

THE NATIONAL EXAMINATIONS COUNCIL OF TANZANIA



**PRIMARY SCHOOL LEAVING EXAMINATION (PSLE)
ITEMS RESPONSE ANALYSIS BOOKLET FOR THE
YEAR 2015**

MATHEMATICS

THE NATIONAL EXAMINATIONS COUNCIL OF TANZANIA



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MATHEMATICS

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FOREWORD

The report on the analysis of answers for Primary School Leaving Examination (PSLE) 2015 has been prepared by the National Examinations Council of Tanzania in order to provide feedback to different education stake holders like; policy and planning experts, curriculum developers, teachers and parents on how the pupils answered the questions of that examination. The analysis of candidates' responses has been used in this report to show different areas in the syllabus where pupils learnt effectively and those areas where pupils did not learn effectively.

The analysis of each question has been done and different information of this analysis has been shown by using tables and figures. The information is about candidates who answered the questions correctly, chose the incorrect answers, omitted some questions and those who chose more than one option. A symbol of star (*) which is put on the letter shows the letter for a correct answer. The information can help to investigate the real situation in the field of mathematics subject, the trend of performance, process of teaching and learning and finally will help to improve the examination results for completing primary education.

The analysis of candidates' responses shows that, the following factors have contributed to the pupils' inability to answer examination questions correctly: lack of knowledge and skills on the specific topic, lack of the concept required, use of incorrect formulae, lack of techniques and logic during calculation, choosing more than one answer and omitting of some questions.

The National Examinations Council of Tanzania believes that, this report shall be the unit for all education stake holders which shall promote the

performance productivity in enhancing the better environment for teaching and learning Mathematics subject. The responsible authorities have the obligation to identify, analyse and propose for the actions to be taken against the challenges that were identified for purposes of improving the performance in the Mathematics subject. Therefore the National Examinations Council of Tanzania believes that, the education stake holders shall receive and use this report as a tool to establish strategies for the aim of improving attitudes, skills and knowledge of pupils who complete primary education so that they are able to perform better in mathematics examinations.

Lastly, the National Examinations Council of Tanzania would like to thank all Examinations Officers and others who participated in preparing and complete this report to this standard. The Council shall highly appreciate comments and suggestions from various education stake holders that can help to improve the analysis of performance of Primary School Leaving Examinations questions in the near future.



Dr. Charles E. Msonde
EXECUTIVE SECRETARY

1.0 INTRODUCTION

The Primary School Leaving Examination in Mathematics subject was done on 9th September, 2015. A total of **763,493 (97.32%)** candidates sat for the mathematics examination. The analysis of mathematics subject examination results shows that **378,502 (49.58 %)** candidates passed the examination.

The Primary School Leaving Examination in Mathematics subject for the year 2015 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 questions in all the three sections. Further, the candidates were instructed to solve each question and then shade the letter of the correct answer in the special answer sheet provided.

The candidates' answers were analyzed by identifying the number of candidates who chose the correct answer, those who chose the distracters and those who omitted and others. Also the analysis is done to identify the possible reasons which might have led them not to choose the correct answers. The analysis on each question has been presented by using tables and/or figures.

2.0 ANALYSIS OF CANDIDATES' RESPONSES

This section provides 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 the answer. The analysis on candidates' responses was done basing on the number of candidates who gave the correct answers, those who chose the distracters on each item and those who omitted and others.

2.1 Section A: Mathematical Operations

Question 1: $225 + 59 + 3,772 =$

- A 4,046
- B 3,956
- C 4,056
- D 4,057
- E 3,946

Candidates, Responses

Option	A	B	C*	D	E	Omitted	Others
Number of candidates	36,620	47,912	639,417	26,179	11,158	1,121	1,090
Percentage of candidates	4.8	6.28	83.75	3.43	1.46	0.15	0.14

This question was testing the candidates' ability in adding whole numbers. A total of 639,417 (83.75 %) candidates were able to add the given numbers and choose the correct answer C "4,056". This

was the best performed question in this examination. However, a total of 121,869 (15.97%) candidates chose either distracter A “4,046”, B “3,956”, D “4,057” or E “3,956”. These candidates lacked the skills of adding whole numbers. For instance, 47,912 (6.28%) candidates who opted an option B forgot to add 1 in hundreds place that was carried from the tens place and thus obtained a total of 3,956 instead 4,056. In addition, 1,121 candidates did not answer this question while 1,090 candidates chose more than one option. The candidates’ performance in this question is shown using Figure 1.1.

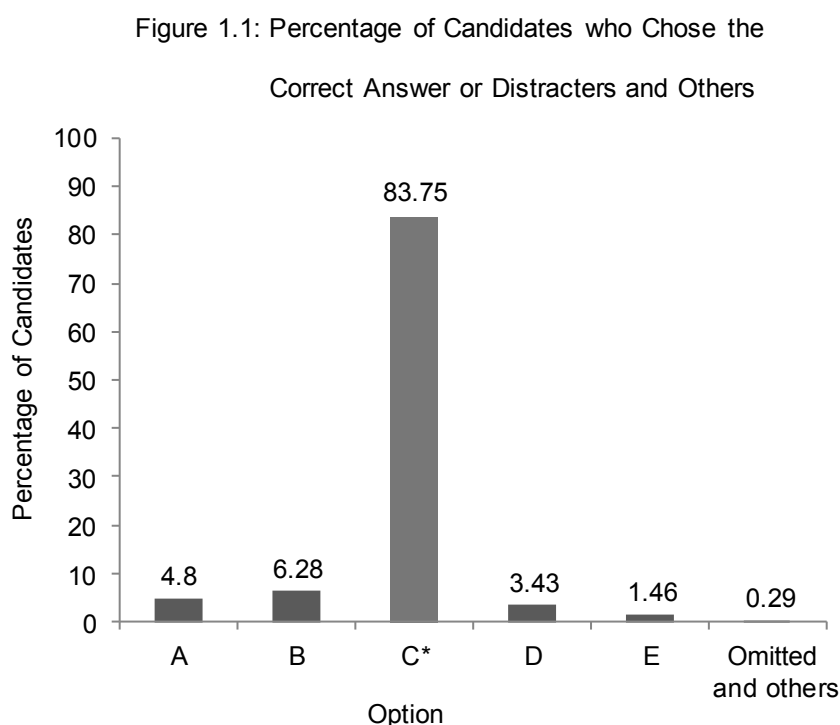


Figure 1.1 shows that many candidates (83.75%) were able to choose the correct answer C as compared to those who chose the distracters.

Question 2: $80,709 - 5,987 =$

- A 75,822
- B 74,722
- C 75,922
- D 74,812
- E 75,722

Candidates' Responses

Option	A	B*	C	D	E	Omitted	Others
Number of candidates	45,359	592,596	34,145	28,428	60,597	1,059	1,313
Percentage of candidates	5.94	77.62	4.47	3.72	7.94	0.14	0.17

Question 2 was testing the ability of the candidates in subtracting whole numbers. This was the second best performed question in this examination whereby a total of 592,596 (77.62%) candidates managed to subtract and choose the correct answer B “74,722”. On the other hand, a total of 168,529 (22.1%) candidates chose either distracter A “75,822”, C “75,922”, D “74,812” or E “75,722” as they lacked the skills to subtract whole numbers correctly. For example, 60,597 (7.94%) candidates who chose distracter E did not remember that they borrowed 1 from the thousands place value of 80,709 while subtracting the numbers. In addition, 1,059 candidates did not answer this question whereas 1,313 candidates chose more than one option. Figure 2.2 shows how the candidates answered this question.

Figure 2.2: Percentage of Candidates who Chose the

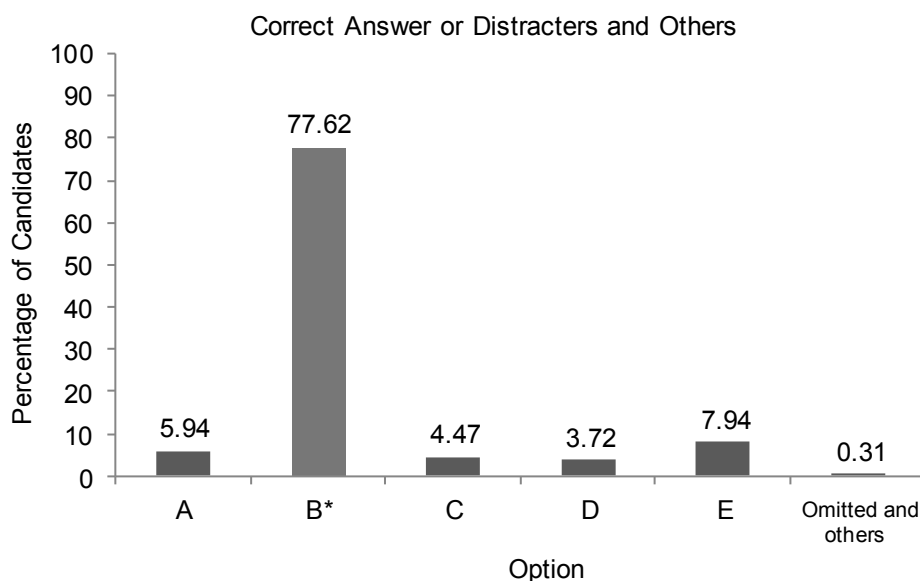


Figure 2.2 shows that the concept of subtracting whole numbers was understood by many candidates (77.62%)."

Question 3: $170.2 \div 74 =$

- A 2.30
- B 2.40
- C 2.03
- D 3.02
- E 3.20

Candidates Responses

Option	A*	B	C	D	E	Omitted	Others
Number of candidates	328,282	76,073	272,510	49,943	28,479	6,409	1,801
Percentage of candidates	43	9.96	35.69	6.54	3.73	0.84	0.24

This question tested the ability of the candidates in dividing decimal numbers. A total of 328,282 (43%) candidates managed to divide

the given numbers and chose A “2.30” which was the correct answer. However, a total of 427,005 (55.92%) candidates chose among distracters B “2.40”, C “2.03”, D “3.02” or E “3.20” whereas distracter C “2.03” attracted more candidates. Those candidates lacked the skills to divide decimal numbers. For instance, the candidates who chose distracter C “2.03” did not check the obtained answer because on multiplying 74 by 2.03, it would result to 150.22 and not 170.2, therefore the answer they chose was not correct.

Question 4: $94 \times 765 =$

- A 71,910
- B 71,470
- C 61,470
- D 71,610
- E 71,510

Candidates’ Responses

Option	A*	B	C	D	E	Omitted	Others
Number of candidates	543,188	54,185	62,397	52,385	45,335	3,992	2,015
Percentage of candidates	71.14	7.1	8.17	6.86	5.94	0.52	0.26

This question tested the ability of candidates to multiply whole numbers. A total of 543,188 (71.14%) candidates worked out and chose the correct answer A “71,910”, a situation which shows that the concept of multiplying whole numbers was understood by many candidates. On the other hand, a total of 220,309 (28.85%) candidates chose either distracter B “71,470”, C “61,470”, D “71,610” or E “71,510” as they lacked the skills to multiply whole numbers. In addition 3,992 candidates omitted the question whereas

2,015 candidates chose more than one option. Figure 4.3 shows the candidates' performance.

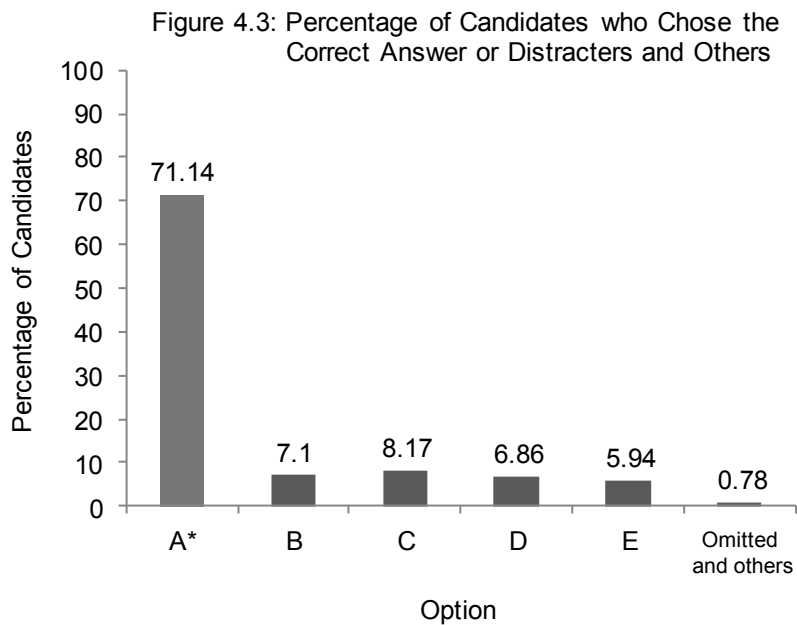


Figure 4.3 shows clearly that the performance of candidates in this question was good as they managed to multiply whole numbers correctly.

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

A $4\frac{6}{15}$

B $4\frac{5}{8}$

C $5\frac{3}{15}$

D $5\frac{4}{15}$

E $5\frac{5}{8}$

Candidates' Responses

Option	A	B	C	D*	E	Omitted	Others
Number of candidates	97,074	99,120	80,264	456,883	26,127	2,136	1,893
Percentage of candidates	12.71	12.98	10.51	59.84	3.42	0.28	0.25

This question tested the ability of candidates to add mixed fractions. A total of 456,883 (59.84%) candidates managed to add the fractions and choose D " $5\frac{4}{15}$ " which is the correct answer. Nevertheless, 302,585 (39.62%) candidates chose either distracter A " $5\frac{4}{15}$ ", B " $4\frac{5}{8}$ ", C " $5\frac{3}{15}$ " or E " $5\frac{5}{8}$ ", indicating that the candidates lacked knowledge and skills to add fractions. For example, the candidates who chose distracter B " $4\frac{5}{8}$ ", they used incorrect method as evident in the following steps:

$3\frac{3}{5} + 1\frac{2}{3} = 3 + 1\left(\frac{3+2}{5+3}\right) = 4\frac{5}{8}$. These candidates added the whole numbers ($3 + 1 = 4$), the numerator ($3 + 2 = 5$) and the denominator ($5 + 3 = 8$) separately contrary to the procedures of adding fractions. In obtaining the correct answer, the candidates were supposed to find the L.C.M of the numbers in the denominator i.e. L.C.M = $1 \times 3 \times 5 = 15$ and use it in adding the fractions as follows:

$$3\frac{3}{5} + 1\frac{2}{3} = 3 + 1\left[\frac{3 \times 3 + 5 \times 2}{15}\right] = 4\frac{9+10}{15} = 4\frac{19}{15} = 5\frac{4}{15}.$$

In addition, 2,136 candidates did not answer this question while 1,893 chose more than one option.

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

A $3\frac{2}{12}$

B $3\frac{4}{12}$

C $3\frac{11}{12}$

D $3\frac{5}{12}$

E $3\frac{7}{12}$

Candidates' Responses

Option	A	B	C	D*	E	Omitted	Others
Number of candidates	96,804	65,635	74,996	484,299	37,779	1,945	2,039
Percentage of candidates	12.68	8.6	9.82	63.43	4.95	0.25	0.27

This question was testing the candidates' skills in subtracting mixed fractions. This was among the questions which its performance was good. A total of 484,299 candidates equivalent to 63.43 percent managed to subtract the mixed fractions correctly and choose the correct answer D " $3\frac{5}{12}$ ". However, a total of 275,214 (36.05%) candidates chose either, an incorrect answer A " $3\frac{2}{12}$ ", B " $3\frac{4}{12}$ ", C " $3\frac{11}{12}$ " or E " $3\frac{7}{12}$ ". These candidates lacked the skills to subtract mixed fractions. In obtaining the correct answer, the candidates were supposed to answer this question as follows:

$$\begin{aligned} 5\frac{2}{3} - 2\frac{1}{4} &= (5 - 2)\left(\frac{2}{3} - \frac{1}{4}\right) \\ &= 3\left(\frac{8 - 3}{12}\right) \\ &= 3\frac{5}{12} \end{aligned}$$

In addition, 1,945 candidates did not answer this question while 2,039 candidates chose more than one option.

Question 7: $-14 \times (-19 + 16) =$

- A - 48
- B 48
- C 42
- D - 42
- E 49

Candidates' Responses

Option	A	B	C*	D	E	Omitted	Others
Number of candidates	88,002	68,018	289,733	142,341	168,165	4,861	2,377
Percentage of candidates	11.53	8.91	37.95	18.64	22.03	0.64	0.31

This item was testing the candidates' ability to use the addition, subtraction and multiplication on whole numbers. A total of 289,733 candidates equivalent to 37.95 percent managed to perform the operations correctly and choose the correct answer C "42". On the other hand, a total of 466,526 (61.11%) candidates chose either an incorrect answer A "- 48", B "48", D "- 42" or E "49". These candidates failed to perform the operations over whole numbers.

For example, 168,165 (22.03%) candidates who were attracted by the distracter E "49" they added 14, 16 and 19 to obtain 49 without considering the presence of multiplication and subtraction operations.

In addition, 4,861 candidates did not answer this question while 1,945 candidates chose more than one response. Figure 7.4 shows the poor performance.

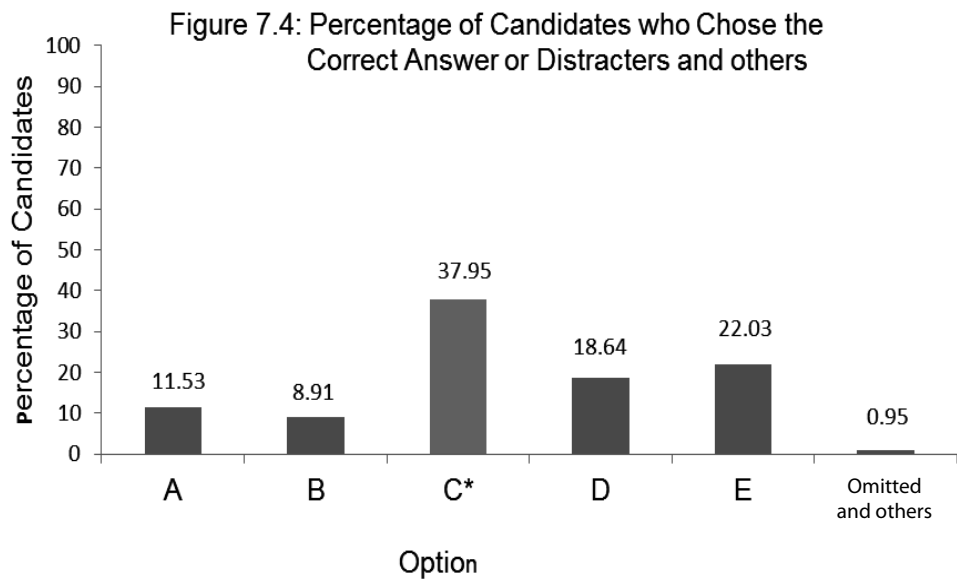


Figure 7.4 shows that many candidates (61.11%) chose the distracters as compared to those who chose the correct answer C.

Question 8: $(+17) + (-35) =$

- A - 52
- B - 18
- C 18
- D 42
- E 52

Candidates' Responses

Option	A	B*	C	D	E	Omitted	Others
Number of candidates	231,467	349,893	48,109	43,077	86,971	1,435	2,545
Percentage of candidates	30.32	45.83	6.3	5.64	11.39	0.19	0.33

This item was testing the candidates' skills to add negative and positive numbers. A total of 349,893 candidates equivalent to 45.83 percent worked out $(+17) + (-35)$ and choose the correct answer B "-18". However, a total of 409,624 (53.65%) candidates chose either an incorrect answer A "-52", C "18", D "-42" or E "52". Those candidates lacked knowledge to perform addition operation over negative and positive numbers.

For example, 231,467 (30.32%) candidates were attracted by the distracter A "-52" because; they added -17 and -35 without knowing that the number that was given in the question was +17 and not -17. Furthermore, 1,435 candidates did not answer this question while 2,545 candidates chose more than one answer.

Question 9: $16\frac{1}{2} \div 6\frac{1}{3} =$

- A $\frac{16}{6}$
- B $\frac{19}{3}$
- C $\frac{33}{2}$
- D $\frac{99}{38}$
- E $\frac{99}{19}$

Candidates' Responses

Option	A	B	C	D*	E	Omitted	Others
Number of candidates	97,945	76,131	102,926	430,608	44,792	9,313	1,782
Percentage of candidates	12.83	9.97	13.48	56.4	5.87	1.22	0.23

This item was testing the candidates' ability to divide mixed fractions. A total of 430,608 candidates equivalent to 56.4 percent managed to divide the given fractions correctly and choose the correct answer D " $\frac{99}{38}$ ". However, a total of 321,794 (42.15%) candidates chose either an incorrect answer A " $\frac{16}{6}$ ", B " $\frac{19}{3}$ ", C " $\frac{33}{2}$ " or E " $\frac{99}{19}$ ". These candidates, lacked knowledge over division of mixed fraction numbers. For example, 101,926 (13.48%) who chose distracter C changed the mixed fraction $16\frac{1}{2}$ that was in the question to be $\frac{33}{2}$ and they did not continue to divide this fraction by $6\frac{1}{3}$ in order to complete answering the question. Moreover, 9,313 candidates did not answer this question while 1,782 candidates chose more than one option.

Question 10: $7,590 \div 15 =$

- A 516
- B 56
- C 506
- D 65
- E 605

Candidates' Responses

Option	A	B	C*	D	E	Omitted	Others
Number of candidates	50,925	174,047	453,259	40,016	41,246	2,102	1,902
Percentage of candidates	6.67	22.8	59.37	5.24	5.4	0.28	0.25

This item was testing the candidates' ability to divide whole numbers. A total of 453,259 candidates equivalent to 59.37 percent were able to divide 7,590 by 15 and choose the correct answer C "506". However, a total of 306,234 (40.11%) candidates chose either an incorrect answer A "516", B "56", D "65" or E "605". These candidates lacked the skills of dividing whole numbers appropriately. For example, 174,047 (22.8%) candidates were attracted by the distracter B "56" because; they incorrectly divided 75 by 15 to get 5, and then divided 90 by 15 to get 6. Finally, they concluded that $7,590 \div 15 = 56$. Further analysis shows that, 2,102 candidates omitted this question while 1,902 candidates chose more than one response.

Question 11: $30.24 \div 12 =$

- A 2,520
- B 25.20
- C 252
- D 2.52
- E 0.252

Response pattern

Option	A	B	C	D*	E	Omitted	Others
No. of candidates	40157	89471	139314	431471	57013	4207	1864
% of candidates	5.26	11.72	18.25	56.51	7.47	0.55	0.24

This question tested the candidates' ability to divide the number in two decimal places with a two digit number. A total of 431,471 (56.51%) candidates managed to divide 30.24 by 12 and choose the correct answer D "2.52". However, a total of 325,955 (42.7%) candidates chose either distracter A "2,520", B "25.20", C "252" or E "0.252" whereby distracter C attracted more candidates. The candidates who chose distracter C were supposed to know that the correct answer for this question was required to have two decimal places and it was not supposed to be 252. This shows that some candidates lacked the skills on how to divide a two decimal number to a two digit number. Moreover, 4,207 candidates did not answer this question and 1,864 candidates chose more than one option.

Question 12: $19.62 + 6.35 + 21.1 =$

A 47.70

B 47.98

C 46.07

D 46.98

E 47.07

Response pattern

Option	A	B	C	D	E*	Omitted	Others
No. of candidates	28696	56183	76299	76712	519694	3019	2894
% of candidates	3.76	7.36	9.99	10.05	68.07	0.4	0.38

The question required the candidates to add numbers in two decimal places. The analysis of the options opted by the candidates revealed that 519,694 (68.07%) candidates chose the correct answer E “47.07”. These candidates showed an understanding of the concept of adding numbers with two decimal places. Further analysis indicates that few candidates (31.16%) chose either distracter A “47.70”, B “47.98”, C “46.07” or D “46.98”. Those candidates lacked the skills on how to add numbers in two decimal places. For instance, 76,712 (10.05%) candidates who chose distracter D could not arrange the decimal numbers in their respective place values before adding them. The correct method to obtain the correct answer for this question is as follow:

$$19.62 + 6.35 + 21.1 = 19.62 + 6.35 + 21.10 = 47.07$$

Also, it was noted that 3,019 candidates did not answer this question while 2,897 candidates chose more than one options. Figure 12.5 shows how the candidates chose the correct answer and the distracters.

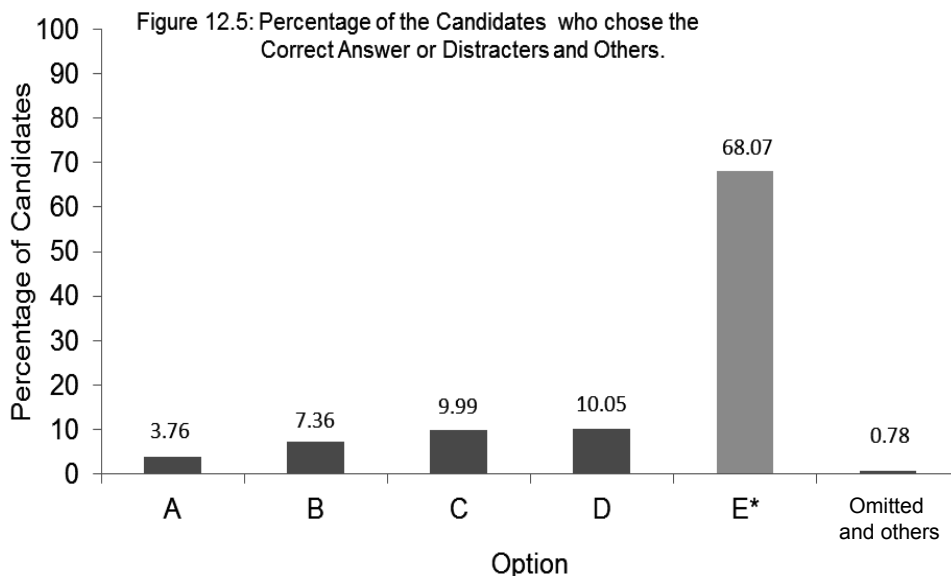


Figure 12.5 shows that many candidates chose the correct answer E as compared to those who chose the distracters, indicating that they had adequate skills to add decimal numbers.

Question 13: If $m = -7$ and $n = -5$ find the value of $\frac{m+n}{n-m}$.

- A -12
- B 2
- C 1
- D 6
- E -6

Response pattern

Option	A	B	C	D	E*	Omitted	Others
No. of candidates	166,255	110,779	155,600	77,116	248,513	2750	2484
% of candidates	21.78	14.51	20.38	10.1	32.55	0.36	0.33

Question 13 was testing the ability of the candidates to evaluate the expression $\frac{m+n}{n-m}$ by inserting the entries $m = -7$ and $n = -5$ into

the expression and then simplify it. The analysis of the options of candidates reveals that, 248,513 (32.55%) candidates managed to work out the answer E “-6”. However, further analysis revealed that a large number of candidates (66.77%) selected either distracter A “-12”, B “2”, C “6” or D “-6”. This shows that, the candidates lacked sufficient skills in evaluating the expression. For example, the candidates who chose the distracter D failed to add the negative and positive numbers in the numerator of $\frac{m+n}{n-m}$ where as they obtained

12. The required procedures to obtain the correct answer could be:

$$\begin{aligned}\frac{m+n}{n-m} &= \frac{(-7)+(-5)}{(-5)-(-7)} \\ &= \frac{-7-5}{-5+7} \\ &= \frac{-12}{2} = -6\end{aligned}$$

On the other hand, 2,750 candidates did not answer this question and 2,484 candidates chose more than one option. Figure 13.6 shows the candidates performance in this question.

Figure 13.6: Percentage of Candidates who Chose the Correct Answer or Distracters and Others

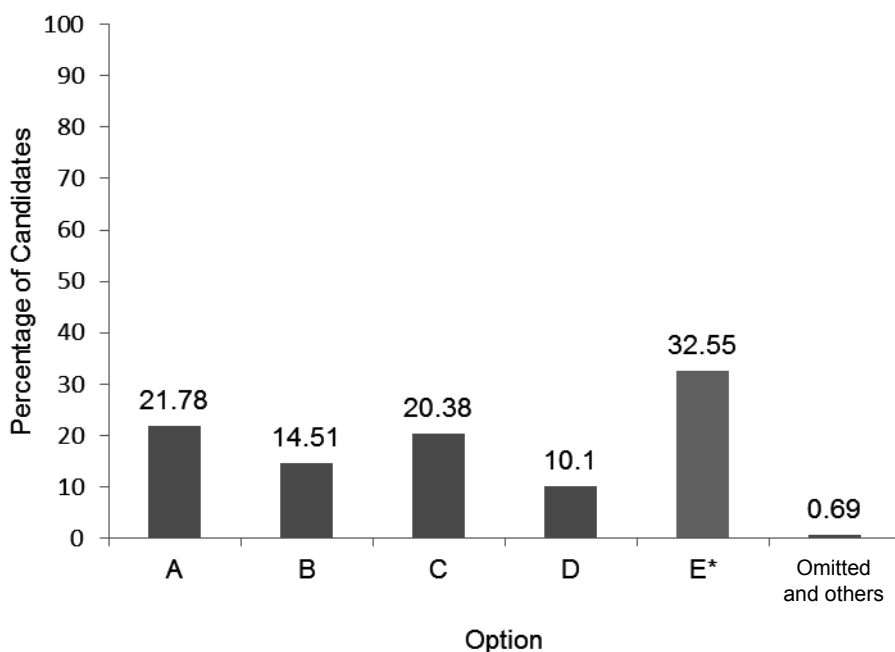


Figure 13.6 shows the candidates ability in answering the question whereas few candidates managed to chose the correct answer.

Question 14: Compute the value of $12 - (-24) + (-9) \times 4$

- A 0
- B 48
- C -48
- D 72
- E 108

Response pattern

Option	A*	B	C	D	E	Omitted	Others
No. of candidates	175944	128479	233392	99683	118410	5392	2197
% of candidates	23.04	16.83	30.57	13.06	15.51	0.71	0.29

This question tested the ability of the candidates to use addition, subtraction and multiplication operations on negative and positive numbers. A total of 175,944 (23.04%) candidates worked out and chose the correct answer A “0”. However, 579,964 (75.97%) candidates chose either an incorrect response B “48”, C “-48, D “72” or E “108”. This indicates that many candidates lacked sufficient understanding on how to perform addition, subtraction and multiplication operations at the same time. For example, the candidates who were attracted towards distracter C failed to identify that; a negative number when is multiplied by a negative number results to a positive number ($- \times - = +$). Therefore they wrote $12 - (-24) + (-9) \times 4 = 12 - 24 - 36 = -48$ while the correct procedure was $12 - (-24) + (-9) \times 4 = 12 + 24 - 36 = 0$. A total of 175,944 (23.04%) candidates evaluated $12 - (-24) + (-9) \times 4$ successfully and thus chose the correct answer A “0”.

Apart from that, 5,392 candidates did not answer this question whereas 2,197 candidates chose more than one answer.

Figure 14.7 shows that the majority of the candidates chose distracters more than those who chose the correct answer.

Figure 14.7: Percentage of Candidates who Chose the Correct Answer or Distracters and Others

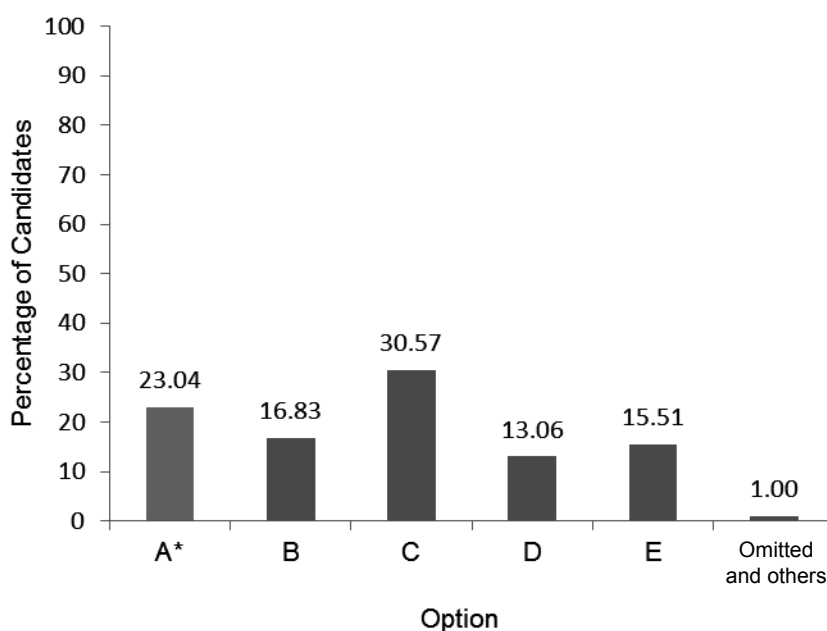


Figure 14.7 shows how many candidates were attracted towards the distracters C instead of the correct answer A.

Question 15: Find the product of the prime numbers between 1 and 10.

- A 384
- B 210
- C 945
- D 1,890
- E 3,840

Response pattern

Option	A	B*	C	D	E	Omitted	Others
No. of Candidates	68,821	417,088	152,957	74,419	40,068	8,373	1,771
% of Candidates	9.01	54.63	20.03	9.75	5.25	1.1	0.23

This question tested the candidates' ability in obtaining the product of the prime numbers between 1 and 10. A total of 417,088 (54.63%) candidates were able to identify and calculate the required product of prime numbers and chose the correct answer B "210". However, a total of 336,265 (44.04%) candidates chose either an incorrect response A "384", C "945", D "1,890" or E "3,840" a situation which shows that they had no concept about prime numbers. For instance, 152,957 (20.03%) candidates who selected the distracter C obtained the product of 3, 5, 7 and 9 as 945 instead of 210 which is the product of 2, 3, 5 and 7 as required. Moreover, 8,373 candidates did not answer this question while 1,771 candidates chose more than one answer.

Question 16: Find the Greatest Common Factor (G.C.F) of 12, 24 and 36.
 A 6
 B 12
 C 24
 D 36
 E 72

Candidates' responses

Option	A	B*	C	D	E	Omitted	Others
No. of Candidates	124,038	425,424	66,201	68,648	74,566	2,405	2,215
% of Candidates	16.25	55.72	8.67	8.99	9.77	0.31	0.29

This question tested the candidates' ability to find the the Greatest Common Factor (G.C.F) of 12, 24 and 36. A total of 425,424 (55.72%) candidates worked out and chose the correct answer B "12". These candidates exhibited to have understood the concept of G.C.F for the given numbers. However, 333,453 candidates who

worked out and chose among distracters A “6”, C “24”, D “36” and E “72”, had no sufficient skills about the concept of G.C.F for the given numbers. For example, the candidates who chose A “6” clearly understood that 12, 24 and 36 are divisible by 6, but they could not recognize that 6 is not greater than 12 which is also divisible by those numbers. In addition, 74,566 candidates who worked out and chose E “72” were not able to distinguish between Greatest Common Factor and Lowest Common Multiple (LCM).

On the other hand, 2,405 candidates did not answer this question and 2,215 chose more than one option.

Question 17: Write $4\frac{1}{5}\%$ as a fraction.

- A $\frac{1}{500}$
- B $\frac{2}{500}$
- C $\frac{4}{500}$
- D $\frac{21}{500}$
- E $\frac{20}{500}$

Candidates' responses

Option	A	B	C	D*	E	Omitted	Others
No. of Candidates	65,696	51,744	102,952	497,135	42,423	1,936	1,611
% of Candidates	8.6	6.78	13.48	65.11	5.56	0.25	0.21

Question 17 tested the candidates' ability to write $4\frac{1}{5}\%$ as a fraction.

A total of 497,135 (65.11%) candidates were able to write the given percentage number in fraction. This situation indicated that the candidates understood the technique to write both the numerator

and denominator of the fraction and chose D “ $\frac{21}{500}$ ” which is the correct answer. On the other hand, 202,815 candidates who chose among the incorrect responses A “ $\frac{1}{500}$ ”, B “ $\frac{2}{500}$ ”, C “ $\frac{4}{500}$ ” or E “ $\frac{20}{500}$ ” had no sufficient knowledge to change the percentage number into fraction. For instance, 102,952 candidates who chose C “ $\frac{4}{500}$ ” failed to change this fraction by writing $\frac{4 \times 1}{5 \times 100} = \frac{4}{500}$ instead of $\frac{(5 \times 4) + 1}{5 \times 100} = \frac{21}{500}$. However, 1,936 candidates did not answer this question while 1,611 candidates chose more than one option.

Question 18: Simplify $3(m-n)+5n-7m$.

- A $4m-2n$
- B $-4m-2n$
- C $2n-4m$
- D $3m-3n$
- E $-4m-8n$

Candidates’ responses

Option	A	B	C*	D	E	Omitted	Others
No. of Candidates	147,631	188,964	214,416	91,412	115,244	4,251	1,579
% of Candidates	19.34	24.75	28.08	11.97	15.09	0.56	0.21

This question tested the candidates’ ability to simplify the algebraic expression $3(m-n)+5n-7m$. A total of 214,416 (28.08 %) candidates, were able to simplify the expression by opening the brackets $(3m-3n+5n-7m)$, putting together the like terms $(3m-7m)+(5n-3n)$ and chose C “ $2n-4m$ ” which is the correct answer. However, 543,251 candidates chose among the distracters

A “ $4m - 2n$ ”, B “ $-4m - 2n$ ”, D “ $3m - 3n$ ” or E “ $-4m - 8n$.” The presence of many candidates to choose incorrect answers indicates that they lacked sufficient knowledge to simplify algebraic expression. For example, the candidates who chose distracter A made an error in addition and subtraction. The first error made, they worked out $3m - 7m = 4m$ and the second error they worked out $-3n + 5n = -2n$. Finally they wrote $4m - 2n$ which is incorrect answer. Also, the incorrect response B that attracted many candidates was chosen because of lacking the concept of positive and negative numbers. On the other hand, 4,251 candidates did not answer this question while 1,579 candidates chose more than one option.

Question 19: Find the value of y if $\frac{3y-5}{7} + y = 5$.

- A 2
- B 6
- C 4
- D 8
- E 5

Candidates' responses

Option	A	B	C*	D	E	Omitted	Others
No. of Candidates	153,648	98,367	271,982	117,024	114,036	6,579	1,861
% of Candidates	20.12	12.88	35.62	15.33	14.94	0.86	0.24

Question 19 tested the candidates' ability to find the value of y from the equation $\frac{3y-5}{7} + y = 5$. A total of 271,982 candidates (35.62 %) worked out the equation to get the value of $y = 4$ and chose C “4”

which was the correct answer. However, 656,998 candidates who chose either distracter A “2”, B “6”, D “8” and E “5” made a wrong calculations of the value of y . For instance, a total of 153,648 (20.12%) candidates who chose distracter A they lacked knoweledge to approve the answers. That is, by entering the value 2 into the equation, the result on the left hand side would be: $\frac{3 \times 2 - 5}{7} + 2 = 2\frac{1}{7}$, which is not equal to 5 as in the right hand side. On the other hand, 6,579 candidates did not answer this question while 1,861 candidates chose more than one option.

Question 20: How many $\frac{1}{3}$ are there in $\frac{41}{3}$?

- A $4\frac{5}{9}$
- B $13\frac{2}{3}$
- C $\frac{9}{41}$
- D 9
- E 41

Candidates' responses

Option	A	B	C	D	E*	Omitted	Others
No. of Candidates	130,609	141,795	117,850	77,243	288,266	5,132	2,602
% of Candidates	17.11	18.57	15.44	10.12	37.76	0.67	0.34

This question required the candidates to work out and obtain the total number of one third in $\frac{41}{3}$. A total of 288,266 (37.76%) candidates worked out and chose the correct answer E “41”, indicating that they had the knowledge about division of $\frac{41}{3}$ by $\frac{1}{3}$. However, 467,497 (61.24) candidates chose among the incorrect

responses A “ $4\frac{5}{9}$ ”, B “ $13\frac{2}{3}$ ”, C “ $\frac{9}{41}$ ”, or D “9”. For instance, the candidates who chose distracter A, multiplied incorrectly the given numbers $\frac{1}{3} \times \frac{41}{3} = \frac{41}{9} = 4\frac{5}{9}$. Distracter B attracted many candidates by 18.57% as compared to distracter D which attracted them by 10.12. Moreover, they incorrectly divided 41 by 3 without using $\frac{1}{3}$ to get $\frac{41}{3} = 13\frac{2}{3}$.

On the other hand, 5,132 candidates did not answer this question, while 2,602 candidates chose more than one answer.

Question 21: Change the roman number CMXCIX into a normal numeral.

- A 9,999
- B 99
- C 999
- D 99,999
- E 999,999

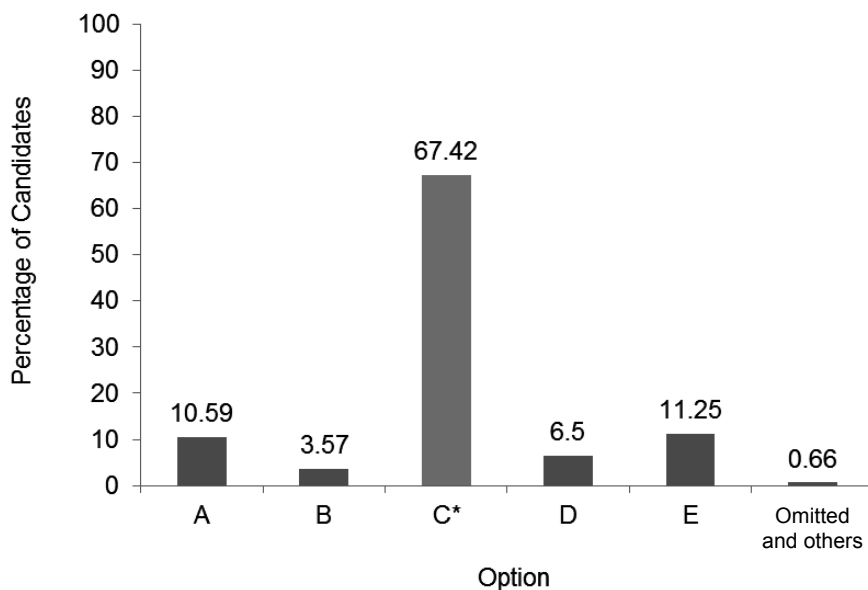
Candidates' Responses

Option	A	B	C*	D	E	Omitted	Others
Number of candidates	80,853	27,277	514,748	49,651	85,929	2,677	2,362
Percentage of candidates	10.59	3.57	67.42	6.5	11.25	0.35	0.31

This item was among the questions that were performed very well and it was testing the candidates' understanding about roman numbers. A total of 514,748 candidates' equivalent to 67.42 percent managed to change the given roman number into a normal numeral number and they chose the correct answer C “999. On the other

hand, a total of 243,710 (31.91%) candidates chose either, an incorrect answer A “9,999”, B “99”, D “99,999” or E “999,999”, showing that they lacked the skills and knowledge to change the roman number into normal numeral. Meanwhile, a total of 2,677 candidates did not choose any answer, while 2,362 candidates opted for more than one distracter. Figure 21.8 shows the performance of the candidates who chose the correct answer and distracters.

Figure 21.8: Percentage of Candidates who Chose the Correct Answer or Distracters and Others



This figure 21.8 shows that many candidates performed well in this question as they chose A correct answer C.

Question 22: Write the missing number in the sequence: 1, 4, --, 16, 25.

- A 5
- B 6
- C 9
- D 10
- E 12

Candidates' Responses

Option	A	B	C*	D	E	Omitted	Others
Number of candidates	57,415	96,775	319,239	92,304	190,557	4,355	2,852
Percentage of candidates	7.52	12.68	41.81	12.09	24.96	0.57	0.37

This item was testing the candidates' ability to find the missing number from the given sequence of whole numbers. A total of 319,239 candidates equivalent to 41.81 percent managed to work out the missing number and chose the correct answer C "9". However, a total of 437,051 (57.25%) candidates chose either, an incorrect answer A "5", B "6", D "10" or E "12". The presence of many candidates who chose the incorrect answer indicates that, they lacked calculations techniques to obtain the missing number. For example, 190,557 (24.96%) candidates were attracted by the distracter E "12" because; they thought that the missing number could be obtained by finding the difference between the two consecutive numbers; so they calculated $16 - 4 = 12$. The correct answer could be obtained as follows: Since the square of 1 is 1, square of 2 is 4 and the square of 3 is 9. Therefore the missing number could be 9. Meanwhile, a total of 4,355 candidates omitted

this question, while 2,852 candidates opted for more than one distracter.

Question 23: Find the Lowest Common Multiple (L.C.M) of 6, 9 and 12.

- A 3
- B 36
- C 54
- D 72
- E 108

Candidates' Responses

Option	A	B*	C	D	E	Omitted	Others
Number of candidates	131,194	477,734	51,477	52,961	45,582	2,397	2,152
Percentage of candidates	17.18	62.57	6.74	6.94	5.97	0.31	0.28

This item was testing the candidates' ability to determine the Lowest Common Multiple (L.C.M) of 6, 9, and 12. More than a half of the candidates 477,734 (62.57%) managed to calculate the L.C.M well and choose the correct answer B "36", that makes the question to be among the well done questions.

However, a total of 281,214 (36.83%) candidates chose either, an incorrect answer A "3", C "54", D "72" or E "108". The presence of candidates who chose the incorrect answer shows that, they lacked the skills to calculate the L.C.M perfectly. The proper calculations of the answer was supposed to be as follows: $6 = 1 \times 2 \times 3$, $9 = 1 \times 3 \times 3$ and $12 = 1 \times 2 \times 2 \times 3$, so that the L.C.M is $1 \times 2 \times 2 \times 3 \times 3 = 36$. On the other hand, a total of 2,397 candidates did not choose any answer, while 2,152 candidates opted for more than one distracter.

Question 24: Find the value of A if $2\frac{1}{4} : A = 12 : 48$.

- A 4
- B 8
- C 9
- D 12
- E 48

Candidates' Responses

Option	A	B	C*	D	E	Omitted	Others
Number of candidates	91,863	99,521	358,819	108,559	95,109	7,509	2,117
Percentage of candidates	12.03	13.03	47	14.22	12.46	0.98	0.28

This item was testing the candidates' ability to find the value of A if $2\frac{1}{4} : A = 12 : 48$. A total of 358,819 candidates, equivalent to 47 percent only managed to calculate the value of A and chose the correct answer C "9". This question is among of the averagely performed questions from the topic of fractions. However, a total of 395,052 (51.74%) candidates chose either, an incorrect answer A "4", B "8", D "12" or E "48" the situation which indicates that the concept about ratios was not understood by most of the candidates. For example, the candidates who chose distracter D did not understand that they were supposed to substitute 12 in that equation so that to observe whether the numbers to the left hand side is equal to the numbers of the right hand side of the equation. That is, by putting 12 in the equation the left hand side would be as follows:

$$2\frac{1}{4} : 12 = \frac{9}{4} : 12 = \frac{9}{4 \times 12} = \frac{9}{48} = 9 : 48; \text{ the solution which is not equal to } 12:48.$$

Meanwhile, a total of 7,509 candidates omitted this question, while 2,117 candidates opted for more than one distracter.

Question 25:

	dm	cm	mm
	4	3	5
–	1	4	6
	<hr/>		

- A 2 dm 8 cm 9 mm
- B 2 dm 9 cm 9 mm
- C 3 dm 8 cm 9 mm
- D 2 dm 8 cm 1 mm
- E 1 dm 8 cm 8 mm

Candidates' Responses

Option	A*	B	C	D	E	Omitted	Others
Number of candidates	545,491	64,274	73,306	52,187	23,894	1,978	2,367
Percentage of candidates	71.45	8.42	9.6	6.84	3.13	0.26	0.31

This item was testing the candidates' skills to subtract the mixed measurements of length. A total of 545,491 candidates equivalent to 71.45 percent were able to calculate and choose the correct answer A "2 dm 8 cm 9 mm".

However, there were 213,661 (27.99%) candidates chose either, an incorrect answer B "2 dm 9 cm 9 mm", C "3 dm 8 cm 9 mm", D "2 dm 8 cm 1 mm" or E "1 dm 8 cm 8 mm". The presence of candidates who chose the incorrect answer indicates that, they lacked knowledge of subtracting the mixed measurements of length. It was observed also that, a total of 1,978 candidates omitted this question, while 2,367 candidates opted for more than one distracter. This question was well done and had a 3rd rank (see figure 25.9).

Figure 25.9: Percentage of Candidates who Chose the Correct Answer or Distracters and Others

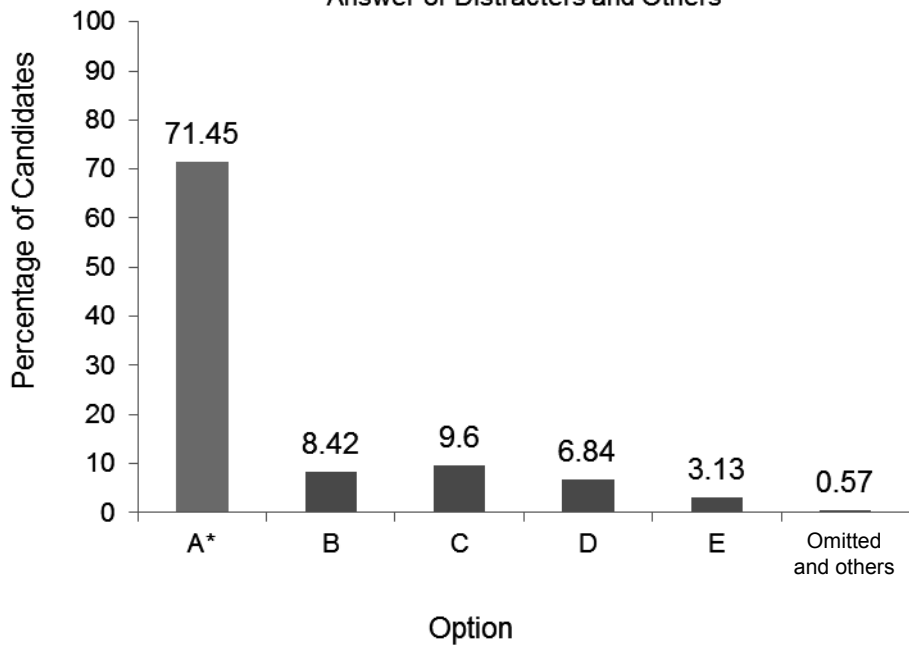
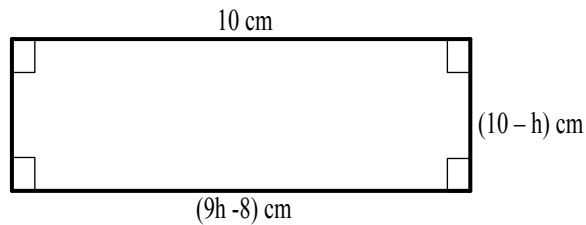


Figure 25.9 shows the good performance of the candidates because many chose A as a correct answer.

2.2 Section B: Figures

Question 26: Find the area of the following rectangle:



- A 2 cm^2
- B 8 cm^2
- C 36 cm^2
- D 80 cm^2
- E 20 cm^2

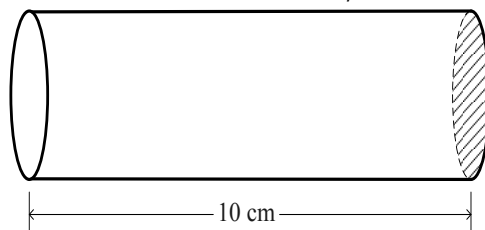
Candidates Responses

Option	A	B	C	D*	E	Omitted	Others
No. of Candidates	65,005	93,626	176,674	288,482	130,207	7,176	2,327
% of Candidates	8.51	12.26	23.14	37.78	17.05	0.94	0.3

This question tested the candidates' ability to find the area of the given rectangle. A total of 288,482 (37.78%) candidates managed to find the area and choose D "80 cm²" which is the correct answer. However, a total of 465,512 (60.96%) candidates chose either the incorrect answer A "2 cm²", B "8 cm²", C "36 cm²" or E "20 cm²", thus leading to poor performance in this question. The presence of many candidates failing to answer this question correctly indicates that the concept of finding area of a rectangle was not well understood.

In finding the area of the rectangle, the candidates were required to find the value of h by comparing the length of the two sides of the rectangle i.e. $10\text{ cm} = (9h - 8)\text{ cm}$ in order to obtain $h = 2$. After obtaining the value of h , the candidates were supposed to find the width of the rectangle which is $(10 - 2)\text{ cm} = 8\text{ cm}$. Finally, the candidates were supposed to use the formula of finding the area of a rectangle i.e. length \times width to obtain the required area of $10\text{ cm} \times 8\text{ cm} = 80\text{ cm}^2$. The analysis of the candidates responses also shows that the total of 176,674 (23.14%) candidates who chose the incorrect answer C "36 cm²", they computed the perimeter of the rectangle i.e. $2 \times (10\text{ cm} + 8\text{ cm}) = 36\text{ cm}$ instead of finding the area. Furthermore, 7,176 candidates did not attempt this question while 2,327 chose more than one option.

Question 27: Find the diameter of the following cylinder if its volume is 61.6 cm^3 . (Use $\pi = \frac{22}{7}$).



- A 1.4 cm
- B 1.96 cm
- C 2.8 cm
- D 6.16 cm
- E 3.92 cm

Candidates Responses

Option	A	B	C*	D	E	Omitted	Others
No. of Candidates	117,161	150,777	254,534	139,854	91,591	7,362	2,218
% of Candidates	15.35	19.75	33.34	18.32	12	0.96	0.29

In this question, the candidates were required to find the diameter of a cylinder having a height of 10 cm and a volume of 61.6 cm^3 . Only 254,534 (33.34%) candidates managed to answer this question and choose the correct option C “2.8 cm”. On the other hand, a total of 499,383 (65.42%) candidates chose either the incorrect response A “1.4 cm”, B “1.96 cm”, D “6.16 cm” or E “3.92 cm”, indicating that they lacked knowledge and skills on the concepts of finding the volume of a cylinder. In answering this question, the candidates were supposed to use the following formula:

Volume of a cylinder = Area of the circle x Height of the cylinder.
Therefore, in order to get the diameter, the following steps were to be followed:

$$61.6\text{ cm}^3 = \pi \times r^2 \times h$$

$$61.6\text{ cm}^3 = \frac{22}{7} \times r^2 \times 10\text{ cm}$$

$$61.6\text{ cm}^3 = \frac{220}{7} \times r^2\text{ cm}$$

$$r^2 = 61.6 \times \frac{7}{220}\text{ cm}^2$$

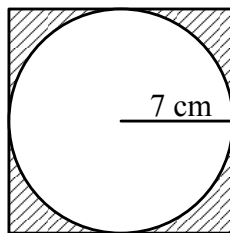
$$r^2 = 1.96\text{ cm}^2$$

$$r = 1.4\text{ cm}$$

Thus, the diameter = $2 \times 1.4 = 2.8\text{ cm}$.

Moreover, 7,362 candidates did not answer this question while 2,218 candidates chose more than option.

Question 28: Find the shaded area if the circle inside the square has a radius of 7 cm, Use $\pi = \frac{22}{7}$.



- A 154 cm^2
- B 49 cm^2
- C 32 cm^2
- D 42 cm^2
- E 196 cm^2

Candidates Responses

Option	A	B	C	D*	E	Omitted	Others
No. of Candidates	240,576	121,954	83,585	254,201	57,120	3,589	2,472
% of Candidates	31.51	15.97	10.95	33.29	7.48	0.47	0.32

In this question the candidates were required to find the shaded area in the given figure. Only, 254,201 (33.29%) candidates managed to find the area and choose D “42cm²” which is the correct answer. Nevertheless, 503,235 (65.91%) candidates chose either the incorrect response A “154cm²”, B “49cm²”, C “32cm²” or E “196cm²” where distracter A “154cm²” attracted more candidates followed by distracter B “49cm²”. Those candidates were unable to identify the demands of the question.

In order to find the shaded area, the candidates were supposed to find the difference of the area of the circle and the square as follows:

Shaded area = Area of the circle – Area of the square

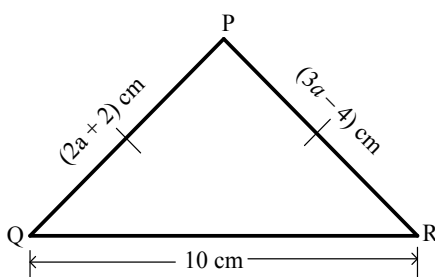
$$\begin{aligned}
 &= \frac{22}{7} \times 7 \times 7 \text{ cm}^2 - 14 \times 14 \text{ cm}^2 \\
 &= 154 \text{ cm}^2 - 196 \text{ cm}^2 \\
 &= 42 \text{ cm}^2
 \end{aligned}$$

The candidates who chose distracter A “154cm²”, they calculated the area of the circle only and considered it as an answer. Likewise, the candidates who chose distracter B “49cm²”, they calculated the area of a square with length 7 cm wrongly to get: area = 7 × 7 = 49cm² and regarded it as the required answer. These

candidates did not recognize that the square which was given in this question had length of 14 cm and not 7 cm. Furthermore, the candidates did not realize that the requirement in this question was to find the difference of the area of the circle and the square and not to find the area of circle or the square only.

In addition, 3,589 candidates did not attempt this question whereas 2,472 chose more than one option.

Question 29: Find the perimeter of the isosceles triangle PQR.



- A 6 cm
- B 14 cm
- C 28 cm
- D 22 cm
- E 38 cm

Candidates Responses

Option	A	B	C	D	E*	Omitted	Others
No. of Candidates	88,987	159,131	161,950	135,077	206,344	9,738	2,270
% of Candidates	11.66	20.84	21.21	17.69	27.03	1.28	0.3

Question 29 tested the ability of the candidates to find the perimeter of the triangle with sides $(2a + 2)$ cm, $(3a - 4)$ cm and 10 cm. Only 206,344 (27.03%) candidates managed to find the perimeter and

choose E “38 cm” which is the correct answer. On the other hand, a total of 545,145 (71.4%) candidates chose either the incorrect response A “6 cm”, B “14 cm”, C “28 cm” or D “22 cm”. These candidates lacked the knowledge of the properties of an isosceles triangle and the skills to find its perimeter.

In obtaining the correct answer the candidates were supposed first to compare the sides of the triangle with equal length in order to determine the value of a as follows:

$$(2a + 2) \text{ cm} = (3a - 4) \text{ cm}$$

$$2a + 2 = 3a - 4$$

$$2a - 3a = -4 - 2$$

$$-a = -6$$

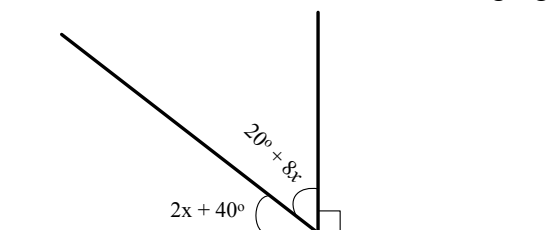
$$a = 6$$

After obtaining the value of a , the candidates were supposed to find the perimeter of the triangle as follows:

$$\begin{aligned} \text{Perimeter of triangle PQR} &= \text{length of PQ} + \text{QR} + \text{RP} \\ &= ((2 \times 6 + 2) \text{ cm} + (3 \times 6 - 4) \text{ cm} + 10 \text{ cm} \\ &= 14 \text{ cm} + 14 \text{ cm} + 10 \text{ cm} \\ &= 38 \text{ cm} \end{aligned}$$

Furthermore, 9,738 candidates did not answer this question while 2,270 chose more than one answer.

Question 30: Find the value of x in the following figure.



A 46°

B 44°

C 3°

D 10°

E 12°

Candidates Responses

Option	A	B	C*	D	E	Omitted	Others
No. of Candidates	85,098	107,046	328,655	101,936	133,969	4,123	2,670
% of Candidates	11.15	14.02	43.05	13.35	17.55	0.54	0.35

This question tested the ability of the candidates to find the value x from the values of the angles that were given in the figure. A total of 328,655 (43.05%) candidates managed to answer this question and choose C “ 3° ” which was the correct answer. On the other hand, 428,049 (56.07%) candidates chose either the incorrect answer A “ 46° ”, B “ 44° ”, D “ 10° ” or E “ 12° ”, a situation which shows that they lacked the understanding on the concepts of angles that make a straight angle. Those candidates were unable to recognize that the sum of the degrees of the angles that make a straight angle is 180 and thus:

$$(2x + 40^\circ) + (20^\circ + 8x) + 90^\circ = 180^\circ$$

By using this equation, the candidates were supposed to find the required value of x as follows:

$$2x + 8x + 40^\circ + 20^\circ + 90^\circ = 180^\circ$$

$$10x + 150^\circ = 180^\circ$$

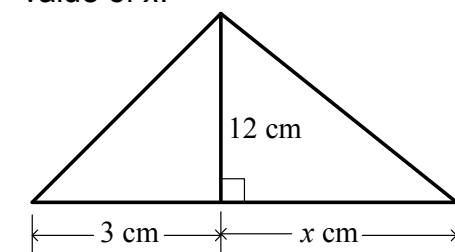
$$10x = 180^\circ - 150^\circ$$

$$10x = 30^\circ$$

$$x = \frac{30^\circ}{10} = 3^\circ$$

In addition, 4,123 candidates did not attempt this question whereas 2,670 candidates chose more than one option.

Question 31: The area of the following triangle is 66 cm^2 . Find the value of x .



- A 3
- B 8
- C 11
- D 12
- E 15

Response pattern

Option	A	B*	C	D	E	Omitted	Others
No. of Candidates	96,085	228,274	161,137	96,367	172,513	5,936	3,185
% of Candidates	12.58	29.9	21.11	12.62	22.6	0.78	0.42

This question tested the ability of the candidates to determine the value of x from the given triangle. The analysis of candidates' responses revealed that a few candidates (29.9%) were able to obtain the value of x correctly and choose the correct answer B "8". These candidates used appropriately the formula $\text{Area} = \frac{1}{2} \times \text{base} \times \text{height}$ to find the value of x . Further analysis revealed that many candidates (68.91%) chose either the incorrect response A "3", C "11", D "12" or E "15". The presence of many candidates who were attracted by the distracters indicates that they lacked the skills on how to find the area of the triangle. For example, the candidates who chose distracter E they added the measurements from the given figure i.e. 3 cm and 12 cm to get 15 cm instead of using the required formula. The correct method of obtaining the value of x is as follows:

$$\text{Area} = \frac{1}{2} \times \text{base} \times \text{height}$$

$$66 = \frac{1}{2} \times 3 + x \times 12$$

$$66 = (3 + x) \times 6$$

$$18 + 6x = 66$$

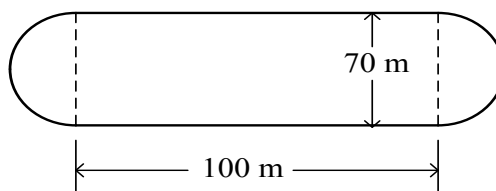
$$6x = 66 - 18$$

$$6x = 48$$

$$x = \frac{48}{6} = 8 \text{ cm}$$

Moreover, 5,936 candidates did not answer this question while 3,185 candidates chose more than one option.

Question 32: Find the area of the football ground shown in the following figure: (Use $\pi = \frac{22}{7}$)



- A 3,850 m²
- B 7,000 m²
- C 7,770 m²
- D 10,850 m²
- E 15,400 m²

Response patterns

Option	A	B	C	D*	E	Omitted	Others
No. of Candidates	99,626	218,734	127,692	194,243	114,467	6,500	2,235
% of Candidates	13.05	28.65	16.72	25.44	14.99	0.85	0.29

This question was testing the ability of the candidates in finding the area of the football ground that was made up of a rectangle and two semi-circles. Only 194,243 (25.44 %) candidates were able to find the area and choose the correct response D “m² 10,850”. However, a total of 560,519 (73.41%) candidates chose either the incorrect response A “3,850 m²”, B “7,000 m²”, C “7,770 m²” or E “15,400 m²”. That choice of incorrect responses indicates that many candidates failed to apply the formulae for area of a semi – circle and area of a rectangle. For instance, 218,734 (28.65%) candidates who chose distracter B computed the area of the rectangle only as follows:

$100\text{ m} \times 70\text{ m} = 7,000\text{ m}^2$. The correct method for finding the answer for this question is as follows:

The area of the football ground

= area of the semi-circle $\times 2$ + area of the rectangle

$$= \left(\frac{\pi \times \text{diameter}^2}{8} \right) \times 2 + (\text{length} \times \text{width})$$

$$= \left(\frac{\frac{22}{7} \times 70^2}{8} \right) \times 2 + (100 \times 70)$$

$$= 3850 + 7000$$

$$= 10,850\text{ m}^2$$

Moreover, a total of 6,500 candidates did not answer this question while 2,235 candidates chose more than one answer. Figure 32.10 shows how the candidates answered this question.

Figure 32.10: Percentage of Candidates who Chose the Correct Answer or Distracters and Others

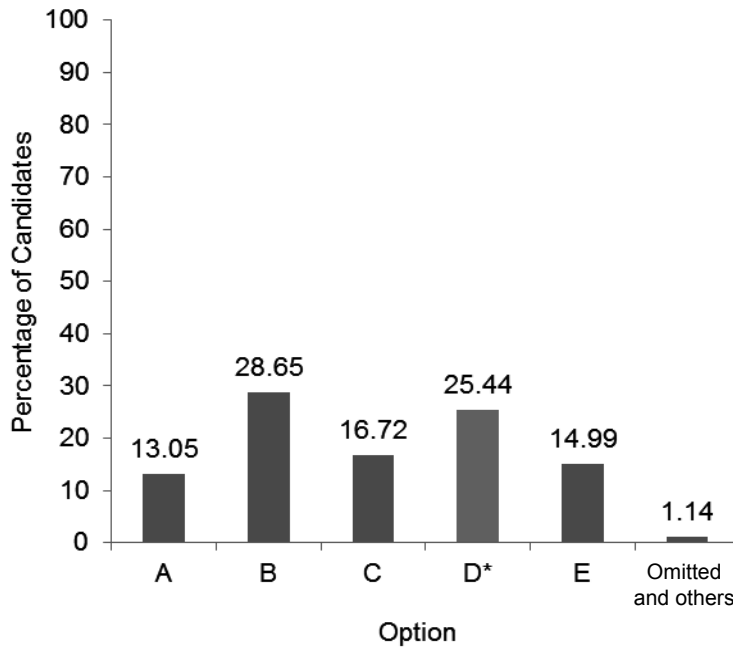
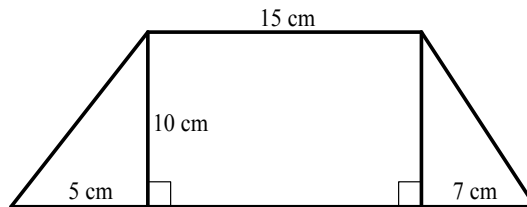


Figure 32.10 indicates that many candidates (73.41%) were attracted by the distracters as compare to the candidates (25.44%) who chose the correct answer D a situation which led to poor performance in this question.

Question 33: Find the area of the following trapezium:



- A 70 cm^2
- B 105 cm^2
- C 150 cm^2
- D 210 cm^2
- E 50 cm^2

Response pattern

Option	A	B	C	D*	E	Omitted	Others
No. of Candidates	80,812	124,032	216,693	274,755	59,274	5,822	2,109
% of Candidates	10.58	16.25	28.38	35.99	7.76	0.76	0.28

This question was testing knowledge and skills of candidates in finding the area of the trapezium which was made up of a rectangle and two right angled triangles. The analysis of the candidates' responses indicates that 274,755 (35.99%) candidates managed to find the required area and choose the correct answer D "210 cm²". However, 480,811 (62.97%) candidates chose either distracter A "70 cm²", B "105 cm²", C "150 cm²" or E "50 cm²" whereby distracter C attracted more candidates. Those candidates lacked understanding on the concepts of finding the area of a trapezium. For instance, 28.38 percent of candidates who chose C computed the area of a rectangle only that is $15\text{ cm} \times 10\text{ cm} = 150\text{ cm}^2$. The correct answer in this question was to be found through the following steps:

$$\begin{aligned}
 \text{The area of trapezium} &= \frac{1}{2}(27 + 15) \times 10 \\
 &= \frac{1}{2}(42) \times 10 \\
 &= 21 \times 10 \\
 &= 210\text{ cm}^2
 \end{aligned}$$

Moreover, 5,822 candidates did not answer this question while 2,109 chose more than one answer. Figure 33.11 shows the candidates performance in this question.

Figure 33.11: Percentage of Candidates who Chose the Correct Answer or Distracters and Others

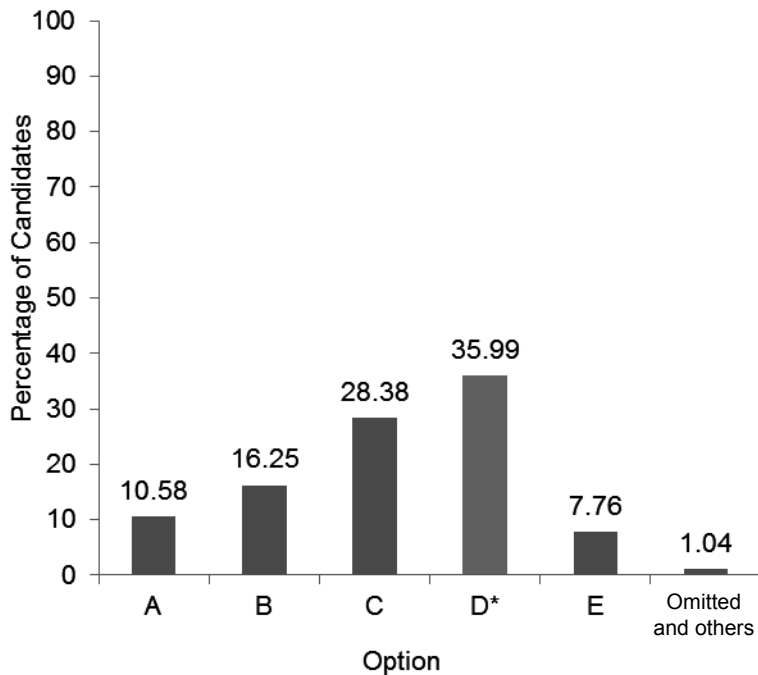
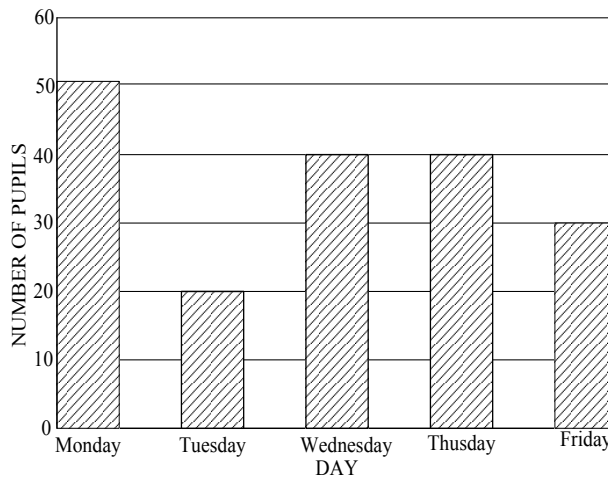


Figure 33.11: shows poor performance of the candidates who most of them selected distracters.

Question 34: The following figure shows the attendance of standard seven pupils at Tumbi Primary School in the five days of the week. Find the average of their attendance per day



- A 180
- B 50
- C 36
- D 30
- E 20

Response pattern

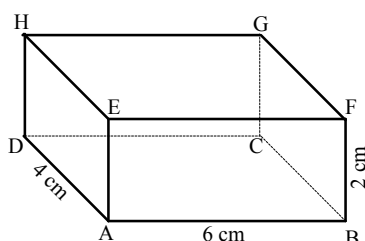
Option	A	B	C*	D	E	Omitted	Others
No. of Candidates	163,822	111,421	277,158	144,816	59,451	5,026	1,803
% of Candidates	21.46	14.59	36.3	18.97	7.79	0.66	0.24

This question was testing the ability of candidates in using the given bar graph to find average attendance per day for the pupils at Tumbi Primary School. Only 36.3 percent of the candidates managed to answer this question and choose the correct answer C “36”. Further analysis shows that 62.81 percent of candidates chose either distracter A, B, D or E indicating that they lacked the skills to interpret the information from the given bar graph or failed to use the formula to find average. For instance, 163,822 (21.46%) candidates who chose distracter A “180”, they computed the total attendance for

the five days but did not divide this total by the number of days to get the required average.

In addition, a total of 5,026 did not answer this question while 1,803 chose more than one answer.

Question 35: Find the surface area of the following rectangular prism of which the face HEFG is open.



- A 88 cm^2
- B 64 cm^2
- C 48 cm^2
- D 44 cm^2
- E 40 cm^2

Response pattern

Option	A	B*	C	D	E	Omitted	Others
No. of Candidates	181,682	137,960	321,897	72,797	44,501	3,243	1,417
% of Candidates	23.8	18.07	42.16	9.53	5.83	0.42	0.19

This question tested the candidates' ability in finding the area of 5 faces of the given rectangular prism. Only 137,960 (18.07%) candidates managed to find the required area and choose the correct answer B " 64 cm^2 ". However, a total of 620,877 (81.32%) candidates chose either distracter A " 88 cm^2 ", C " 48 cm^2 ", D " 44 cm^2 " or E " 40 cm^2 ". The presence of many candidates who chose the incorrect answers indicates that they lacked understanding of

how to find the required area. For example, the candidates who chose the incorrect option C, they lacked understanding of the formula to calculate the surface area and thus multiplied all measurements that were in the given figure to get $4 \times 6 \times 2 = 48 \text{ cm}^2$. In addition, the candidates who chose the incorrect option A they failed to realize that the surface HEFG of the rectangular prism was open and thus they calculated the surface area of 6 faces instead of 5 faces.

Additionally, 3,243 candidates did not answer this question while 1,417 candidates chose more than one answer. Figure 35.12 shows how the candidates answered this question.

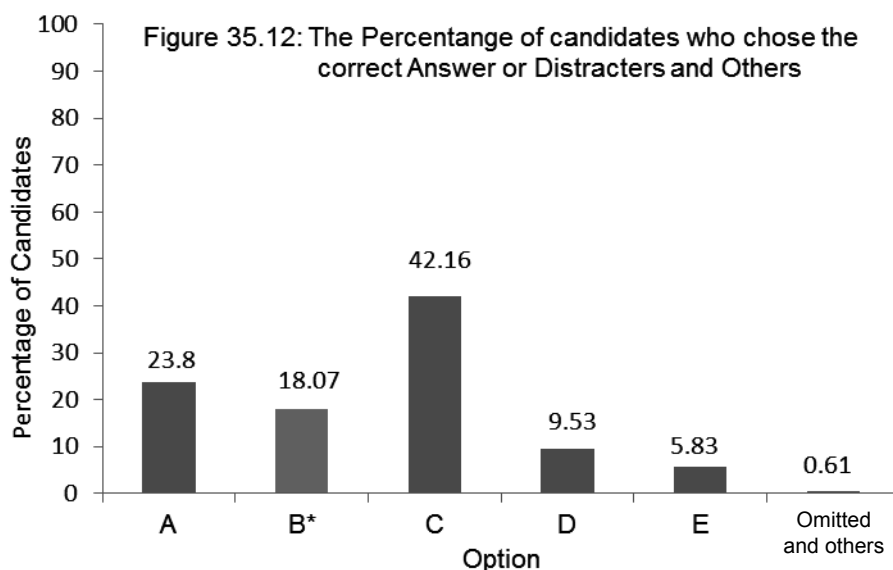
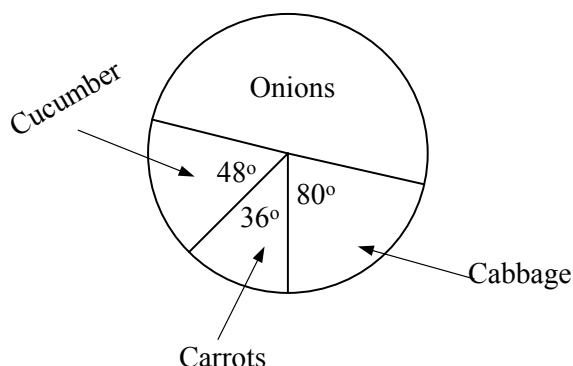


Figure 35.12 shows that many candidates were attracted by distracter C “ 48 cm^2 ” as compare to those who chose the correct answer B.

Question 36: Ilembula Primary School harvested 4,500 kilograms of vegetables that are shown in the following pie chart. Find the number of kilograms for onions that were harvested.



- A 2,050
- B 196
- C 2,450
- D 1,050
- E 164

Candidates' responses

Option	A	B	C*	D	E	Omitted	Others
No. of Candidates	85,031	146,774	292,352	51,212	179,754	6,376	1,998
% of Candidates	11.14	19.22	38.29	6.71	23.54	0.84	0.26

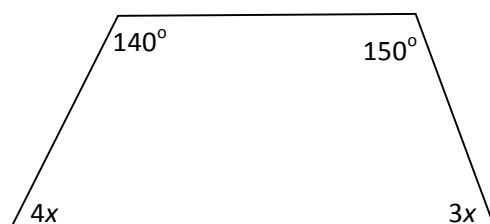
This question tested the candidates' ability in using the pie chart to find the kilograms of onions that were harvested. A total of 292,352 (38.29 %) candidates worked out and chose C "2,450" which is the correct answer. However, 462,771 (60.61%) candidates chose among the incorrect response A "2,050", B "196", D "1,050" or E "164" indicating that they had no knowledge to use the pie chart. For example, 179,754 (23.54%) candidates who chose distracter E "164", they added the degrees of cucumber, carrots and cabbage to

get $48 + 36 + 80 = 164$ and considered wrongly that the 164 degrees were the required kilograms for onions. In order to attain the required answer, the candidates were supposed to go through the following steps.

$$48^\circ + 36^\circ + 80^\circ = 164^\circ, 360^\circ - 164^\circ = 196^\circ, \frac{196^\circ}{360^\circ} \times 4,500 = 2,450$$

which is the correct answer. In addition to that, 6,376 candidates (0.84%) did not answer this question.

Swali la 37: Find the value of x in the following figure:



- A 10°
- B 30°
- C 40°
- D 140°
- E 150°

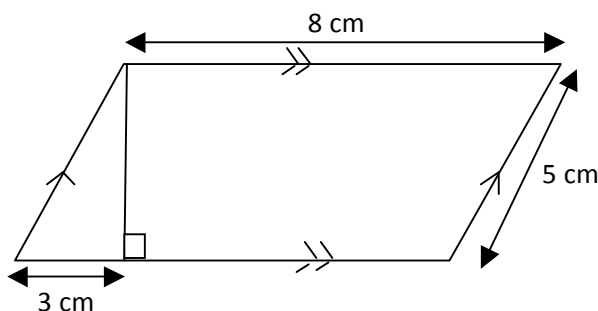
Candidates' responses

Option	A*	B	C	D	E	Omitted	Others
No. of Candidates	378,612	94,980	114,090	78,270	89,136	6,241	2,168
% of Candidates	49.59	12.44	14.94	10.25	11.67	0.82	0.28

Question 37 tested the candidates ability to find the value of letter x in a quadrilateral which has the interior angles 140° , 150° , $3x$ and $4x$. A total of 378,612 (49.59%) candidates managed to find the value of the mentioned letter x and choose A " 10° " which is the correct

answer. On the other hand, 376,476 (49.3%) candidates chose among the incorrect responses B “30°”, C “40°”, D “140°” or E “150°”. These candidates failed to formulate the equation: $4x + 3x + 140^\circ + 150^\circ = 360^\circ$ which they would use to obtain the value of x. For example, 22.92 percent of the candidates who chose distracter D and E, they used the 140 and 150 degrees that were given in the figure as the required answer because they lacked the basic knowledge that was required in answering this question. Furthermore, 6,241 candidates equivalent to 0.82 % did not answer this question.

Swali la 38: Find the area of the following parallelogram:



- A 24 cm^2
- B 32 cm^2
- C 40 cm^2
- D 12 cm^2
- E 25 cm^2

Candidates' responses

Option	A	B*	C	D	E	Omitted	Others
No. of Candidates	103,786	221,348	292,682	91,998	46,105	5,483	2,095
% of Candidates	13.59	28.99	38.33	12.05	6.04	0.72	0.27

Question 38 tested the candidates' ability to find the area of the parallelogram. Only 221,348 (28.99 %) candidates managed to find the area and choose the correct answer B “32 cm²”. However, 534,571 (70.01%) candidates chose among the distracters A “sm² 24”, C “sm² 40”, D “sm² 12” or E “sm² 25” because they lacked knowledge and skills to find the area of a parallelogram. For instance, 38.33 percent of the candidates who chose distracter C, they worked out the area of the parallelogram by multiplying both lengths of the two pairs of the parallel sides wrongly i.e. area = sm8 × sm5 = sm² 40. The candidates were supposed to find the area as follows:

Firstly to find the width or height of the parallelogram = $\sqrt{5^2 - 3^2}$ cm = 4cm and then to find the area: 8cm × 4cm = 32cm². However, 5,483 candidates equivalent to 0.72% did not answer this question. Figure 38.13 gives a clear picture on how the candidates answered this question.

Figure 38.13: Percentage of Candidates who Chose the Correct Answer or Distracters and Others

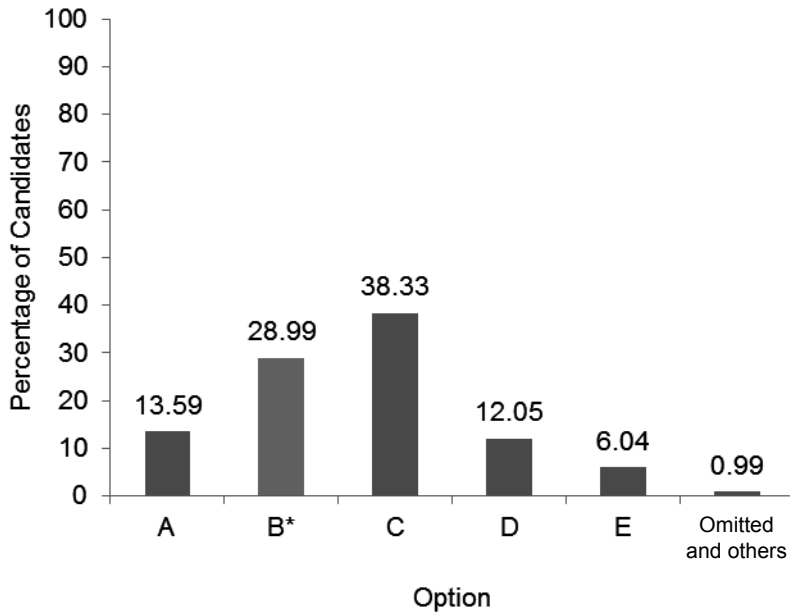


Figure 38.13 shows that distracter C attracted more candidates as compared to those who chose the correct answer B since they used an incorrect formula to find the area of the parallelogram.

2.3 Section C: Word Problems

Question 39: Zebedayo has 7 cows for milk. If each cow gives 5 litres of milk every day, how many litres of milk does she get per week?

- A 215
- B 225
- C 235
- D 245
- E 255

Candidates' responses

Option	A	B	C	D*	E	Omitted	Others
No. of Candidates	79,071	124,339	150,306	345,813	54,910	6,962	2,096
% of Candidates	10.36	16.29	19.69	45.29	7.19	0.91	0.27

This question tested the candidates' ability to work out the litres of milk that Zebedayo gets from 7 cows if each gives 5 litres a day. A total of 345,813 (45.29 %) candidates were able to calculate the required amount of milk and choose the correct answer D "245". However, 408,626 (53.53%) candidates chose among the incorrect responses A "215", B "225", C "235", or E "255". These candidates were unable to identify the requirements of the word problem that, was on ratios. They were supposed to know that a week has seven days and therefore the amount of milk required is $7 \times 5 \times 7 = 35 \times 7 = 245$ litres. On the other hand, 6,962 candidates equivalent to 0.91 % did not answer this question.

Swali la 40: Perima has the following notes and coins of Tanzanian currency:

2 notes @ shs. 10,000; 3 notes @ shs. 5,000; 4 notes @ shs. 2,000; 5 notes @ shs. 1,000 and 10 notes @ 500. Also, he has 5 coins each of shs.200 and 4 coins each of shs. 100. How many shillings does he have in total?

- A 58,400/=
- B 54,400/=
- C 19,800/=
- D 34,400/=
- E 48,400/=

Candidates' responses

Option	A	B*	C	D	E	Omitted	Others
No. of Candidates	89,038	376,502	166,760	64,461	58,900	5,770	2,066
% of Candidates	11.66	49.31	21.84	8.44	7.71	0.76	0.27

Question 40 tested the candidates' ability to find the value of the coins and notes that Perima had. About half of the candidates (49.31%) managed to calculate the required amount of money and choose the correct answer B "54,400/=". However, 379,159 (49.65%) candidates chose among the distracters A "58,400/=", C "19,800/=", D "34,400/=" or E "48,400/=". This situation shows that, approximately half of the candidates did not have the knowledge to work out the amount of money that was required. On the other hand, 5,770 candidates equivalent to 0.76 % did not answer this question.

Question 41: Musa deposited money in a bank that gives 5 percent interest rate for one year. If he deposited the money for a period of one year and gets an interest of 2,500 shillings, how much did he deposit in the bank?

- A sh. 5,000
- B sh. 50,000
- C sh. 500,000
- D sh. 50,005
- E sh. 5,005

Candidates' Responses

Option	A	B*	C	D	E	Omitted	Others
Number of candidates	168,858	297,983	162,365	60,323	63,599	8,333	2,036
Percentage of candidates	22.12	39.03	21.27	7.9	8.33	1.09	0.27

This item was testing the candidates' ability to find the principal from the word problem where; rate, time and profit were given. A total of 297,983 (39.03%) candidates managed to calculate the principal and choose the correct answer B "sh. 50,000". On the other hand, a total of 455,145 (59.62%) candidates chose either, the incorrect answer A "sh. 5,000", C "sh. 500,000", D "sh. 50,005" or E "sh. 5,005". Those candidates lacked understanding on using the formula for finding the principal. In calculating the amount of money that Mussa deposited in the bank for one year, the candidates were supposed to go through the following steps:

$$\text{Interest} = \frac{\text{Principal} \times \text{Rate} \times \text{Time}}{100}$$

$$\begin{aligned}\text{Principal} &= \frac{\text{Interest} \times 100}{\text{Rate} \times \text{Time}} \\ &= \frac{2,500 \times 100}{5 \times 1} \\ &= \text{sh. } 50,000\end{aligned}$$

On the other hand, 8,333 candidates omitted this question, while 2,036 chose more than one option.

Question 42: Kazaroho answered correctly 45 out 50 questions in Kiswahili examination. What percentage did Kazaroho get?

- A 95
- B 45
- C 5
- D 50
- E 90

Candidates' Responses

Option	A	B	C	D	E*	Omitted	Others
Number of candidates	200,718	106,015	123,322	38,797	286,847	4,193	3,605
Percentage of candidates	26.29	13.89	16.15	5.08	37.57	0.55	0.47

In question 42, the candidates were required to find the percentage that was obtained by Kazaroho after answering 45 out of 50 questions correctly. A total of 286,847 (37.57%) candidates managed to answer this question and choose the correct answer E “90”. On the other hand, a total of 468,852 (61.42%) candidates chose either the incorrect answer A “95”, B “45”, C “5” or D “50”, whereby distracter A attracted more candidates followed by distracter C. These candidates were unable to identify the requirements of the question because the candidates who chose A added 45 and 50; those who chose B and D considered the figures in the question as the answers and those who chose C computed the difference between 50 and 45. In order to find the correct answer the candidates were required to calculate: $\frac{45}{50} \times 100 = 90\%$.

Moreover, a total of 4,193 candidates omitted this question while 3,605 candidates chose more than one option.

Question 43: Mapinduzi Primary School has 28 teachers of which 18 are female. What is the fraction of the male teachers?

- A $\frac{18}{28}$
- B $\frac{9}{14}$

$$\begin{array}{l} \text{C} \quad \frac{5}{14} \\ \text{D} \quad \frac{5}{9} \\ \text{E} \quad \frac{5}{28} \end{array}$$

Candidates' Responses

Option	A	B	C*	D	E	Omitted	Others
Number of candidates	173,127	179,815	246,743	77,231	78,218	6,183	2,180
Percentage of candidates	22.68	23.55	32.32	10.12	10.24	0.81	0.29

This item was testing the candidates' ability to find the fraction of the male teachers from the given word problem. A total of 246,743 candidates equivalent to 32.32 percent managed to find the required fraction and choose the correct answer C " $\frac{5}{14}$ ". However, 468,852

(61.42%) candidates chose either the incorrect answer A " $\frac{18}{28}$ ", B

" $\frac{9}{14}$ ", D " $\frac{5}{9}$ " or E " $\frac{5}{28}$ ". These candidates lacked understanding of

the concepts of fractions and also failed to identify the requirements of the question. For example, the candidates who chose distracters A and B computed the fraction of the male teachers as: $\frac{\text{number of female teachers}}{\text{number of all teachers}}$ instead of $\frac{\text{number of male teachers}}{\text{number of all teachers}}$.

Moreover, a total of 6,183 candidates omitted this question while 2,180 chose more than one option.

Question 44: Maendeleo Primary School has a meeting room which is 12 meters in length and has a width of 5.5 meters. If inside the room, there is an area of 2.5 m^2 allocated for keeping various documents, find the remaining area.

- A 66 m^2
- B 68.5 m^2
- C 62.5 m^2
- D 63.5 m^2
- E 53.5 m^2

Candidates' Responses

Option	A	B	C	D*	E	Omitted	Others
Number of candidates	163,304	142,077	160,763	219,728	66,686	8,749	2,190
Percentage of candidates	21.39	18.61	21.06	28.78	8.73	1.15	0.29

This item was testing the candidates' skills to find the remaining area if an area of 2.5 m^2 in the meeting room was allocated for keeping various documents. A total of 219,728 candidates equivalent to 28.78 percent managed to calculate the area and choose the correct answer D " 63.5 m^2 ". However, 532,830 (69.79%) candidates chose either distracter A " 66 m^2 ", B " 68.5 m^2 ", C " 62.5 m^2 " or E " 53.5 m^2 ". The presence of many candidates who chose the incorrect answers indicates that they did not understand how to solve the given word problem. For example, 163,304 (21.39%) candidates who were attracted by distracter A " 66 m^2 ", they calculated the area of the meeting room i.e. 12×5.5 to obtain 66 m^2 without subtracting 2.5 m^2 which is the area that was allocated for keeping various documents. Also, 142,077 (18.61%)

candidates who were attracted by distracter B added incorrectly the area of the meeting and area allocated for keeping various documents i.e $66 \text{ m}^2 + 2.5 \text{ m}^2$ to get 68.5 m^2 . Furthermore, a total of 8,749 candidates omitted this question while 2,190 candidates chose more than one option.

Question 45: Moga and Juma shared one hundred twenty five thousand shillings in the ratio of 2:3 respectively. How much did Juma get?

- A 25,000/=
- B 50,000
- C 62,500/=
- D 75,000/=
- E 100,000/=

Candidates Responses

Option	A	B	C	D*	E	Omitted	Others
No. of Candidates	148,391	125,269	118,878	296,036	65,866	6,913	2,144
% of Candidates	19.44	16.41	15.57	38.77	8.63	0.91	0.28

This item tested the ability of the candidates to find the amount of money Juma got after sharing 125,000 shillings with Moga in the given ratio. Only 296,036 (38.77%) candidates managed to find that amount of money and choose D “75,000/=” which is the correct answer. However, a total of 458,404 (60.05%) candidates chose either distracter A “25,000/=”, B “50,000/=”, C “62,500/=” or E “100,000/=”. Those candidates lacked knowledge and skills on

solving word problems involving ratios. In order to obtain the correct answer the candidates were supposed to:

Relate the given ratio as Moga : Juma = 2 : 3

Add the parts of the given ratio : 2 + 3 = 5

Find the amount of money Juma got: $\frac{3}{5} \times 125,000 = 75,000/ =$

In addition, 6,913 candidates did not answer this question while 2,144 chose more than one option.

Question 46: Maganga's car travels a distance of 20 km with a speed of 80 km per hour. What time does it take to cover the whole journey?

- A 0.25 hours
- B 0.5 hours
- C 2.00 hours
- D 4.00 hours
- E 8.00 hours

Candidates Responses

Option	A*	B	C	D	E	Omitted	Others
No. of Candidates	166,797	70,876	148,321	269,253	99,218	6,482	2,550
% of Candidates	21.85	9.28	19.43	35.27	13	0.85	0.33

This question tested the ability of the candidates to find the time it would take Maganga to cover his journey by using the formula $\text{time} = \frac{\text{distance}}{\text{speed}}$. Only 166,797 (21.85%) candidates were able to

compute the answer and choose the correct option A "0.25 hours". A total of 577,155 candidates (75.59%) chose either the incorrect response B "0.5 hours", C "2.00 hours", D "4.00 hours" or E "8.00 hours" as they failed to apply the required formula. For example, the

269,253 (35.27%) candidates who chose distracter D “4 hours”, they divided speed by distance instead of distance by speed to get the time. Figure 46.14 gives a clearer picture on how the candidates chose the correct answer and the distracters.

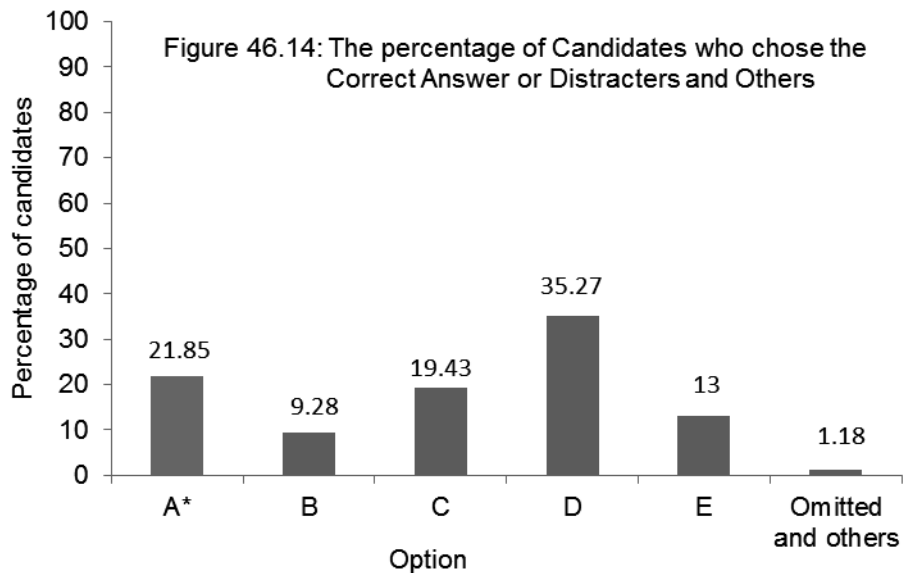


Figure 46.14 shows that only a few candidates (21.85%) managed to answer this question correctly. It also shows that the candidates (35.27%) who chose distracter D are more compared to those who chose the correct answer.

Question 47: A book is sold at seven thousand five hundred shillings at Jamali’s shop. If the owner of the shop will give a discount of 10 percent, at how much shillings will the book be purchased?

- A 7,500/=
- B 7,490/=
- C 8,250/=

D 6,750/=

E 750/=

Option	A	B	C	D*	E	Omitted	Others
No. of Candidates	96,508	186,583	79,710	263,147	129,005	6,132	2,412
% of Candidates	12.64	24.44	10.44	34.47	16.9	0.8	0.32

This question tested the ability of the candidates to solve a word problem on finding the price of a book after a discount of 10 percent. Only 263,147 (34.47%) candidates managed to find the new price of the book and choose the correct answer D “6,750/=”. However, a total of 491,806 (64.42%) candidates chose either the incorrect response A “7,500/=”, B “7,490/=”, C “8,250/=” or E “750/=”, indicating that the candidates failed to identify the requirements of the question and also they lacked the basic knowledge on the topic of money. The 47.52 percent of the candidates who chose either distracter A “7,500/=”, B “7,490/=” or C “8,250/=” did not realise that that if a book sold at 7,500 shillings, has its price reduced by 10 percent it can not have the same or exceeds the original price.

In order to find the price of the book the candidates were supposed to go through the following steps:

Finding the reduction price: $\frac{10}{100} \times 7,500 = 750/=$

Finding the new price of the book: $7,500 - 750 = 6,750/=$

On the other hand, 6,132 candidates did not answer this question while 2,412 candidates chose more than one option.

Question 48: Kambona’s salary per month is 456,500 shillings. If the salary will increase by 26 percent, how much will the new salary be??

- A shs 118,690
- B shs 456,526
- C shs 337,810
- D shs 574,090
- E shs 575,190

Response pattern

Option	A	B	C	D	E*	Omitted	Others
No. of Candidates	139,278	235,708	97,528	80,998	200,870	6,624	2,491
% of Candidates	18.24	30.87	12.77	10.61	26.31	0.87	0.33

This question was testing the ability of the candidates in solving a word problem that was on finding the new salary of Kambona after an increase of 26 percent. The analysis of candidates’ responses reveals that, 200,870 (26.31%) candidates computed the new salary and chose the correct answer E “shs. 575,190”. Further analysis shows that 553,512 (72.49%) candidates chose either A “shs. 118,690”, B “shs. 456,526”, C “shs. 337,810” or D “shs 574,090” which were not the correct answers. Those candidates failed to identify the requirements of this question. For instance, 235,708 (30.87%) candidates who opted for option B added incorrectly the salary of Kambona and 26 percent that was given i.e. $456,500 + 26 = \text{shs. } 456,526$. Also, 139,278 (18.24%) candidates who chose A computed the increase in the salary of Kambona only

i.e. $\frac{26}{100} \times 456,500 = \text{shs. } 118,690$. In obtaining Kambona's new

salary, the candidates were supposed to find:

Increase in the salary: $\frac{26}{100} \times 456,500 = \text{sh } 118,690$

The new salary: $456,500 + 118,690 = \text{shs. } 574,090$

Moreover, a total of 6,624 candidates did not answer this question whereas 2,491 candidates chose more than one option. Figure 48.15 shows how the candidates chose the answers in the question.

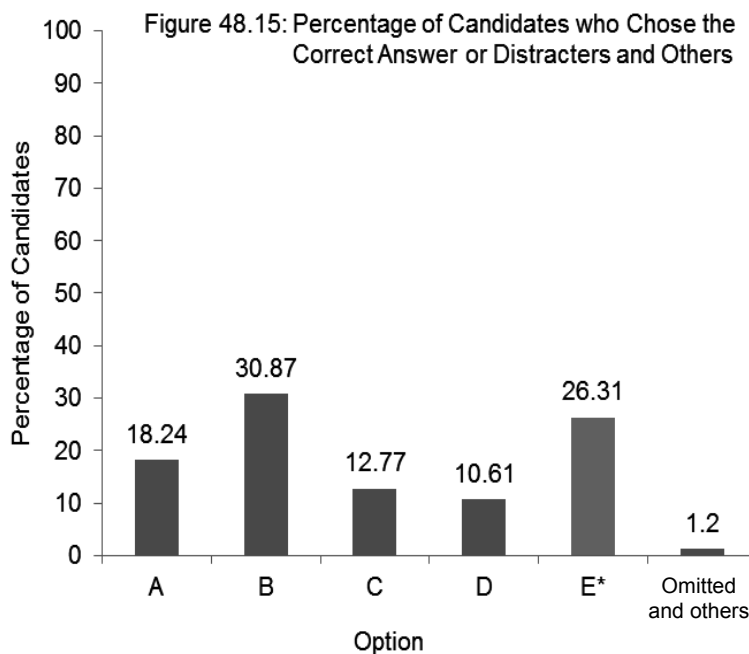


Figure 48.15 shows that many candidates were attracted by distracter B as compared with those who chose the correct answer A. Also, a large number of candidates chose distracters A, C and D indicating that they had inadequate knowledge on the topic of money.

Question 49: A business man sold sugar for three months as follows: In January 1,500 kilograms, February 2,500 kilograms and in March 1,250 kilograms. How many tons of sugars were sold in three months? (1 Ton = 1,000 kilograms)

- A 4.25 tons
- B 425 tons
- C 5.25 tons
- D 6.25 tons
- E 5,250 tons.

Response pattern

Option	A	B	C*	D	E	Omitted	Others
No. of Candidates	63,647	90,598	277,926	73,722	249,520	5,998	2,086
% of Candidates	8.34	11.87	36.4	9.66	32.68	0.79	0.27

This question tested the ability of the candidates in solving a word problem on finding the tons of sugar that were sold for three months. The analysis of the candidates' responses shows that 277,926 (36.4%) candidates managed to compute the total tons that were sold and choose correct answer C "5.25 tons". However, a total of 477,487 (62.55%) candidates chose either the incorrect answers A "4.2 tons", B "425 tons", D "6.25 tons" or E "5,250 tons". The presence of many candidates who chose the incorrect answers indicates that they lacked understanding on the topic of measurements. For instance, 249,520 (32.68%) candidates who opted for option E, they computed the total kilograms of sugar correctly but failed to use the given information that 1 ton = 1,000 kilograms in changing 5250 kilograms into 5.25 tons. In obtaining

the correct answer, the candidates were supposed to go through the following steps:

$$1,500 \text{ kg} + 2,500 \text{ kg} + 1,250 \text{ kg} = 5,250 \text{ kg}$$

But 1 ton = 1,000 kilograms

$$\text{Thus } 5,250 \text{ kg} = \frac{5,250}{1,000} = 5.25 \text{ tons}$$

Moreover, a total of 5,998 candidates did not answer this question while 2,086 candidates selected more than one answer.

Question 50: The weight of fruits that were sold at Mikunda market for four consecutive days were as follows:

Day	Monday	Tuesday	Wednesday	Thursday
Weight (tons)	2	$1\frac{1}{2}$	$\frac{1}{2}$	$2\frac{1}{2}$

What is the average of kilograms of fruits that were sold at the market per day?

- A 1,625 kg
- B 1,375 kg
- C 1,250 kg
- D 1,500 kg
- E 6,500 kg

Response pattern

Option	A*	B	C	D	E	Omitted	Others
No. of Candidates	199,334	113,859	168,172	111,635	160,522	8,471	1,504
% of Candidates	26.11	14.91	22.03	14.62	21.02	1.11	0.2

This question tested the ability of the candidates in solving a word problem which was on finding the average of kilogram of fruits that were sold at the market per day. The analysis of the candidates'

responses shows that few candidates (26.11%) computed the average and opted for A “1,625 kg” which is the correct answer. Further analysis shows that many candidates (72.58%) chose among B “1,375 kg”, C “1,250 kg”, D “1,500 kg” or E “6,500 kg”, which are not the correct answers. The presence of many candidates who opted for the incorrect answers indicates that they lacked knowledge and skills on the topic of measurements and statistics. For instance, 160,522 (21.02%) candidates who opted for E computed the total kilograms of fruits but failed to realize that they were supposed to divide it by 4 to get the required average. In obtaining, the average kilograms of fruits that were sold at the market, the candidates were supposed to go through the following steps:

$$\begin{aligned}
 \text{Average} &= \frac{2 \times 1000 + 1.5 \times 1000 + 0.5 \times 1000 + 2.5 \times 1000}{4} \\
 &= \frac{2000 + 1500 + 500 + 2500}{4} \\
 &= \frac{6500}{4} = 1625 \text{ kg}
 \end{aligned}$$

However, 8,471 candidates did not answer this question while 1,504 chose more than one answers.

3.0 CONCLUSION

The general analysis of candidates' answers in Mathematics for the year 2015 shows that the level of performance for this subject has increased. Further analysis by topics for this subject indicates that, the two topics on Roman Numbers and Whole Numbers have good performance when compared to the performance of 2014 where

there were no topics which had good performance. This good performance is due to many candidates having skills and knowledge on how to answer the questions from these topics. Also, they managed to answer the questions using the required approach appropriately.

The topics of Decimals and Percentages have remained with the average pass performance as it was in 2014. However, the topic of Fractions has improved its performance from poor in 2014 to average in 2015. The analysis of performance of candidates for every topic is shown in the **Appendix**. On the other hand, the analysis shows that many candidates answered poorly the questions from the following topics; *Algebra, Geometry, Positive and Negative numbers, Statistics, Measurements and Money*. The candidates who answered poorly the questions from these topics lacked accuracy in computations, skills, knowledge, and techniques on how to solve equations and did not verify the answers they were getting. For example in question 38, a total of 534,571 (70.01%) failed to calculate the area of the parallelogram because they used an incorrect formula.

4.0 RECOMMENDATIONS

In order to improve more performance it is recommended that:

- (a) The responsible authorities should ensure that all schools have capable teachers to teach Mathematics competently and complete all the contents in the syllabus. This is due to the fact that, many candidates still do not have the ability to use both the correct concept and logic in answering questions

- (b) The responsible authorities should ensure that all schools have conducive environment for teaching and learning in order to attract teachers and pupils during the teaching and learning of Mathematics.
- (c) Teachers should improve teaching of the topics which many candidates did not do well. For instance, Algebra, Geometry, Positive and negative numbers, Statistics, Measurements and Money.
- (d) Educational Quality Ensures Controllers should make a close follow up to see if formulae are applied appropriately and calculations in mathematics are done correctly.

Appendix

COMPARISON OF CANDIDATES' PERFORMANCE BY TOPIC IN PSLE 2014 AND PSLE 2015 IN MATHEMATICS

No	Topic	2014				2015			
		Number of Question	Percentage of Performance	Average of performance	Remarks	Topic	Number of Question	Percentage of Performance	Average of performance
1	Roman Numbers	25	50.38	50.38	Average	21	67.42	67.42	Good
2	Whole Numbers	2	68.44	55.44	Average	1	83.75	63.33	Good
		3	72.15			2	77.62		
		19	49.55			4	71.14		
		21	48.45			10	59.37		
		49	38.61			15	54.63		
						16	55.72		
						22	41.81		
						23	62.57		
3	Decimals	1	46.03	60.43	Average	3	43	55.86	Average
		7	84.93			11	56.51		
		11	50.33			12	68.07		
4	Fractions	4	45.17	36.58	Poor	5	59.84	49.5	Average
		8	46.96			6	63.43		
		9	38.74			9	56.4		
		41	27.35			20	37.76		
		42	24.69			24	47		
						43	32.32		
5	Percentages	15	57.43	44.01	Average	17	65.11	43	Average
		16	31.74			42	37.57		
		17	42.86			48	26.31		
6	Money	39	43.13	31.03	Poor	40	49.31	40.4	Poor
		40	25.45			41	39.03		
		44	26.01			45	38.77		
		46	29.71			47	34.47		
		47	31.09						
		48	30.77						
7	Measurements	12	61	31.50	Poor	25	71.45	38.31	Poor
		13	19.99			39	45.29		
		20	31.28			44	28.78		
		24	23.04			46	21.85		
		43	22.20			49	36.4		
						50	26.11		
8	Statistics	23	53.53	36.58	Poor	34	36.3	37.3	Poor

No	Topic	2014				2015			
		Number of Question	Percentage of Performance	Average of performance	Remarks	Topic	Number of Question	Percentage of Performance	Average of performance
		33	19.21			36	38.29		
		35	39.76						
		50	33.82						
9	Whole Numbers	5	38.1	48.50	Average	7	37.95	35.61	Poor
		6	58.9			8	45.83		
						14	23.04		
10	Geometry	26	26.01	32.09	Poor	26	37.78	33	Poor
		27	24.25			27	33.34		
		28	39.82			28	33.29		
		29	16.61			29	27.03		
		30	35.76			30	43.05		
		31	47.26			31	29.9		
		32	23.96			32	25.44		
		34	59.51			33	35.99		
		36	18.29			35	18.07		
		37	39.03			37	49.59		
		38	22.52			38	28.99		
11	Algebra	10	54.43	34.63	Poor	13	32.55	32.1	Poor
		14	35.58			18	28.08		
		18	26.36			19	35.62		
		22	25.1						
		45	31.69						

