.40%) candidates who opted for the correct answer C were able to read every score of the four months and calculate the average as follows:

$$\frac{60+80+60+70}{4}=\frac{270}{4}=67.5.$$

On the other hand, 422,291 (46.05%) candidates failed to answer this question correctly. Lack of knowledge to read the statistics from the histogram and failure to find the average caused the candidates to chose incorrect responses A, B, D or E.

Question 36: Find the volume of the following figure in sm^3.
(Use $\pi = \frac{22}{7}$)



A. 660 B. 1,320 C. 3,520 D. 4,620 E. 4,720.

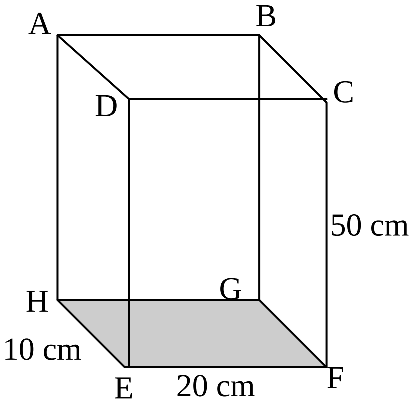
Candidates' responses

Option	A	B	C	D*	E	Others
No. of Candidates	152,373	232,136	95,739	354,943	67,980	13,912
% of Candidates	16.61	25.31	10.44	38.70	7.41	1.52

This question tested the candidates' ability to find the volume of a circular cylinder. This question was poorly done because 548,228 (59.77%) candidates failed to get the correct answer. They lacked knowledge of calculating volumes of circular cylinders and chose the incorrect answers A, B, C or E. For instance, the candidates who opted for distractor A, instead of using the formula $Volume = \pi r^2 h$, they used $Volume = \pi r h$ which was not the right one for finding the volume of the circular cylinder. They worked out the volume of the circular cylinder as $\text{volume} = \frac{22}{7} \times 7 \times 30 = 660$. There were candidates who also used an incorrect formula $volume = \pi dh$ and calculated as $\text{volume} = \frac{22}{7} \times 14 \times 30 = 1320$ and chose an incorrect answer B.

However, 354,943 (38.70%) candidates calculated correctly the volume of the circular cylinder and chose D (4,620). They used the correct formula that is, $Volume = \pi r^2 h$ and the right answer was obtained by calculating $Volume = \frac{22}{7} \times 7 \times 7 \times 30 = 4620$.

Question 37: Find the total area of the faces of the rectangular prism ABCDEFGH when the face ABCD is open.



A. $3{,}200\text{cm}^2$ B. $3{,}000\text{cm}^2$ C. $1{,}200\text{cm}^2$ D. $2{,}200\text{cm}^2$

E. $10{,}200\text{cm}^2$

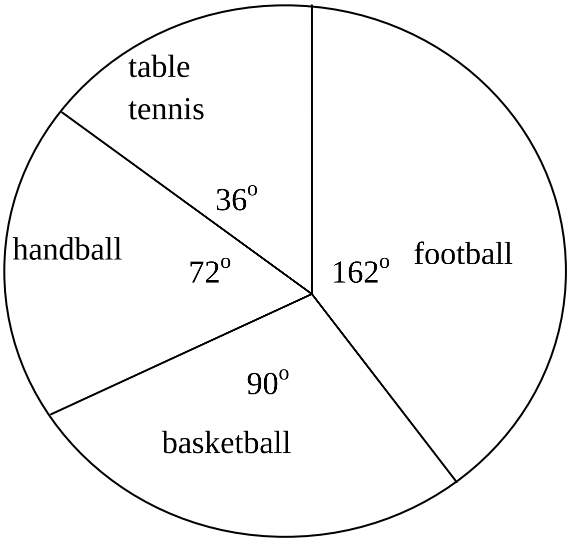
Candidates' Responses

Option	**A***	**B**	**C**	**D**	**E**	**Others**
No. of Candidates	270,090	184,865	178,126	111,778	151,978	20,246
% of Candidates	29.45	20.16	19.42	12.19	16.57	2.21

This question tested the candidates' ability to find the total surface area of a rectangular prism when one face is open. The candidates' performance was weak as far as 626,747 (68.34%) candidates failed to answer this question correctly. The reasons for the failure include: failure to understand the concept of a rectangular prism; inability to find the area of each face using the correct formula, that is *length* times *width* and failure to identify the number of faces whose area was intended. Eventually, such candidates decided to choose the distractors B, C, D and E. For example, the candidates who chose the distractor B ($3{,}000\text{cm}^2$), forgot to include the area of base *EFGH* ($20cm \times 10cm$), while those who opted for the distractor C ($1{,}200\text{cm}^2$), forgot to include the areas of faces *ABGH* ($50cm \times 20cm$) and *DCEF* ($50cm \times 20cm$).

On the other hand, 270,090 (29.45%) candidates managed to answer the question correctly. They found the area as follows: total area = area of face *ABGH* ($50cm \times 20cm$)+*area of face DCEF* ($50cm \times 20cm$)+*area of face ADEH* ($50cm \times 10cm$)+*area of face BCFG* ($50cm \times 10cm$)+*area of base EFGH* ($20cm \times 10cm$), leading to a total of $3{,}200\text{cm}^2$ and chose the correct answer A ($3{,}200\text{cm}^2$).

Question 38: The following pie chart shows the sports that the pupils of Mwenge primary school like to play. If the school has 400 pupils, how many pupils like the football?



A. 80 B. 90 C. 100 D. 162 E. 180

Candidates' responses

Option	**A**	**B**	**C**	**D**	**E***	**Others**
No. of Candidates	78,660	100,912	118,974	250,215	352,678	15,644
% of Candidates	8.58	11.00	12.97	27.28	38.46	1.71

This question tested the ability of the candidates to use the data presented in the pie chart to find the number of pupils who like to play football. Moreover, other games which are table tennis, handball and basketball were shown in the graph. The question was poorly performed because 548,761 (59.83%) candidates chose the incorrect options A, B, C or D. This shows that most of the candidates lacked the skills of relating the angle in the given pie chart to the number of pupils. For example, those who chose D (162), regarded 162^0 as the number of pupils who like football.

The analysis of the data also shows that 352,678 (38.46%) candidates were able to answer this question and chose the correct answer E (180). Those candidates had the basic knowledge of finding the number of pupils correctly from the given pie chart. They obtained the correct answer through the following steps: If n represents the number of pupils who like to play football; thus

$$n = \frac{162^0}{360^0} \times 400$$

$$n = 180.$$

2.3 Section C: Word Problems

Question 39: The car travelled at a speed of 80 kilometers per hour in 45 minutes. Find the distance of the journey.

A. 15 km B. 30 km C. 45 km D. 60 km
E. 80 km.

Candidates' Responses

Option	**A**	**B**	**C**	**D***	**E**	**Others**
No. of Candidates	205,144	144,588	178,359	264,509	105,732	18,751
% of Candidates	22.37	15.77	19.45	28.84	11.53	2.04

This question tested the candidates' ability to solve a word problem that is related to speed in the topic of Units. The candidates' performance was poor because 633,823 (69.12%) candidates failed to answer this question correctly. Basically, they were not able to recall the correct formula for finding speed. Others even failed to convert *45 minutes* into *hours* before proceeding further. So, they ended up opting for the distractors A, B, C and E. For example, there were candidates who just wrote $60\,\text{minutes} - 45\,\text{minutes} = 15\,\text{km}$ and then opted for the distractor A (15 km). Those who chose the distractor E (80 km), wrote $80\ km\ per\ hour = 80\ km$ because they failed to differentiate between speed and distance.

On the other hand, 264,509 (28.84%) candidates answered this question correctly as they managed to recall the formula for finding speed, that is $speed = \frac{distance}{time}$ or $distance = speed \times time$. Then, they remembered to convert 45 minutes into hours, that is $45 minutes = \frac{45}{60} hour$, and lastly they were able to apply the formula to find the distance, that is $distance = 80\ km/hour \times \frac{45}{60} hour = 60 km$. So they chose the correct answer D (60km).

Question 40: Teti bought the following items in the market: rice 20 kg @ sh 1,200; 15 eggs @ sh 250; 5 kg of wheat flour @ sh 1,100; 3 kg of meat @ sh 6,500 and various spices for 2,800. How much did she pay?

A. 54,550 B. 54,650 C. 55,450 D. 55,550
E. 55,650

Candidates' Responses

Option	**A**	**B**	**C**	**D***	**E**	**Others**
No. of Candidates	111,504	149,139	132,453	401,478	102,642	19,867
% of Candidates	12.16	16.26	14.44	43.78	11.19	2.17

The question tested the ability of the candidates to solve a word problem involving bills. The performance of this question was average. The total number of 401,478 (43.78%) candidates chose the correct answer D (55,550). Those candidates were able to get the correct answer after multiplying the quantity of each item by its corresponding price and summed up to get the total amout of money paid by Teti, as shown in the table below:

Goods/Item	**Quantity**	**Price per each**	**Total cost per each Item (Price × Quantity)**
20kg of rice @ shs. 1,200	20	Shs. 1,200	Shs. 24,000
15 eggs @ shs. 250	15	Shs. 250	Shs. 3,750
5kg of wheat flour @ shs. 1,100	5	Shs. 1,100	Shs. 5,500
3kg of meat @ shs. 6,500	3	Shs. 6,500	Shs. 19,500
Various spices for shs. 2,800	-	-	Shs. 2,800 +
Total amout of money paid by Teti			**Shs. 55,550**

On the other hand, 495,738 (54.05%) candidates were unable to get the correct answer and so they chose the incorrect answers A, B, C and E. Those candidates failed to get the correct answer due to lack of knowledge on multiplication and addition of quantities involving money.

Question 41: Tupa bought a radio at 450,000 shillings and then sold it at 354,000 shillings. What is the amount of loss in shillings did Tupa get?

A. 95,000 B. 96,000 C. 104,000 D. 154,000
E. 354,000

Candidates' Responses

Option	**A**	**B***	**C**	**D**	**E**	**Others**
No. of Candidates	55,401	586,264	161,413	59,091	41,547	13,367
% of Candidates	6.04	63.93	17.60	6.44	4.53	1.46

This question tested the ability of the candidates to find the amount of loss in shillings, made by Tupa in his business. This question was well performed as 586,264 (63.93%) candidates managed to answer it correctly and choose the correct option B (96,000). The analysis shows that most of the candidates had the basic knowledge about the concept of loss made in business. These candidates did as follows:

Amount of loss made by Tupa = Buying price - Selling price which is 450,000 – 354,000 = 96,000.

On the other hand, 317,452 (34.61%) candidates chose the incorrect answers A, C, D or E. For example, the candidates who chose C (104,000), made errors in subtraction and those who chose E (354,000), regarded the selling price as the amount of loss made. This shows that the candidates lacked the knowledge on how to find loss and profit made in business.

Question 42: Katungo travels a distance of 3 km from Moshona to the west until he reaches Katepo town and then a distance of 4 km towards south until he reaches Kahenga town. If he goes straight from Moshona to Kahenga without passing in Katepo, how many kilometers shall he travel?

A. 3 km B. 4 km C. 5 km D. 7 km E. 12 km.

Candidates' Responses

Option	A	B	C*	D	E	Others
No. of Candidates	56,176	68,709	204,311	281,021	290,841	16,025
% of Candidates	6.13	7.49	22.28	30.64	31.71	1.75

This question tested the ability of the candidates to solve the word problem which was about the theorem of Pythagoras and distance. The performance was poor as 696,747 (75.97%) candidates lacked the knowledge of using the theorem of Pythagoras, and hence they chose A, B, D and C. For example, 281,021 (30.64%) candidates added the distance from Mashona to Katepo (3 km) and Katepo to Kahenga (4 km) to get 7 km, and then chose the incorrect response D (7 km).

On the other hand, 204,311 (22.28%) candidates answered the question correctly and chose C (5 km). Those candidates had the knowledge of using the Pythagoras theorem which states that; "For right angled triangle, the square of hypotenuse side is equal to the sum of square of two sides of the triangle". Therefore, they did as follows $c^2 = a^2 + b^2$ which is $c^2 = 3^2 + 4^2 = 9 + 16 = 25$, whereas $c = \sqrt{25} = \mathrm{km}\,5$.

Question 43: A businessman bought 20 balls for selling them in his shop. If 18 balls had the required quality as per customers, what percent of the balls had no quality?

A. 2% B. 20% C. 18% D. 38% E. 10%.

Candidates' Responses

Option	**A**	**B**	**C**	**D**	**E***	**Others**
No. of Candidates	391,574	103,238	73,384	122,664	211,412	14,811
% of Candidates	42.70	11.26	8.00	13.38	23.05	1.62

This question tested the candidates'ability to solve a word problem about the percentage of balls which had no quality when the businessman bought 20 balls, 18 of which had the required quality.The question was poorly answered as more than three quarters (75.34%) of the candidates chose the incorrect responses A, B, C and D. Those candidates used an incorrect approach in solving the given word problem. For instance, 391,574 (42.70%) candidates who chose A, subtracted and got 2 balls. Eventually they concluded that 2% was the percent of the balls that had no quality (20- 18 = 2%). Also, 122,668 (13.38%) candidates who chose D, added the two numbers (20+18 = 38), which is an incorrect method. In general, those candidates lacked the basic skills on percentages.

However, this question was answered correctly by 211,412 (23.05%) candidates. The candidates were able to find the number of balls that had no quality by subtracting 18 from 20 to got 2

$(20-18=2)$. Finally, they computed the percentage as follows: $\frac{2}{20}\times 100=10\%$.

Question 44: Majengo primary school has 690 pupils. If $\frac{2}{3}$ of pupils performed well in Mathematics test, how many pupils did not do well?

A. 230 B. 330 C. 450 D. 460 E. 660.

Candidates' Responses

Option	**A***	**B**	**C**	**D**	**E**	**Others**
No. of Candidates	279,868	113,500	100,406	257,324	149,741	16,244
% of Candidates	30.52	12.38	10.95	28.06	16.33	1.77

The question tested the candidates' ability to solve a word problem involving fraction and whole number and work out the number of pupils who performed poorly in the Mathematics exercise. The number of pupils (690) was given and $\frac{2}{3}$ was a fraction of the pupils who did well. The question was poorly done since 620,971 candidates, equivalent to 67.72 percent, chose either the incorrect response B, C, D or E. For example, 28.06% of the candidates were attracted to distractor D because it was easy to find $\frac{2}{3}$ of 690 pupils, thus $\frac{2}{3}\text{ of }690=\frac{2}{3}\times 690=460.$ This was an incorrect answer because it refers to the number of pupils who did well.

However, 279,868 (30.52%) candidates were able to answer this question correctly and chose A (230). They calculated

$\frac{2}{3}\, of\ 690 = \frac{2}{3} \times 690 = 460$ and then found the remainder which was $690 - 460 = 230$ as the number of pupils who did not do well in the Mathematics test. This shows that, they had knowledge of operation of fractions on whole numbers.

Question 45: The cost of buying two mangoes of the same kind at Tegeta market is 2,000 shillings. If Msafiri bought five mangoes of that kind, how much did he pay?

A. shs 4,000 B. shs 5,000 C. shs 5,400 D. shs 5,500

E. shs 10,000.

Candidates' Responses

Option	A	B*	C	D	E	Others
No. of Candidates	124,866	301,174	61,393	44,068	370,130	15,452
% of Candidates	13.62	32.84	6.69	4.81	40.36	1.68

This question tested the ability of the candidates to solve a word problem that was about the cost of buying five mangoes, whereas the cost of buying two mangoes was 2000 at Tegeta market. The candidates' performance was poor as 600,457 (65.48%) candidates failed to solve the given word problem. Eventually, the candidates chose incorrect answers A, C, D or E. For example, 370,130 (40.36%) candidates chose distractor E (shs 10,000) because they multiplied five mangoes by shs. 2000. They did not understand that shs 2000 was the cost for two mangoes.

On the other hand, 301,174 (32.84%) candidates answered the question correctly and chose the correct option B (shs 5,000). The correct answer of this question was obtained through the following steps: They divided $2,000 \div 2 = 1000$ in order to get the the value of one mangoe. Then, they multiplied $1,000 \times 5 = \text{shs}\,5,000$, which was the value paid for five mangoes.

Question 46: Two children Natt and Pett shared shs.18,000 in a ratio of 2:3 respectively. How much did Pett get?

A. shs 3,600 B. shs 7,000 C. shs 7,200
D. shs 10,500 E. shs 10,800.

Candidates' Responses

Option	**A**	**B**	**C**	**D**	**E***	**Others**
No. of Candidates	188,383	129,597	155,287	78,356	347,424	18,036
% of Candidates	20.54	14.13	16.93	8.54	37.88	1.97

This question tested the candidates' ability to apply the knowledge of ratios in finding the share received by Natt na Pett, who shared shs 18,000 in a ratio of 2:3. The performance was poor as 551,623 (60.14%) candidates failed to get the correct answer, and hence chose the incorrect responses A, B, C or D. For example, the candidates who chose the incorrect response C calculated the share of Natt instead of finding the share received by Pett as it was asked in the question. Similarly, the candidates who opted for the incorrect responses A, B and D did not have the concepts of ratios. For example, there were candidates who wrote $2:3 = 2+3 = 5$ then the amount given to $Pett = \frac{18,000}{5} = 3,600$ and therefore opted for the distractor A (shs 3,600). The analysis reveals that those candidates had no knowledge on how to find ratios in calculating the share that each would get.

Contrarily, 347,424 (37.88%) candidates answered this question correctly as they managed to apply the knowledge of ratios to find the amount that Pett would get. They worked out the amount as follows: $\frac{3}{5} \times 18,000 = 10,800$, and so they opted for the correct response E (shs 10,800).

Question 47: Maendeleo primary school planted 104 tree seedlings in the school farm. If $\frac{1}{4}$ of the trees got dried, how many trees dried?

A. 21 B. 24 C. 26 D. 52
E. 78

Candidates' Responses

Option	A	B	C*	D	E	Others
No. of Candidates	85,625	126,446	483,353	89,158	116,236	16,265
% of Candidates	9.34	13.79	52.71	9.72	12.67	1.77

This question tested the candidates' ability in solving word problem involving fraction. The performance was average because 483,353 (52.71%) candidates answered this question and chose the correct response C (26). For example, they multiplied $\frac{1}{4}$ by 104 tree seedlings and got 26 trees which dried.

On the other hand, 417,465 (45.52%) candidates failed to answer this question and chose the incorrect responses A, B, D and E. For instance, those who opted for E (78) calculated the number of the seedlings that did not dry. When they worked out the answer, they had the following steps: Number of seedlings that dried $=104-\left(\frac{1}{4}\times 104\right)=104-26=78.$

Question 48: The duplicating machine produces 20 copies of papers at 40 seconds. How many copies shall be duplicated in one hour?

A. 60 B. 90 C. 800 D. 1,200 E. 1,800.

Candidates' Responses

Option	A	B	C	D	E*	Others
No. of Candidates	232,310	78,791	261,792	139,924	188,262	16,004
% of Candidates	25.33	8.59	28.55	15.26	20.53	1.75

This question tested the ability of the candidates to solve a word problem which was about the unit for number of copies of paper to be duplicated by a machine in one hour, if the capacity of the machine was 20 copies in 40 seconds. The question was poorly performed as 712,817 (77.73%) candidates chose either of the incorrect responses A, B, C or D. For example, there were candidates who just added the given numerical values that led to incorrect response A (60); others just multiplied the given numerical values, ending up with the incorrect response C (800). This indicates that those candidates were unable to convert 1 hour into seconds (that is, 1 hour = $1\times 60\times 60=3600$ seconds) before performing the ratios.

However, 188,262 (20.53%) candidates were able to convert 1 hour into seconds and then perform the ratios correctly, that is $\frac{20\times 3600}{40}$ = 1,800 copies of paper and chose the correct response E (1,800).

Question 49: Mokiwa ate $\frac{3}{10}$ of the bread and Jenita ate the same bread twice as much as Mokiwa. What fraction of the bread did they eat altogether?

A. $\frac{5}{10}$ B. $\frac{9}{10}$ C. $\frac{6}{10}$ D. $\frac{2}{10}$ E. $\frac{1}{10}$.

Candidates' Responses

Option	A	B*	C	D	E	Others
No. of Candidates	90,944	357,248	278,914	86,944	88,366	14,667
% of Candidates	9.92	38.95	30.41	9.48	9.64	1.60

This question tested the candidates' ability to solve the word problems related to fraction. This question was poorly done as 545,168 (59.45%) candidates chose either of the incorrect responses A, C, D or E. This shows that the candidates did not understand the requirements of the question. For instance, 90,944 (9.92%) candidates who chose A, added $\frac{3}{10}$ and $\frac{2}{10}$, thus

$\frac{2}{10}+\frac{3}{10}=\frac{3+2}{10}=\frac{5}{10}$. Other candidates (30.41%) who chose C, multiplied $\frac{3}{10}$ by 2 and got the incorrect answer $\frac{6}{10}$.

However, 357,248 (38.95%) candidates understood how to solve the word problem and chose the correct answer B$\left(\frac{9}{10}\right)$. For example, the correct answer was obtained by doing the following steps: The fraction that Mokiwa ate was $\left(\frac{3}{10}\right)$plus (the fraction that Jenita ate which is equivalent to twice the fraction that Mokiwa ate $=2\times\frac{3}{10}=\frac{6}{10}$). Altogether they ate $\frac{2}{10}+\frac{2\times3}{10}=\frac{3}{10}+\frac{6}{10}=\frac{9}{10}$.

Question 50: The average income for fruits seller in four days of a week is shs. 20,000. If the income of the first day is 22,000, the second day 18,000 and the third day is 16,000, how much does he get in the fourth day?

A. 12,000 B. 15,000 C. 20,000 D. 22,000
E. 24,000.

Candidates' Responses

Option	**A**	**B**	**C**	**D**	**E***	**Others**
No. of Candidates	153,881	161,726	129,086	75,847	380,957	15,586
% of Candidates	16.78	17.63	14.08	8.27	41.54	1.70

This question tested the candidates' ability to solve the word problem that was about finding average. The candidates' performance was average because 380,957 (41.54%) candidates answered this question correctly and therefore chose the correct response E (24,000). For example, they were able to apply the formula for finding the average, that is; $\frac{22{,}000+18{,}000+16{,}000+x}{4}=20{,}000$, where x represents the amount of the fourth day. Those candidates performed calculations and eventually got $x=24{,}000$.

Apart from that performance, statistics show that 520,540 (56.76%) candidates failed to answer the question and chose the distractors A, B, C and D. For example, those candidates did not recall the formula for finding the average, that is, $Average=\frac{Sum\,of\ the\ given\,incomes}{Number\,of\ incomes}$. They just assumed that, since the income of the second day (shs 18,000) is less than that of the first day (shs 22,000) and the income of the third day (shs 16,000) is less than that of the second day, then the income of the fourth day should be less than that of the third day. That is why they chose either distractor A (12,000) or B (15,000). This indicates that those candidates lacked knowledge on how to find average, especially in solving related word problems.

3.0 A SUMMARY OF THE ANALYSIS OF CANDIDATES' RESPONSES

The analysis of the candidates' responses in Mathematics examination in 2017 shows that:

Section A, which had 25 questions about mathematical operations, 14 were performed well, 07 were averagely done and 04 were poorly done. This indicates that 16% of the questions in section A had weak performance.

The weak performance in section A was largely contributed by inability of the candidates to: perform mathematical operations correctly such as addition, subtraction, division and multiplication of whole numbers, integers, fractions and decimals; simplify expressions and solve equations; change percentages into fractions or decimals, and fractions into percentages.

In section B, which had 13 questions on figures, 02 had good performance, 06 were averagely done, whereas 05 were poorly performed. This indicates that 38.46% of the questions in section B had weak performance. The weak performance in section B was mainly due to failure of the candidates to apply the correct formula and methods in answering the questions involving figures such as circle, square, trapezium, triangle and graph.

In section C, which had 12 questions about word problems, 01 had good performance, 03 were averagely done and 08 were poorly done. This indicates that 66.67% of the questions in section C had weak performance. The candidates had weak performance in section C due to lack of skills in solving word problems involving speed, money and percentages.

Generally, the questions about mathematical operations had better performance as compared to the questions about figures and word problems. The analysis of the candidates' performance sectionwise is shown in Appendices I, II, III, IV and V.

4.0 CONCLUSION

In general, the performance of Mathematics examination in 2017 has improved compared to that of 2016. The analysis has shown that, out of 13 topics which were measured in Mathematics examination 2017, 5 which are S*quares and Square roots*, *Whole Numbers*, *Roman Numbers*, *Coordinate Geometry* and *Decimals* were well performed. The topics that had good performance in 2016 were only 2, which are *Decimals* and *Whole Numbers*. Therefore, the number of topics with good performance has increased from 2 to 5, whereby *Whole Numbers* and *Decimals* have continued to have good performance in both 2016 and 2017.

Also, the analysis has shown that in 2017, 7 topics had average performance. Those topics were *Fractions*, *Percentages*, *Statistics*, *Integers*, *Geometry*, *Algebra* and *Money*. In 2016, only 4 topics had average performance. Those topics were *Percentages*, *Fractions*, *Whole Numbers* and *Decimals*.

On the other hand, Mathematics examination results in 2017 have shown that *Units* is the only topic that had poor performance. Also, in 2016, 6 topics which had poor performance were *Percentages*, *Statistics*, *Whole Numbers*, *Coordinate Geometry*, *Algebra* and *Money*. Therefore, the number of topics which were poorly performed has decreased from 6 topics in 2016 to 1 topic in 2017.

Further analysis has shown that some of the reasons that contributed to weak performance of the candidates include: lack of knowledge and skills on specific topics, lack of understanding of the intended concepts, use of incorrect formula, inadequate strategies and logic in mathematical operations, choosing more than one option or failure to answer some of the questions.

5.0 RECOMMENDATIONS

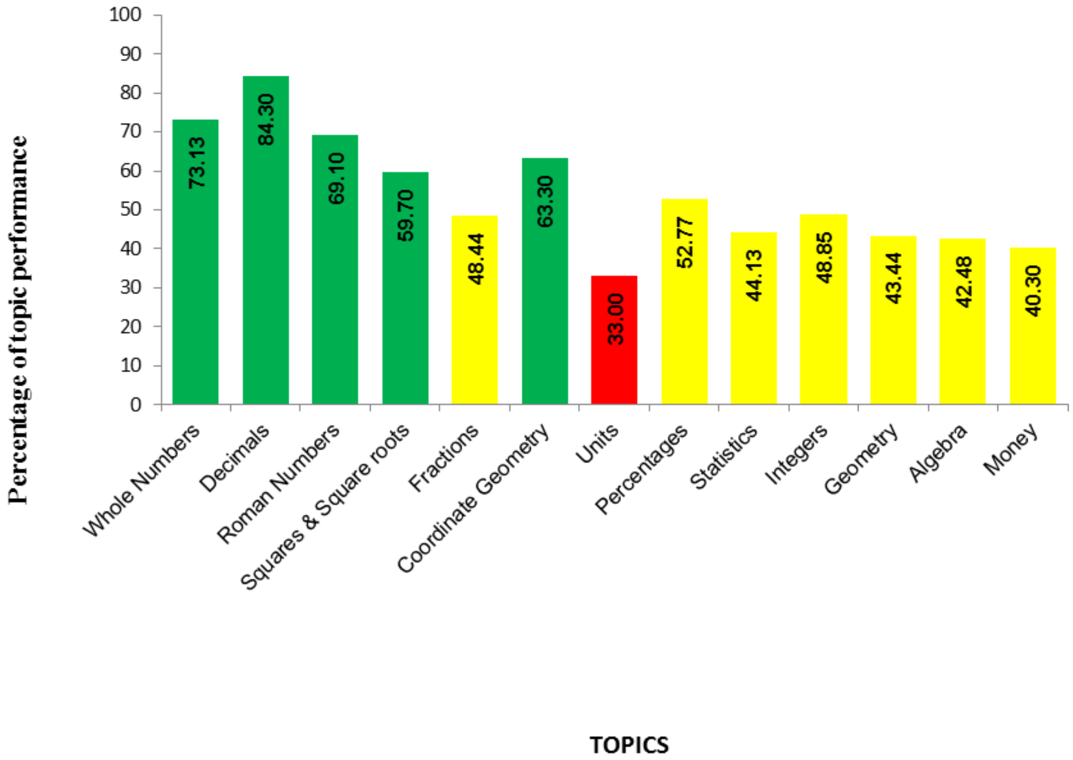
In order to improve the performance of the candidates in future Primary School Leaving Examinations (PSLE) in Mathematics, the National Examinations Council of Tanzania recommends the following:

(a) Teachers should put more effort in teaching the topic of *Units* that had weak performance. They should also put more emphasis on other topics like *Fractions*, *Percentages*, *Statistics*, *Integers*, *Geometry*, *Algebra* and *Money,* which had average performance.

(b) Teachers should provide adequate exercises, especially on the questions about figures and word problems in order to build pupils' ability of using various concepts and formulae in answering questions.

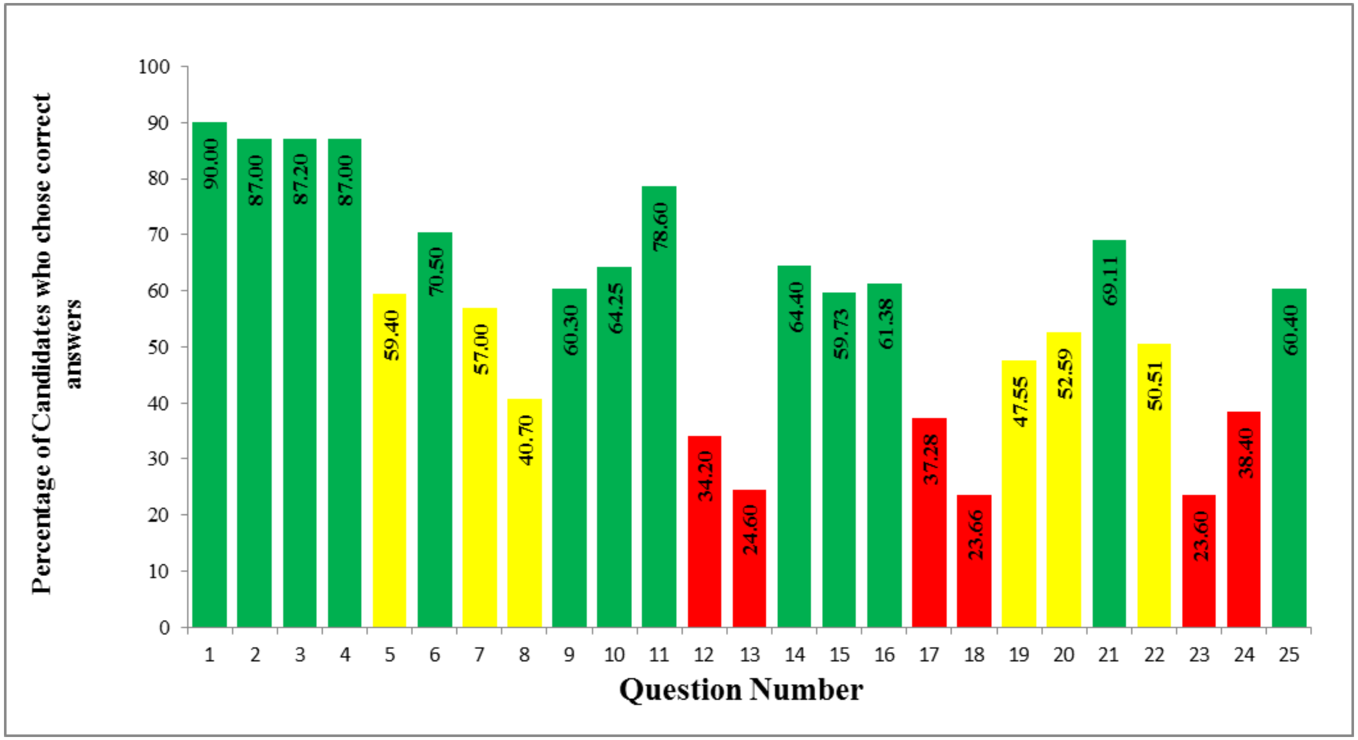
Appendix I

PERCENTAGE OF PERFORMANCE PER TOPIC



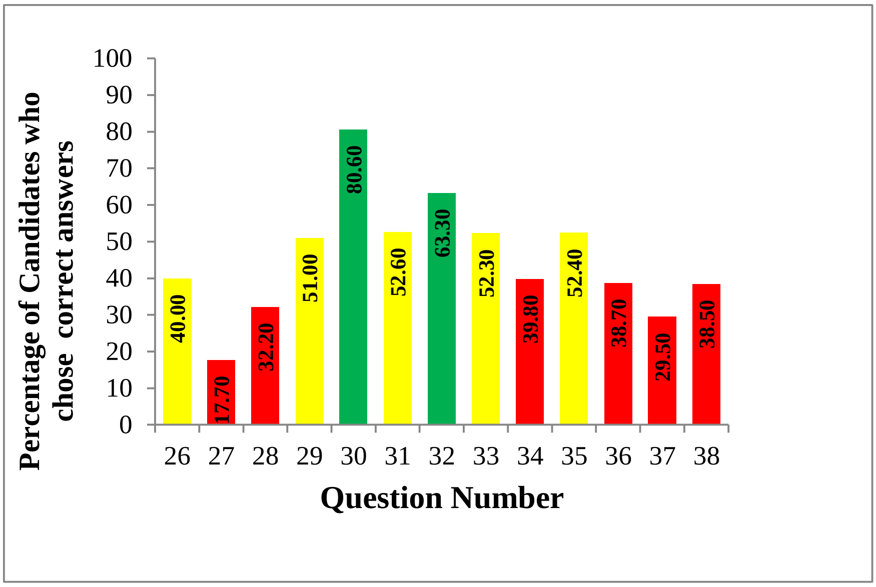
Appendix II

CANDIDATES’ PERFORMANCE IN SECTION A



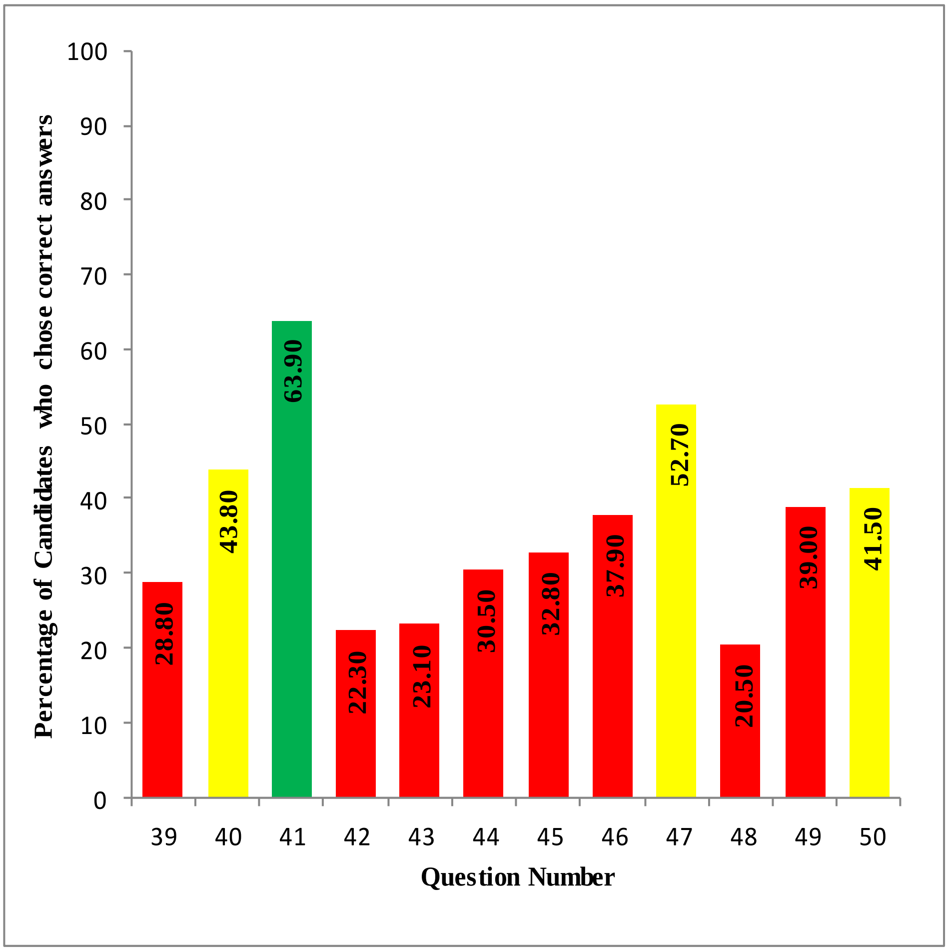
Appendix III

CANDIDATES' PERFORMANCE IN SECTION B



Appendix IV

CANDIDATES' PERFORMANCE IN SECTION C



Appendix V

COMPARISON OF CANDIDATES' PERFORMANCE TOPIC-WISE BETWEEN PSLE 2016 AND PSLE 2017

No	Topic	2016				2017			
		PERFORMANCE IN EACH QUESTION				PERFORMANCE IN EACH QUESTION			
		Question Number	Percentage of performance	Average Performance	Remarks	Question Number	Percentage of performance	Average Performance	Remarks
1	Whole Numbers	23	50.10	65.34	Good	2	87	73.1	Good
		15	53.63			3	87.2		
		19	62.97			4	87		
		10	64.06			10	64.3		
		16	64.57			16	61.4		
		2	74.63			23	51.9		
		1	75.33						
		4	77.46						
2	Decimals	11	81.30	59.74	Good	1	90	84.3	Good
		12	67.18			11	78.6		
		3	30.75						
3	Roman Numbers	21	53.10	53.10	Average	21	69.1	69.1	Good
4	Square roots and Powers	-	-	-	-	15	59.7	59.7	Good
5	Fractions	6	60.38	51.65	Average	5	59.4	48.44	Average
		5	58.36			6	70.5		
		13	51.62			9	60.3		
		9	45.44			13	24.6		
		20	42.45			22	50.5		
						44	30.5		
						47	52.7		
						49	39		
6	Coordinate Geometry	32	51.09	51.09	Average	32	63.3	63.3	Good
7	Units	46	52.02	43.75	Average	25	60.4	33.0	Poor
		25	48.78			39	28.8		
		44	30.46			48	20.5		

No	Topic	2016				2017			
		PERFORMANCE IN EACH QUESTION				**PERFORMANCE IN EACH QUESTION**			
		Question Number	Percentage of performance	Average Performance	Remarks	Question Number	Percentage of performance	Average Performance	Remarks
						42	22.3		
8	Percentages	17	62.35	39.37	Poor	17	67.3	52.77	Average
		24	32.67			20	52.6		
		43	23.08			24	38.4		
9	Statistics	39	43.11	37.86	poor	35	52.4	44.13	Average
		37	32.61			38	38.5		
						50	41.5		
10	Integers	7	51.79	37.78	poor	7	57	48.85	Average
		8	44.62			8	40.7		
		14	34.12						
		22	20.59						
11	Geometry	38	49.07	30.59	Poor	26	40	43.44	Average
		31	39.37			27	17.7		
		28	36.03			28	32.2		
		34	34.00			29	51		
		33	33.81			30	80.6		
		35	30.52			31	52.6		
		26	30.09			33	52.3		
		27	29.26			34	39.8		
		29	23.91			36	38.7		
		30	20.78			37	29.5		
		41	20.69						
		36	19.55						
12	Algebra	18	34.04	28.84	Poor	12	34.2	42.48	Averag e
		49	33.96			14	64.4		
		50	29.72			18	23.7		
		45	26.84			19	47.6		
		48	25.74						
		42	22.74						
13	Money	40	25.02	19.30	Poor	40	43.8	40.3	Average
						41	63.9		
		47	13.57			43	23.1		
						45	32.8		
						46	37.9		