



*Let the mind manage the body  
Que l'esprit gère le corps*

**MAURITIUS  
EXAMINATIONS  
SYNDICATE**

**NCE 2023**

**GRADE 9**

**Mathematics**

Subject code: N510

## **Introduction**

In October 2023, the third edition of the National Certificate of Education (NCE) assessment was taken by total of 14324 candidates. This includes candidates of Grade 9 from the regular programme and candidates from the Grade 9+ of the extended programme.

The NCE Mathematics Assessment assesses mathematical skills acquired by candidates from Grade 7 to Grade 9. Candidates are assessed on the learning objectives spelt out in the Teaching and Learning syllabus (TLS, MIE 2016). The 2023 Mathematics assessment catered for students of all abilities, providing different types of questions to allow each candidate to demonstrate the competencies that they have acquired after nine years of continuous schooling. The paper was graded in terms of the level of difficulty.

It is highly recommended to read this report in conjunction with the question paper for the assessment.

## **The Assessment Objectives**

Three assessment objectives, namely knowledge, application and reasoning serve as a foundation to the design of the Mathematics paper.

### **AO1: Knowledge (55%)**

Questions assessing *knowledge* evaluate the recall and use of facts, concepts, rules and procedure which learners need to solve problems.

### **AO2: Application (35%)**

Questions assessing *application* focus on learners' ability to apply their mathematical knowledge and skills to solve routine problems.

### **AO3: Reasoning (10%)**

Questions assessing *reasoning* require candidates to deal with routine and non-routine problems which may be multi-step problems or may be set in complex contexts.

The NCE Mathematics Examiners' Report aims at:

1. **Providing insight into Exam Structure:** This Examiners' reports will provide detailed information about the structure of the exam, including the types of questions asked, the format of the questions, and the distribution of marks across different topics. This insight can help students better understand what to expect on future exams and how to prepare effectively.
2. **Understanding Common Mistakes:** This report typically highlights common mistakes made by students in the exam. By reviewing these mistakes, students can identify their own weaknesses and take steps to address them. Understanding common pitfalls can also help students avoid making similar errors in future exams.
3. **Feedback on Performance:** This feedback may include observations about trends in student performance, areas of strength and weakness, and suggestions for improvement. By reviewing this feedback, students can gain a better understanding of how they performed relative to their peers and where they need to focus their efforts for future exams.
4. **Revision Guidance:** This report will contain guidance on how students can improve their performance in future exams. This may include recommendations for additional study resources, suggested revision techniques, and advice on how to approach different types of questions. Following this guidance can help students develop more effective study habits and strategies.

## Key Messages

In order to do well in this paper, candidates need to

- demonstrate good understanding across the whole syllabus.
- be competent in basic numeracy skills (the four basic operations).
- be familiar with whole numbers, decimals and fractions and their conversion from one form to another.
- recall and apply necessary formulae.
- use acquired skills to solve routine, non-routine and complex problems.

## General Comments

The difficulty level of the 2023 Mathematics assessment paper was comparable to that of 2021-2022. It is worth pointing out that the types of questions set, particularly the first few questions proved to be more accessible to the majority of candidates. More illustrations and visuals were included in the paper and the reading load was decreased. Students having difficulties in reading were thus able to demonstrate their mathematical knowledge and skills more confidently. The paper also provided some challenging questions to stimulate mathematical thinking and reasoning.

The percentage of the number of students obtaining a grade 6 or better in 2023 increased to 79.8% compared to 69.4% in 2022. The percentage pass for girls was 83.5 while the percentage pass for boys was 79.8%.

Item analysis indicates that students still struggle to solve complex or non-routine questions requiring logical thinking, sense making and reasoning. For instance, questions 31 proved to be particularly challenging to the majority of candidates. On the other hand, questions 1 to 22 was more accessible to the majority of the candidates.

There were some well-presented scripts. Candidates appeared to have had sufficient time to complete the paper. However, many scripts were found to be incomplete with answer spaces left blank. It was also common to note that some candidates had the necessary skills to devise proper strategies to solve problems, but could not reach the correct solution due to arithmetic errors while dealing with integers, fractions and decimals.

In many cases, candidates were not able to secure partial marks because of the omission of necessary workings. Many candidates failed to present their work in a clear and neat manner, resulting in loss of marks. It was also noted that many candidates used pencil to answer questions and then erase those workings. They therefore lose their chances to score method marks if their final answers were incorrect.

Analysis of candidates' scripts indicate the following:

- Many candidates had difficulties in carrying out the four basic operations in Mathematics.
- Candidates lost marks because of arithmetic mistakes which could have been avoided if they were more careful.

- Many omitted intermediate steps and thus they could score partial marks.
- Algebra, Inverse Proportion, Geometry, Trigonometry and Survey problems in Sets and problems involving ratio were found to be challenging in general.
- It was noted that candidates usually responded well to one-step or two-step problems. However, many candidates struggled to attempt long/structured questions that required higher order thinking skills and reasoning. Non-routine problems requiring problem solving skills such as questions 29 and 31 proved to be particularly challenging for candidates. It is important to note that candidates are also expected to develop appropriate strategies to solve non-routine problems in varied contexts and make connections between the different mathematical concepts acquired.
- In many cases, candidates could not make a logical link between the different parts of structured questions.
- It was common to find candidates fiddling with numbers to reach their answers.
- In general, candidates encountered challenges in recalling mathematical concepts learnt in lower grades. They performed less well in questions set on topics covered in G7 and G8. Lack of revision or insufficient preparation for the assessment might also be a cause.

The NCE assessment paper is graded, that is the level of difficulty of the different questions gradually increases.

Questions 25(a), 26, 27(b), 28(a, d), 31(a)(i), 31(b) were more challenging to many candidates.

## Specific Comments

### Question 1

1. Work out:

$$\begin{array}{r} 451 \\ + 236 \\ \hline \\ \hline \end{array}$$

Almost all candidates were able to perform the addition. (Ans: 687)

### Question 2

Evaluate:

$$\frac{8}{11} - \frac{5}{11}$$

Most candidates could perform the subtraction. A few candidates gave  $\frac{3}{0}$  as final answer. This resulted from the subtraction of both the numerators and the denominators respectively. (Ans:  $\frac{3}{11}$ )

### Question 3

Simplify  $(a^4)^5$

Performance in this question was very satisfactory. Among the few candidates who could not do it successfully, the incorrect response  $a^9$  was often seen, where powers were added. (Ans:  $a^{20}$ )

### Question 4

Calculate  $2.3 \times 3$

This question was generally well answered by candidates. (Ans: 6.9)

### Question 5

Evaluate:  $2 + 5 - 4$

This question was well answered by almost all candidates. (Ans: 3)

### Question 6

Circle all the odd numbers from the list below.

23      36      52      67      48

Around two thirds of the candidates were successful in attempting this part.

Among those who did not earn the mark, the following mistakes were noted:

- only one odd number was encircled
- more than the two numbers encircled including the odd numbers
- even numbers encircled instead. (Ans: 23 and 67)

### Question 7

Express  $\frac{27}{100}$  as a decimal.

A high proportion of candidates successfully attempted this part. (Ans: 0.27)

### Question 8(a)

Simplify  $4y + 9y$

Candidates responded well to this question but in some scripts, the incorrect answer  $13y^2$  was noted. (Ans:  $13y$ )

### Question 8(b)

Factorise  $2x + 4$

Performance of candidates in this question was below average. The most common wrong answer noted was  $6x$  obtained by

adding the coefficient of  $x$  and the constant term. Another wrong answer which was also quite common was  $2(x + 4)$ . (Ans:  $2(x+2)$ )

### Question 9

Write  $2 \times 2 \times 2$  in index form.

Around 75% of the candidates answered this question correctly by giving their final answer in index form. However, a few candidates evaluated their answers to reach 8. They could not score the mark in this case. (Ans:  $2^3$ )

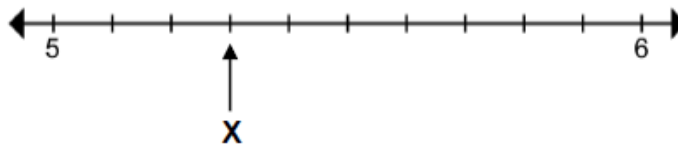
### Question 10

Find the Highest Common Factor (H.C.F.) of 15 and 25.

Many candidates were successful in finding the H.C.F correctly. However, even if some managed to prime factorise 15 and 25, they were unsuccessful in finding the H.C.F. They found the L.C.M. instead obtaining 75 as final answer. Another common wrong answer was 25. (Ans: 5)

### Question 11

Write down the value of X.



More than two thirds of the candidates could find the correct value. However, reading values from a number line remained problematic for a few candidates. Common wrong answers observed were  $5\frac{1}{3}$ ,  $5\frac{3}{5}$ , 2 and -1. Incorrect values like 0.3 and  $\frac{3}{10}$  were also seen. (Ans: 5.3)

## Question 12

This question consisted of 8 multiple choice questions. They were mainly questions assessing knowledge and comprehension.

Part	Key	Most common distractor
(a)	C	A
(b)	B	-
(c)	A	D
(d)	C	-
(e)	B	D
(f)	D	-
(g)	D	A
(h)	C	-

### Comments on Specific Parts of Question 12

Parts (b), (d), (f) and (h) were successfully answered by the majority of the candidates.

#### Part (a)

(a)	How many sides does a hexagon have?
A	8
B	7
C	6
D	5

Around 75% of the candidates could obtain the correct answer. Among those who were not successful D was the most common distractor.

**Part (c)**

(c) Reduce  $\frac{24}{30}$  to its lowest terms.

**A**  $\frac{4}{5}$

**B**  $\frac{8}{10}$

**C**  $\frac{5}{6}$

**D**  $\frac{12}{15}$

Whilst many candidates were able to simplify the fraction to its lowest term, a significant number of candidates chose option D as they did not reduce  $\frac{24}{30}$  to the simplest form.

**Part (e)**

(e) Which one of the following is a square number?

**A** 30

**B** 25

**C** 20

**D** 11

A large proportion of candidates answered correctly. Among those who were not able to answer option D was the most common distractor.

**Part (g)**

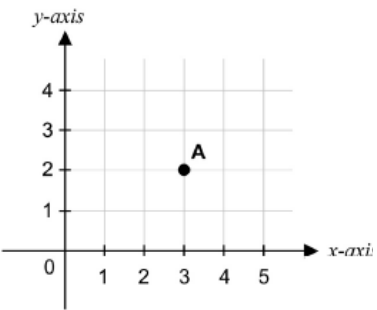
What are the coordinates of point A?

**A** (2, 3)

**B** (0, 3)

**C** (2, 0)

**D** (3, 2)



More than half of the candidates answered this part correctly. Among those who were not successful, option A was a common distractor.

### Question 13

Complete the sequence below.

3, 10, 17, 24, .....

This item was well-answered by most candidates. (Ans: 31)

### Question 14

Arrange the following numbers in **descending** order:

5213

5321

5132

5231

This part was well answered by most candidates but in some scripts, it was common to see the numbers arranged in ascending order. (Ans: 5321, 5231, 5213, 5132)

### Question 15

Convert

(a) 7 kg = \_\_\_\_\_ g.

(b) 350 cm = \_\_\_\_\_ m.

Candidates performed better in part (a) than part (b). Common wrong answer seen for part (a) was 700 instead of 7000. Common wrong answers for part(b) were 35000, 35, 3500 or 0.35.

(Ans: (a) 7000 (b) 3.5)

### Question 16(a)

China is 4 hours ahead of Mauritius.

Complete the table below.

Time in Mauritius	Time in China
12 00	16 00
17 00	.....

Most candidates successfully attempted this part.

(Ans: 21 00)

**Question 16(b)**

A car travels 90 km in 3 hours.  
Find the **average speed** of the car.

<b>Distance travelled</b>	90 km
<b>Time taken</b>	3 hours
<b>Average speed</b>	..... km/h

Around 60% of the candidates applied the correct formula to obtain the answer. However, in some scripts, the wrong answer 270 coming from  $90 \times 3$  was found. (Ans: 30)

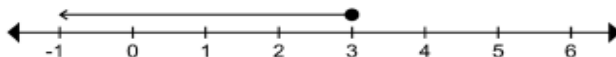
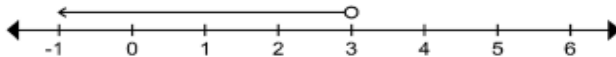
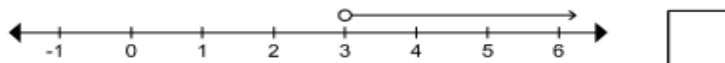
**Question 17(a)**

Solve  $x + 3 = 12$

This part was well answered by most of the candidates. They were confident in solving linear equations with one operation. (Ans: 9)

**Question 17(b)**

(b) Which of the following number lines represents the **inequality**  $x \leq 3$ ?  
Tick (✓) the correct box.

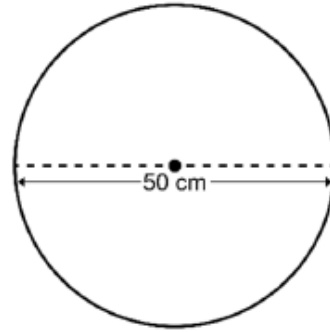


Performance in this part of the question was good. Most candidates were able to choose the correct number line.

(Ans: third number line ticked)

**Question 18(a)**

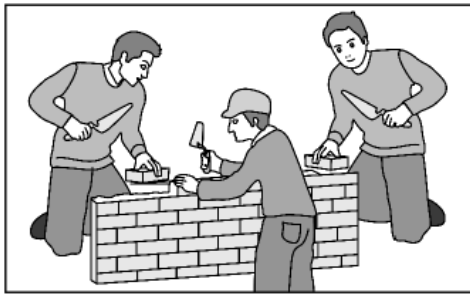
- (a) The diameter of a circle is 50 cm.  
Find its **radius**.



Around two thirds of the candidates successfully found the radius of the circle. A wrong answer seen in some scripts was 100 coming from  $50 \times 2$ . (Ans: 25)

**Question 18(b)**

Three men take 18 days to build a wall.

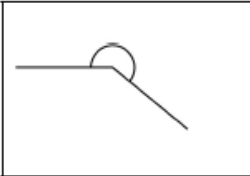
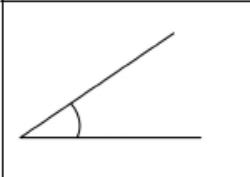
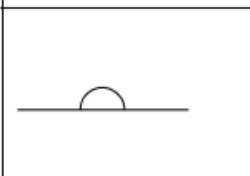
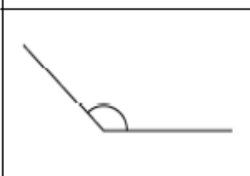


How many days will **one** man take to build the wall?

Around 60% of the candidates answered this part correctly. It appears that some candidates could not differentiate between direct and inverse proportion. A common mistake seen in the scripts was 6 coming from  $18 \div 3$ . Candidates are advised to look back to see whether their answers make sense.

(Ans: 54)

### Question 19(a)

	•	• <input type="text" value="Acute"/>
	•	• <input type="text" value="Straight"/>
	•	• <input type="text" value="Obtuse"/>
	•	• <input type="text" value="Reflex"/>

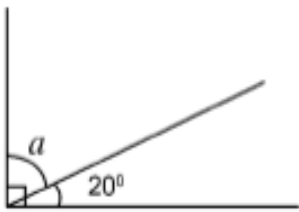
[4]

This question was an Objective type question (Matching) requiring candidates to match the different angles to their correct name. Many candidates could not recall the names of the different types of angles. There is a strong indication that many candidates confused between obtuse and reflex angles.

(Ans: Reflex, Acute, Straight, Obtuse)

### Question 19(b)

Find angle  $a$ .



Complementary angles seemed to be familiar to most candidates. The majority successfully found the value of the unknown angle.

Some incorrect values seen were  $110^\circ$  resulting from  $(90^\circ + 20^\circ)$  and  $160^\circ$  resulting from  $(180^\circ - 20^\circ)$ .

(Ans:  $70^\circ$ )

### Question 20(a)

Given that:

$$A = \begin{pmatrix} 1 \\ 7 \end{pmatrix} \qquad B = \begin{pmatrix} 6 \\ 4 \end{pmatrix}$$

Work out:

(a)  $A + B$                       (b)  $\frac{1}{2}B$

Many candidates obtained the correct answer.

However, it was observed that candidates dealt with the matrix operation in part(a) as addition of fractions to reach the final answer  $\frac{7}{11}$ .

On the other hand, for part(b) many candidates reached  $\frac{1}{2} \begin{pmatrix} 3 \\ 2 \end{pmatrix}$  but were unsuccessful in obtaining the final answer.  $\begin{pmatrix} 12 \\ 8 \end{pmatrix}$  was the most common wrong answer seen.

(Ans: (a)  $\begin{pmatrix} 7 \\ 11 \end{pmatrix}$  (b)  $\begin{pmatrix} 3 \\ 2 \end{pmatrix}$ )

### Question 21

In the expression  $4x + 1$ , what is the coefficient of  $x$ ?

Most candidates were able to identify the co-efficient of  $x$ . However, among those who were not successful, the incorrect answers like  $4x$ ,  $5x$  or  $1$  were commonly seen. A few candidates tried to find the value of  $x$  after equating  $4x+ 1$  to  $0$ . (Ans:4)

## Question 22

(a) Write 21.37 to 1 decimal place.

(b) Find  $\sqrt{49}$

(c)  $\frac{5}{8} - \frac{1}{4}$

(a) Only half of the candidates were able to write 21.37 to 1 d.p. Many candidates had difficulties in approximations. Common wrong answers 21.3, 213.7 or 21.40 were frequently seen.

(b) Most candidates obtained the correct answer. Among those who did not score, a common wrong answer seen was  $7 \times 7$ .

(c) A large proportion of the candidates made successful attempts in operating on fractions. However, some candidates could not reach the correct answer because of careless arithmetic

mistakes. A common mistake is given below:

$$\frac{5}{8} - \frac{1 \times 2}{4 \times 2} = \frac{5-3}{8} = \frac{2}{8}$$

It was also common to see  $\frac{4}{4}$  as final answer coming from  $\frac{5-1}{8-4}$ .

(Ans: (a) 21.4 (b) 7 (c)  $\frac{3}{8}$ )

### Question 22(d)

The equation of a straight line is  $y = 2x + 5$ .

(i) What is its gradient?  
Circle the correct answer.

1            2            5

(ii) What are the coordinates of the y-intercept?  
Tick (✓) the correct box.

(0, 1)            (0, 2)            (0, 5)

(i) Most candidates could identify the gradient. Among the few wrong answers, 5 was most common.

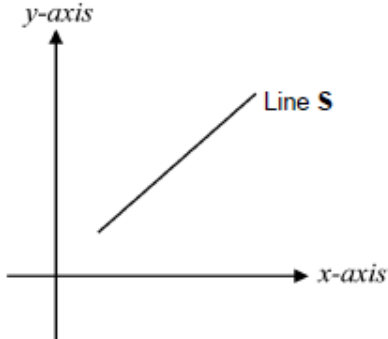
(ii) The majority candidates ticked the correct box. A few identified a (0, 2) as final answer and could not score.

Many candidates tend to confuse the gradient with y-intercepts.

(Ans: (a) 2 (b) (0, 5))

### Question 22(e)

Study the graph below.



Complete the sentence.

The gradient of Line S is \_\_\_\_\_ .

(negative            zero            positive)

Only a handful of the candidates could recall the orientation of a line and its gradient.

The most common wrong answer was 'zero'. This suggests that candidates might have concluded that the line passes through the origin and thus gave the y-intercept. (Ans: positive)

### Question 23

A bag contains 4 white marbles and 6 black marbles.

A marble is chosen at random.

Find the probability that it is

(a) black,

(b) red.



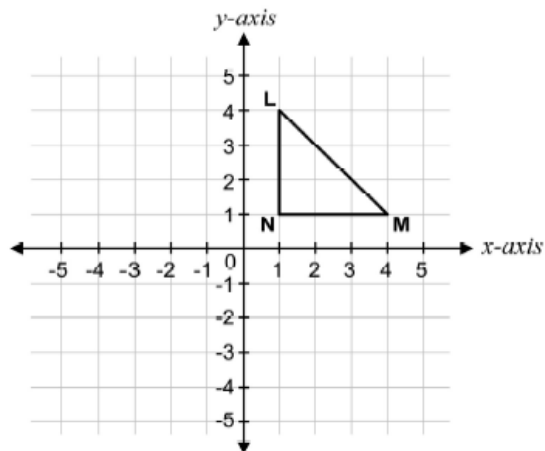
Many candidates successfully attempted this question.

The most common wrong answer seen for part(a) was 6, which represented the number of black marbles.

For part(b), some incorrect answers seen were 'nil' and 'impossible' which indicates that they knew that there is no chance that a red marble is chosen. (Ans: (a)  $\frac{3}{5}$  (b) 0)

### Question 24

The graph below shows triangle LMN.



Draw the image of triangle LMN under a reflection in the  $x$ -axis.

Performance in this question was satisfactory in most cases.

Among those who could not score full marks some were able to reflect only two points correctly.

Among those who could not earn any credit, the following were often noted:

- (1) reflection was done in the  $y$ -axis, or in the three quadrants
- (2) Incorrect reflection of the vertices of triangle LMN

### Question 25

- (a) Factorise  $x^2 + 11x + 10$ .
- (b) Hence, solve the equation  $x^2 + 11x + 10 = 0$

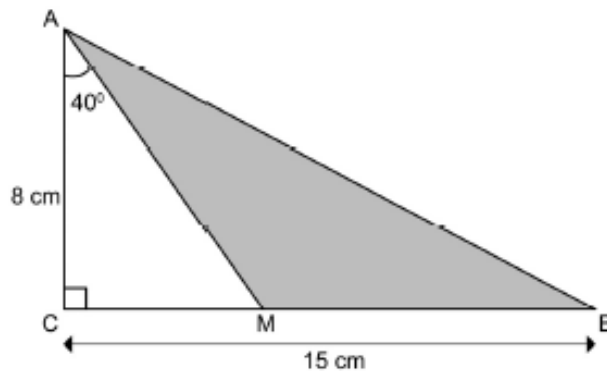
Only a handful of candidates were successful in attempting this question.

Factorisation of quadratics is found to be challenging by many candidates. In some scripts, part(a) was not attempted. On the other hand, some candidates chose to provide both the factorisation and solving the quadratic as their answer to part(b).

(Ans: (a)  $(x+1)(x+10)$  (b)  $-1, -10$ )

### Question 26

The diagram below shows a triangle ABC, where  $BC = 15$  cm and  $AC = 8$  cm.  
The point M lies on BC such that angle  $CAM = 40^\circ$ .



- (a) Using the information given below, as necessary, find CM.  
[ $\sin 40^\circ = 0.64$        $\cos 40^\circ = 0.77$        $\tan 40^\circ = 0.84$ ]
- (b) Find the area of shaded triangle ABM.

Less than half of the candidates were able to score full marks. Among those who did not score, many used the value for  $\tan 40^\circ$  but could not recall the correct ratio. More precisely,  $\tan 40^\circ$  was equated to  $\frac{8}{CM}$  instead of  $\frac{CM}{8}$ .

Many candidates struggled to find the area of the shaded part. After finding the length of MB correctly, they wrongly identified AM (which they tried to find using Pythagoras Theorem/cos ratio) as the height of the triangle ABM.

A few candidates found the area of triangle ACM but could not proceed further.

(Ans: (a) 6.72 (b) 33.12)

### Question 27(a)

- (a) Ali works for 6 hours daily from Monday to Friday. He is paid Rs 100 per hour.
- On Saturday, he works for 2 hours 45 minutes and is paid Rs 200 per hour.
- Calculate Ali's total earnings from Monday to Saturday.

This question was well answered by around 50% of the candidates. Calculating the earning for Saturday proved to be particularly challenging. The common mistakes were:

- Taking 2 hours 45 minutes to be equal to 2.45 h.
- Ignoring the 45 minutes in their calculation and considering 2 h instead.

(Ans: (a) 3550)

### Question 27(b)

- (b) Some marbles are shared among 3 children, Amy, Ben and Clara.
- Clara gets half of the marbles.
- Ben gets twice as many marbles as Amy.
- The information is represented on a pie chart.
- Find the angle that represents the number of marbles that Ben gets.

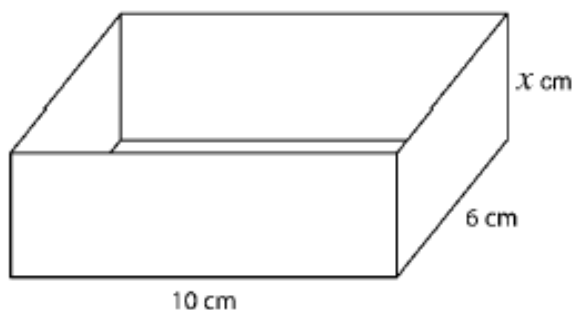
Few candidates correctly answered this part. Students having language difficulty could not understand what was required and misinterpreted the information given. Interpreting

the sentence 'Ben gets twice as many marbles as Amy' was problematic for many candidates and consequently they used the wrong ratio. The ratio of the number of marbles obtained by Ben to the number of marbles obtained by Amy was considered to be 1:2 instead of 2:1. As a result, a common wrong answer  $60^{\circ}$  was often seen instead of  $120^{\circ}$ .

It is worth pointing out that correct final answers coming from wrong workings do not earn any credit. For example, in this case  $360 \div 3$  leading to  $120^{\circ}$  with the assumption that the marbles were equally shared among the 3 children was commonly seen. Candidates did not earn any marks in this case. (Ans:(b)  $120^{\circ}$ )

### Question 28(a, b)

The figure shows an open rectangular container A, of length 10 cm, width 6 cm and height  $x$  cm.



Container A

(a) The total surface area of the container is  $284 \text{ cm}^2$ .

Find its height  $x$ .

(b) Using the value of  $x$ , obtained in part (a), find the volume of Container A.

### Part (a)

This question was the least well answered item in this question. One in four candidates managed to score full marks. Many candidates overlooked the fact that the tank was open. They considered 6 faces instead of 5 faces, resulting in the wrong value of the

height  $x$ . It was also noted that many candidates applied the formula for volume of cuboid instead of total surface area of cuboid.

The trial-and-error approach was sometimes used. Nevertheless, only a few candidates managed to reach the correct answer. (Ans: (a)7)

### Part (b)

It was seen that most candidates made correct use of the formula for the volume of cuboid by using their answer in part (a) for the height  $x$  thus earning a partial mark. However, very few scored full credit.

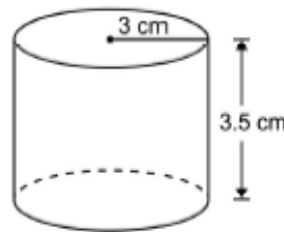
(Ans:(b)420)

### Question 28(c, d)

(c) A cylindrical glass has radius 3 cm and height 3.5 cm.

Calculate the volume of the cylindrical glass.

[Take  $\pi = \frac{22}{7}$ ]



(d) 5 such cylindrical glasses are completely filled with water.

The water from these 5 cylindrical glasses is then poured into the open rectangular container A.

Find the volume of water that overflows from the container A.

### Part (c)

Many candidates were successful in finding the volume of the cylindrical glass. In many cases, full marks were not scored due to incorrect calculation and arithmetic slips. Only around 35% of the candidates scored full marks. Among those candidates who did not score any mark, wrong formulae like  $2\pi rh$  or  $2\pi r^2h$  were commonly used. (Ans: (c)99)

### Part (d)

Around 20% of the candidates were successful in scoring full marks.

It was noted that a large number of candidates correctly used their answers to part (c) to calculate the volume of 5 such cylindrical glasses. Many could not reach the correct final answer due to arithmetic mistakes. For example, in some scripts the volume of **container A** in part (b) was greater than the volume of the 5 cylindrical glasses, so that overflowing did not occur. (Ans: (d)75)

### Question 29

Ann invests Rs 125 000 in a bank that pays simple interest at the rate of 2.5% per annum.

After a few years, Ann withdraws all her money which amounts to Rs 137 500.

For how many years did Ann's money remain in bank?

In this question, candidates were assessed on their ability to devise strategies to solve non-routine real-life problems in a given context (AO3 - reasoning).

Only a few candidates were successful in finding the required number of years. A large number of candidates calculated the Simple Interest (137 500 – 125 000) and did not proceed further. Many candidates equated the formula  $\frac{PRT}{100}$  to Rs 137500 which represents the total amount withdrawn from the bank.

Arithmetic slips were very common in this question. (Ans: 4)

### Question 30

Solve the simultaneous equations:

$$4x - 5y = -7$$

$$6x + y = 15$$

Most candidates tried to solve the simultaneous equations, but very few managed to reach the correct solution. The equating coefficients method was more often seen. A

common mistake noted was that candidates did not multiply all the terms by a particular value when equating coefficients. Arithmetical mistakes in intermediate steps were also very frequent.

Some candidates who had reached an incorrect value ( $x$  or  $y$ ) proceeded by using the value to find a pair of values satisfying one of the equations, thus earning a partial mark.

Candidates are strongly recommended to perform a solution check by replacing the values obtained for  $x$  and  $y$  in both equations, as it will help to identify any mistake in their working. (Ans:  $x = 2$ ,  $y = 3$ )

**Question 31(a)**

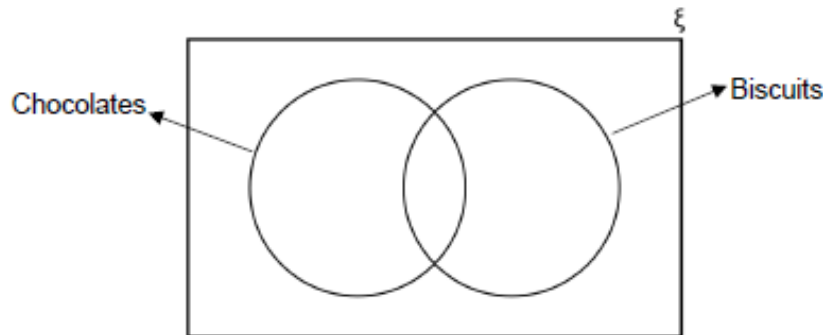
(a) In a class, there are 36 students.

They are asked whether they like chocolates or biscuits.

Of the 36 students

- 20 like chocolates
- 18 like biscuits
- 6 like neither
- $x$  like both

(i) Represent the above information on the Venn diagram below.



(ii) Find the value of  $x$ .

(iii) How many students like chocolates only?

This was the least well answered question in the paper. Slightly less than one third of the candidates could score full marks. Candidates of all abilities struggled to attempt this question. Candidates seemed to lack confidence in dealing with survey problem on Sets.

In part(i), candidates were supposed to represent all the given information in the Venn diagram and very few earned full credit. The most common mistake was to represent 20 as the number who like Chocolates **only** and 18 as the number who like Biscuits **only**.

In part(iii), candidates were expected to find the number of students who liked chocolates only and the most common wrong answer seen was 20. Candidates did not realise that 20 included the number of students who liked both biscuits and chocolates.

(Ans: (a) (ii) 8 (iii) 12)

### Question 31(b)

In a group of 75 children, the ratio of boys to girls is 3 : 2.

How many more girls must join the group so that the ratio of boys to girls becomes 5 : 4?

This question proved to be challenging to a significant number of candidates across all the ability groups. Candidates struggled to understand and interpret this problem. Less than 15% could score full marks and around 55% could not score any mark.

Most of the candidates reached 45 for the number of boys and 30 for the number of girls. Many candidates failed to understand that number of boys did not change, and this has led to many incorrect answers.

For example, some candidates who assumed that both the number of boys and the number of girls should change reached an incorrect value of 60 for the number of girls coming from  $[(\frac{75}{5}) \times 4]$  and hence a final wrong answer of  $60-30=30$  was seen.

(Ans: (b) 6)

## Recommendations and conclusions

Candidates are advised to:

- read and interpret information/instructions and command words carefully.
- read questions till the end before attempting them to avoid missing out on any key information.
- show all necessary workings clearly in the appropriate space. Neat, clear and concise work presentation helps candidates to remain focused, ensures that the number of arithmetic mistakes is reduced and consequently increases candidates' chances to score marks. Also, evidence of working makes it possible for marks, where they are available, to be awarded for correct methods and intermediate results.
- attempt all questions even when some of them seem unfamiliar.
- to revise concepts learnt at upper primary level, Grade 7 and Grade 8.

Educators are advised to

- reinforce the learning of Mathematical fundamental concepts and operations on numbers including fractions and decimals through constant practice to build confidence.
- train students so that they develop problem-solving skills and have the ability to link different mathematical concepts learnt.
- train students to attempt questions assessing Knowledge, Application and Reasoning.
  - Encourage students to look back at their workings and help them to develop number sense.

Some candidates demonstrated good skills in carrying out mathematical procedures competently. On the other hand, statistical analyses of the NCE results provides an indication that Mathematics is problematic for many candidates specially when they deal

with new or complex contexts. Many candidates seem to lack confidence when tackling problems that require them to develop strategies to solve problems. While many candidates showed proficiency in mathematical procedures, frequent arithmetic errors hindered them from attaining perfect scores