



Mauritius Examinations Syndicate

PSAC 2021- 2022

Mathematics

Subject code: P120

Examiners' Report

April 2023

Introduction

The Primary School Achievement Certificate (PSAC) in Mathematics was developed in the context of the Nine-Year Continuous Basic Education (NYCBE) reform. Candidates sat for the PSAC Mathematics Assessment in 2017 for the first time.

The fifth series of the PSAC Mathematics assessment, initially scheduled for April 2022, was administered in October 2022. The assessment was meant to measure the extent to which learners have developed the mathematical proficiencies and competencies defined in the National Curriculum Framework (NCF) and the Teaching and Learning Syllabus Grade 1 -6 (MIE, 2017).

Candidates are assessed on three Assessment Objectives (AOs) as defined in the Annual Programme for PSAC.

AO1: Knowledge and Comprehension (40%)

Questions assessing 'Knowledge and Comprehension' aim at showing candidates' ability to, 'recall specific mathematical specific facts, concepts, rules and formulae; represent simple mathematical statements or information; perform simple mathematical operations and routine procedures.'

AO2: Application (40%)

Questions assessing 'Application' aim at assessing candidates' ability to, 'identify and apply mathematical concepts, rules and formulae, skills and techniques to solve familiar problems in Mathematics'

AO3: Analysis (20%)

Questions assessing 'Analysis' aim at indicating candidates ability to 'break down and interpret multi-faceted information and data into their component parts; recognise and use unstated mathematical assumptions in problem solving; formulate appropriate strategies to solve non-routine problems'.

General Comments

The PSAC Examiners' report for Mathematics offers feedback on the performance of candidates and identifies their strengths and weaknesses. It is also meant to guide future candidates and Educators in preparing the assessment.

This report is to be read along with the 2022 Mathematics PSAC question paper, available on the MES website(www.mes.intnet.mu).

The performance of candidates in 2022 was quite encouraging. The overall percentage of candidates achieving a Grade 5 or better in 2022 was 83.21% compared to 78.28% in 2020/2021. The mean mark for boys was 54.4 while the mean mark for girls was 59.3. Candidates responded well to questions assessing knowledge and comprehension, and showed difficulty in attempting questions assessing application and analysis. In general, candidates did well in the paper in 2022. However, there are candidates who did not show much progress and performed below average.

The following issues might be contributing to the poor performance of some candidates:

1. Poor basic mathematical skills/pre-requisites
2. Surface teaching and learning
3. Mechanical responses to questions
4. Difficulty in thinking logically and reasoning
5. Lack of confidence in solving complex mathematical problems.
6. Low motivation level
7. Difficulty in understanding English

Some main topics in Mathematics that require more attention from both pupils and Educators are:

(i) Factors and Multiples

It was observed that candidates did not fare well in questions involving factors and multiples. These include questions 12 and 19. When a learner has difficulties in understanding the meaning of factors and multiples, he will also have problems in finding L.C.M. and H.C.F., adding or subtracting fractions involving different

denominators and consequently in many other topics in future. More time and effort should be invested in understanding factors and multiples.

(ii) Fractions and decimals

Pupils tend to struggle and lack confidence while dealing with fractions and decimals. Educators are advised to lay emphasis on the meaning of fractions and decimals through appropriate activities and in real life contexts.

(iii) Percentages

The concept of percentages is challenging at Grade 6. Candidates seem to be confused when they need to solve problems involving percentages. It is worth noting that the notion of 'percentages' is a fundamental concept that needs to be mastered at an early age, as it becomes more difficult to keep up with topics involving percentages like profit and loss and word problems later on.

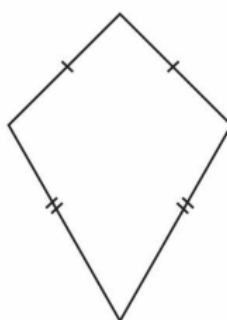
Comments on specific Questions

Very Short Answer Questions

Questions 1 – 17 were designed to assess candidates' knowledge and comprehension of simple mathematical operations, rules and facts. Most of these questions were generally well answered by most candidates of all abilities. However, **questions 3, 7, 11, 12, 14 and 17** posed some difficulties to a few candidates.

Question 3

Draw the line(s) of symmetry of the kite shown.



More than a third of the candidates did not score in this question. Many candidates drew 2 lines of symmetry assuming the 4 sides of the kite to be of equal length, while others counted the number of sides instead.

Only those drawing a fairly straight line passing through the required two vertices earned the mark.

Question 6(b)

Some candidates left grammatical mistakes while writing 4780 in words.

Common mistakes were:

- Four thousandss seven hundreds and eighty
- Four thousand seven hundred and eight
- Four thosands seven hundred and eighty.

Question 7

Convert 8 L into mL.

Many candidates managed to convert 8 L into mL. However, some answers indicated a confusion between mL and cL. 800 mL was often given as the final answer instead of 8000 mL.

Question 8

Work out:

$$\frac{3}{8} + \frac{4}{8}$$

This rather straight-forward question was not well-attempted by some candidates.

A common mistake noted was obtaining $\frac{7}{16}$ coming from the addition of both the numerators and denominators of the two fractions.

Question 9

Convert $\frac{12}{5}$ to a **mixed** number.

Only 1 in 3 candidates could give the correct answer to this question.

As in previous years, candidates still seem to struggle with fractions, which remains an abstract concept for them. Many candidates wrote $\frac{5}{12}$ or $2\frac{5}{2}$ as their final answers. This reveals that there may be a confusion between writing the reciprocal of fractions and writing an improper fraction to a mixed number.

Question 12

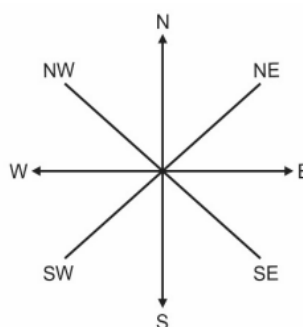
What is the Highest Common Factor (**H.C.F.**) of 15 and 18?

More than half of the candidates were unable to find the H.C.F. Many candidates had difficulty distinguishing between finding the L.C.M. and the H.C.F. However, some candidates earned a partial mark for the correct factorisation of 15 and 18.

Question 14

Sara is facing **West**.

Which direction will she face after making $\frac{1}{4}$ turn **anticlockwise**?



This was one of the least well-answered questions in the very short answer question series.

Less than half of the candidates earned credit for this question. Candidates were expected to understand that Sara was facing West. From there, many candidates turned clockwise instead of anticlockwise.

Some candidates managed to turn in the anticlockwise direction but wrongly interpreted quarter turn as 45° instead of 90° .

Question 17

Work out the following:

$$\frac{2}{3} \times \frac{1}{5}$$

Like questions 8 and 9, this item which tested knowledge of operations on fractions also proved to be problematic to many candidates. They seemingly could not differentiate between the multiplication and division of fractions. $\frac{2}{3} \times \frac{5}{1} = \frac{10}{3}$ (reciprocating the second fraction) was commonly seen. Another common mistake noted in scripts was $\frac{2}{3} \div \frac{5}{1} = \frac{10}{3}$. There is a strong indication that pupils tend to answer questions on fractions mechanically and that their understanding of the concepts is superficial.

Multiple Choice Questions (Questions 18 – 28)

The Multiple Choice Questions (MCQs) were generally well-answered with the exception of questions 19, 22, 23 and 27. The table below illustrates the most common wrong answers in the MCQs.

Question	Key	Most popular distractor
(18)	C	-
(19)	D	A
(20)	B	-
(21)	A	C
(22)	C	B
(23)	D	C
(24)	B	D
(25)	C	A
(26)	D	-
(27)	C	B
(28)	B	-

While the MCQs are considered 'easy' and test mostly basic knowledge candidates have to be careful while answering this type of question. Some issues that have been noted in scripts during the marking exercise and statistics analyses are listed below:

- Some candidates did not circle the correct letter despite doing correct workings. This implies that they did not make a choice. In these cases, they do not score.
- A few candidates made their choices by ticking or crossing out or underlining the correct answer.
- In a few scripts it was noted that candidates circled 2 answers instead of one. Marks were not awarded even if one of the circled answers was correct.

Question 19

Which of the following is a multiple of 8?	
A	4
B	6
C	18
D	24

This MCQ proved to be challenging for a large number of candidates. Only around half of the candidates could correctly identify a multiple of 8. The most common wrong answer was option A (4). It is strongly felt that candidates have difficulties in differentiating between 'factors' and 'multiples'.

Question 21

$\frac{3}{5}$ expressed as a percentage is	
A	60 %
B	53 %
C	35 %
D	30 %

Many candidates could not answer this question correctly with many opting for option C (35%). Candidates might have opted for distractor C as the digits of $\frac{3}{5}$ and 35%

look similar. Candidates who chose option C have not understood the concept of percentages.

Question 22

In a sale, the price of a purse is reduced by Rs 50. After the reduction, the purse costs Rs 250.

What was the **original price** of the purse?

- A Rs 150
- B Rs 200
- C Rs 300
- D Rs 350

This was a basic question assessing application. One third of the candidates could not answer. The most common distractor was option B (Rs 200) which reveals that candidates mechanically associated subtraction with the word 'reduction'. While a few candidates may have difficulties in reading while understanding it is believed that the most

common reason for choosing wrong answer 'B' was carelessness in the reading of the question.

Question 23

Which one of the following is a **reflex** angle?

- A 56°
- B 108°
- C 180°
- D 259°

Despite being a common question, this was the least well-answered MCQ. Less than half of the candidates identified 259° as a reflex angle.

Many opted for B or C. This shows that identifying different types of angles is problematic.

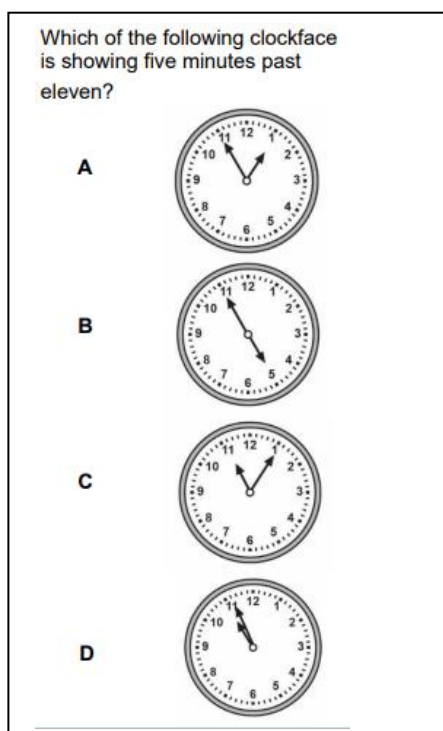
Question 24

What is 5 % expressed as a **decimal**?

- A 0.005
- B 0.05
- C 0.50
- D 5.0

1 out of 4 students could not express a percentage as a decimal. The most common distractor was option D (5.0).

Question 27



A little more than half of the candidates could identify the correct clockface (option C). Many candidates chose option B. This suggests that understanding time written in words remains challenging to pupils.

Question 29

Write down the following numbers in **ascending** order, starting with the smallest.

0.5	1.5	0.3	0.03
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This was one of the least well-answered questions in the short answer questions.

It is felt that pupils are not confident to work with decimals. It was noted that many candidates converted the decimals to fractions, rearranged in ascending order and left their final answers in fractions.

The main difficulty for many was to compare 0.3 and 0.03.

Candidates could not compare decimals written to 1 decimal place to those written to 2 decimal places. One way to address this issue would be to write all the numbers to 2 decimal places at first, then rearrange them in ascending order:

Step 1: Write all decimals to 2 d.p

0.50	1.50	0.30	0.03
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Step 2: Rearrange in ascending order.

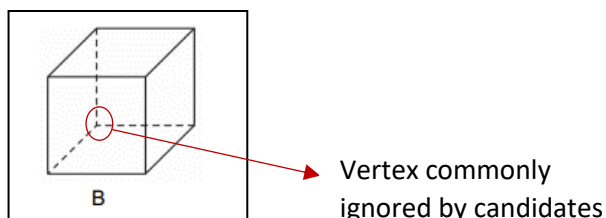
0.03	0.30	0.50	1.50
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This could make the comparison simpler.

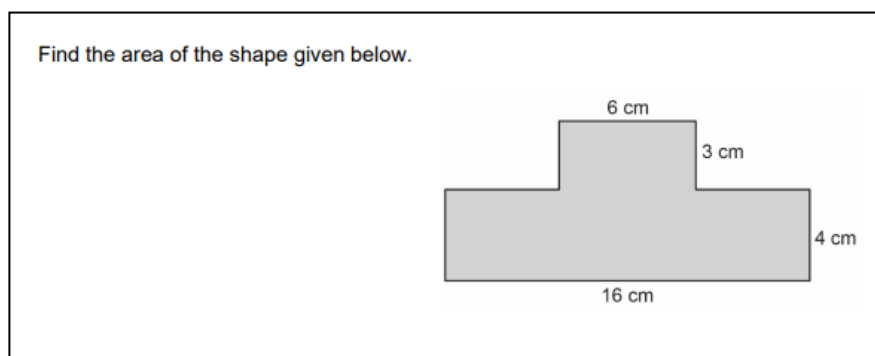
At this stage candidates are expected to perform operations involving whole numbers, fractions and decimals confidently.

Question 30

This question was based on 3-D objects and was generally well attempted except for part (b) where candidates were supposed to recognise and write the word cylinder. The majority recognised the shape but were unable to write 'cylinder' correctly. Even if candidates were not penalised for wrong spelling, they should be encouraged to correctly write names of shapes or other mathematical terms correctly. In part(a), candidates were expected to count the number of vertices of shape B, which was a cuboid. Some candidates wrote 7 vertices instead of 8 vertices. This was mainly because they ignored the vertex which was described with dotted lines in the diagram.



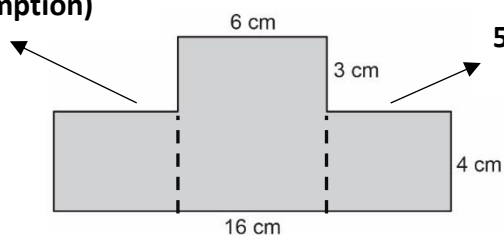
Question 31



Only a handful of candidates were able to score full marks in this question. The simplest solution was to calculate $(6 \times 3) + (16 \times 4)$ to reach 82 cm sq.

However, many candidates worked this question based on the following assumptions:

5 cm (wrong assumption)

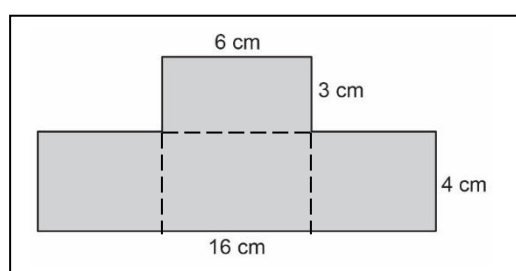


5 cm (wrong assumption)

They proceeded by calculating $(6 \times 7) + 2(5 \times 4)$.

Pupils should be reminded that drawings are not drawn to scale unless otherwise specified. This is also stated in the 'instructions to candidates' on the front page of the question paper. They should be encouraged to read the instructions carefully.

Some candidates subdivided the shape in ways which complicated the task of finding the area. Such an example is given below.



Question 32

A rope is cut into 2 pieces in the ratio 3 : 5. The length of the **shorter** piece is 24 cm.
What was the length of the rope?

Students are familiar with this type of question. However, only about one third of the candidates scored full marks in this question. Some gained partial marks.

Many candidates took 24 cm to be the length of the rope, even if the word 'shorter' was written in bold. Some managed to find the length of the longer piece and stopped there itself. Candidates are advised to read questions attentively, interpret given information before starting the calculations. This will increase their chances of scoring marks.

Question 33

Gary has 120 marbles in his collection.
10% of the marbles are blue and the rest are red.
How many **red** marbles does Gary have in his collection?

Working with percentages seems to be challenging for many candidates. Less than 40% of candidates scored full marks. One third of the candidates managed to get partial marks for correctly calculating 10% of 120 with no further calculations to finding the number of red marbles.

Common mistakes noted are as follows:

- $\frac{120}{10} \times 100$ or $\frac{100}{10} \times 120$ were commonly seen showing a lack of conceptual understanding while dealing with percentages.
- Considering the number of red marbles to be represented by 10% instead of 90%.
- Adding the number of blue marbles (12) to 120 instead of subtracting.

Candidates having difficulty with understanding English could not attempt this question successfully.

Question 34

The table below shows the opening and closing times of a children's playground. Study the table and answer the questions that follow.

Days	Opening time	Closing time
Mondays to Fridays	09 45	18 30
Saturdays and Sundays	08 00	19 40

- (a) At what time does the playground close on Sundays?

Answer: _____

- (b) On Monday, Mary arrives at the playground at 15 45.
She leaves when the playground **closes**.
How much time did she spend at the playground?
Give your answer in hours and minutes.

Part(a)

A large majority of candidates could read the closing time of the playground on Sundays from the table. However, some wrote their answers as 19:40, 19 40 p.m., 19.40, 19 h 40 min.

This showed that some of candidates were not confident in writing time in the correct way. Here, candidates were expected to rewrite the time as shown in the table.

Part(b)

Less than half of the population of candidates earned full marks. Some scored partial marks, while around 1 out of 3 candidates did not score at all. This part proved to be problematic for many candidates for various reasons. The main problems are listed below:

- Inability to read, extract and interpret information from a table.
- Language problem - candidates showed difficulties in understanding the question. Very often candidates performed 19 40 – 15 45, that is using the closing time of Sunday instead of Monday.

- Many candidates knew that they had to subtract 15 45 from 18 30 but failed to carry out the subtraction successfully. They struggled to perform the subtraction which involved borrowing in the minute column.

Question 35

Given that $486 \times 38 = 18\,468$

Without doing any calculation, fill in the empty boxes below.

(a) $18\,468 \div \boxed{} = 486$

(b) $\boxed{} \times 38 = 18\,468 + 38$

(c) $48.6 \times 0.38 = \boxed{}$

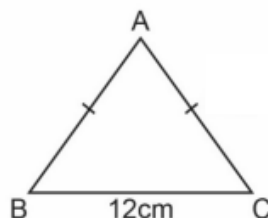
Students are familiar with this type of question now as they are frequently set in the PSAC Mathematics assessment. Part(a) and part(b) were well-answered by most candidates this year, showing slight improvement from previous years. However, only a handful of the candidates could score in part (c). They could not recognise table 38 or had difficulties in relating multiplication to repeated addition.

In previous Examiners' reports, the attention of candidates has been repeatedly drawn to the fact that calculations involving the numbers given is not required for these types of questions. They are expected to use and interpret the number fact given and their knowledge and understanding of numbers and the four basic operations to find answers. Yet many candidates still show full workings and, in those cases, marks were not awarded.

Question 36

ABC is an isosceles triangle, in which $AB = AC$, and $BC = 12$ cm
Its perimeter is 32 cm.

Find the length of AB.



This question was application based and was successfully attempted by a majority of candidates. Some managed to score partial marks as method marks.

It was noted that some candidates considered the triangle to be equilateral instead of isosceles as they divided the perimeter by 3 (based on the assumption that the 3 sides were equal). A few candidates subtracted 12 cm from the perimeter but did not proceed further to reach the final answer.

Question 37

37. Mira buys a packet of rice at the shop. She gives a Rs 200-note to the shopkeeper.

Below is the **change** that the shopkeeper gives to Mira.



100-rupee note



20-rupee coin



1-rupee coin



50-cent coin

a) How much **change** does the shopkeeper give to Mira?

b) How much did Mira pay for the packet of rice?

Performance in this question, particularly part (a) was relatively good. Only a few candidates showed difficulty in adding the 50 cents and chose to write Rs 120 as answer instead of Rs 121.50. Some candidates considered 50 cents as Rs 50, and gave Rs 170 as final answer.

Part (b) proved to be more challenging to candidates with only around one third scoring full marks. Most of them knew they had to subtract *their* (Rs 121.50) from Rs 200 but

failed to carry out the operation. Others, despite having got Rs 121.50 in part(a) chose to subtract Rs 120 from Rs 200.

Question 38

This question on bar chart had a good response in general. Most candidates did well in parts (a) and (b).

However, only one out of two candidates earned full credit in part(c) where they were required to find the average number of fish caught from Monday to Friday. The information had to be retrieved from the bar chart. Some issues noted were:

- The concept of finding average seemed unclear to many candidates.
- Many candidates found the total number of fish instead of finding the average.
- Some candidates could not perform the division correctly and it was left incomplete.
- It was common to see arithmetic errors in the calculation.
- Many candidates worked out the average number of fish on Monday **and** Friday, instead of average number of fish **from** Monday **to** Friday, indicating language difficulty.
- Some candidates showed difficulties in reading values from the bar chart.

Question 39

- (a) A car travels a distance of 108 km from Town A to Town B in 2 hours.
Calculate the average speed of the car in km/h.

Answer: _____ km/h [2]

- b) On its way back from Town B, the average speed of the car increases by 6 km/h.
Calculate the time taken by the car to travel from Town B to Town A.

Part (a) This part was well answered by the majority of the candidates and there is sufficient evidence to conclude that candidates were familiar with the formula $\text{Speed} = \text{Distance} / \text{Time}$ and knew how to apply it. However, some candidates misread 108 km and considered 180 km instead. Only a partial mark was obtained in those cases.

Part (b) on the other hand, proved to be problematic to most candidates. Only around 25% of the candidates managed to get full credit and more than half of the candidates did not score any mark. They could not apply their knowledge acquired to solve this part of the question. Some common mistakes noted in scripts are listed below:

- Many candidates were unable to link part(b) to part(a). They did not make efficient use of the information given efficiently.
- Finding the new speed of the car was a challenge to many candidates. Instead of adding 6km/h to the speed, obtained in part (a) they subtracted 6 km/h.
- Many candidates left their answers in improper form (9/5 commonly seen) and this should be avoided.

Question 40

<p>€ 1 = Rs 50</p> <p>£ 1 = Rs 60</p> <p>(a) Mr John has € 470. He changes all his money into rupees.</p> <p>Calculate the amount of money he gets in rupees.</p> <p>Answer: Rs _____ [2]</p> <p>(b) After spending Rs 8 980, Mr John exchanges the rest of the money into pound Sterling (£).</p> <p>How much money does he get in pound Sterling (£)?</p>
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Part(a) was mostly well-answered. Nevertheless, less than half of the candidates obtained full marks in part(b). They knew the correct procedure to find the solution, but made arithmetic mistakes, particularly while dividing the rest of the money by Rs 60 to obtain the answer in pound Sterling (£).

A few candidates divided the rest of the money by Rs 50 instead of Rs 60 indicating confusion that candidates have when they are given more than one piece of information to interpret. Candidates should be encouraged to read questions carefully and underline the important information that they will need to answer the question.

Question 41

This question was based on coordinates and shapes. Candidates from all ability groups could attempt parts (a) and (b) successfully. However, there are some candidates who still interchange the x and y coordinates while reading or writing a coordinate. For example, (7,3) was often seen instead of (3,7) for part(a). Moreover, a few candidates plotted (8,5) instead of (5,8) in part (b).

Less than half of the candidates did not recognise the parallelogram. The most common wrong answer was 'rectangle' and 'rhombus'. Many of those who could identify the parallelogram could not write the word correctly.

Question 42

c) Coconut milk is sold in large cartons and small cartons. A large carton contains 500 mL of coconut milk.

Sandra buys 2 large cartons and 5 small cartons. She uses all the coconut milk bought to bake the 6 cakes.



(i) Calculate the capacity of 5 small cartons of coconut milk.

(ii) Hence, find the capacity of one small carton of coconut milk.

Part (a) was well answered by most students with the exception of a few who had some problems in understanding 'How much **more** flour'

In part(b) it was frequent to see candidates working with the value associated with 'grated coconut' rather than the value associated with 'coconut milk'. Candidates are advised to read questions attentively to avoid such confusion.

Although many candidates correctly answered parts (a) and (b), it is worth noting that only around of 33% were successful in giving the correct answer to part(c). In this part, candidates were assessed on their ability to read, understand and solve more complex word problems. The question was either unanswered or unsuccessful trials were noted.

Candidates who have difficulty in reading struggled to make sense of the context of the question. Pupils seem to lack confidence in solving word problems.

Question 43

When it is 05 00 in Mauritius it is 02 00 in France.

(a) What time is it in France when it is 12 10 in Mauritius?

(b) A plane leaves Mauritius at 12 10 on Monday.

It takes 11 hours and 30 minutes to reach France.

What is the time in France when the plane lands?

The performance of candidates in part(a) was fairly good.

Some candidates were confused with 'Time' or had difficulty to understand the language. They added 3 hours to Mauritian time to obtain the time in France instead of subtracting. Some candidates knew they had to subtract but they could not perform the subtraction. A common mistake seen was $12\ 10 - 3 = 12\ 07$

Part (b) was well answered by only 30% of the candidates. Very few realised that they could use part(a) to reach the solution in a simpler way.

Many calculations were left incomplete.

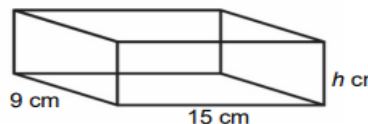
Candidates stopped after adding 11 30 to 12 10 and obtaining 23 40. They did not subtract 3 hrs to reach the time at which the plane landed in France.

Question 44

- (a) The cuboid shown below has length 15 cm, width 9 cm and height h cm.

The volume of the cuboid is 405 cm^3 .

Calculate the height, h cm, of the cuboid.



Answer: _____ cm

[3]

- (b) Calculate the total surface area of the cuboid.

This question, was one of the least well-answered questions. 19×5 was seen in most scripts.

The answers provided by candidates showed that many of them had problems with division.

Many arithmetic mistakes were also noted.

They were unsure about the procedure/ method to be used to find the height of the cuboid. This was indicated with workings such as, finding $\frac{15 \times 9}{405}$ instead of $\frac{405}{15 \times 9}$.

Less than 20% students successfully completed part(b).

Many candidates are not able to find the TSA of a cuboid. Many blank answer spaces were noted. Candidates calculated the TSA of the cuboid by finding $(9 \times 15 \times 6)$ which corresponds to area of one face $\times 6$. This indicates that candidates might have confused the TSA of cube and the TSA of a cuboid. Some candidates found the volume of the cuboid instead of TSA.

Question 45

Mariam has some money. She gives $\frac{2}{7}$ of her money to her brother.

(a) What fraction of the money is left?

(b) Mariam then gives Rs 695 of the money to her sister.

She **now** has Rs 2 780.

How much money did Mariam have **at first**?

Although being quite straightforward, part(a) was correctly attempted by only around half of the candidates. As stated in previous questions, some candidates did not understand the concept of fractions. Some even gave answers like Rs 2780 or Rs 695.

Some candidates managed to write $1 - \frac{2}{7}$ but did not proceed further (probably they could not associate 1 to $\frac{7}{7}$), while others would perform the calculations wrongly. A common wrong statement seen in some scripts was $\frac{2}{7} - \frac{7}{7} = \frac{5}{7}$, suggesting that some candidates have problems in comparing fractions and thus lack number sense.

Some bright candidates wrote the correct answers without showing their workings and they were not penalised. However, candidates should be encouraged to provide all the necessary workings to ensure that they score marks even when the final answers are not numerically correct. Method marks can be given only if the workings are legible.

Part(b)

This part was poorly attempted by most candidates and was deemed to be abstract to by many candidates. Less than 20% of the candidates scored full marks and around 33% did not score any mark. This part required higher order thinking skills. Many candidates failed to understand what was required or expected from them. This was mainly due to the language barrier and problems in interpreting information given in an implicit manner. A lot of fiddling was also noted. In many instances, candidates' work was messy and presented in a disorganised manner. This made marking rather tedious as it was difficult to follow the pupils' work.

Many candidates managed to score a partial mark for writing $\text{Rs } 2780 + \text{Rs } 695 = \text{Rs } 3475$. Quite a few stopped at this stage.

Many answer spaces were left blank.