EXAMINATIONS COUNCIL OF ESWATINI

JC

EXAMINATION REPORT

FOR

MATHEMATICS

YEAR

2020

JC EXAMINATION REPORT

FOR 2020

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JC MATHEMATICS

Paper 309/01

General Comments

There were 18 732 candidates who sat for the 2020 Junior Certificate Mathematics Paper 1 examination. The paper was accessible to most of the candidates because a majority of them responded to all the questions. Generally, the performance of candidates in this year's examination was relatively low when compared with last year's performance. Raw scores were widely spread from 0 to 99.

The table below shows questions that were particularly challenging for the candidates as well as the content tested by each of the questions.

Question	Content tested
2	Time interval between times on different days
4(a)	Mixed number percentage as a fraction
5	Evaluating expressions involving indices and negative numbers. i.e $-(-2)^2 \times 4$
8	Numerical expressions involving negative indices
11(a)	Bearings
15	Perimeter and arc length

The majority of this year's candidature properly used the working and answer spaces in the question paper. However, there were some candidates who presented their working haphazardly on the page which made it difficult for the examiner to associate the candidate's working to the question they are responding to. There were also cases of candidates who lost marks due to presentation of more than one method in response to one question. Such was a distinct communication to the examiner that the candidate did not have the necessary command for the concept in question.

Comments of Specific Questions

1. **(a)** Work out 0.02×5.6 [1]

(b) Express $\frac{58}{7}$ as a decimal, correct to 3 decimal places. [2]

Correct answers

(a) 0.112
(b) 8.286

Performance in this question was unsatisfactory. In part (a), most candidates were failing to place the decimal point correctly in the answer. Part (b) seemed very challenging to the candidates. Some candidates would start by 5 by 7 and getting 0, followed by a decimal point, before finding the number of times 7 go to 58. There were also those candidates who would

divide correctly, but stop the division at the third decimal places instead of making it four decimal places and then round off to 3 decimal places. Hence, their answer was incorrect.

Common errors

(a) 1.12; 11.2; 0.0112; 0.1120; 112
(b) 0.828; 0.829; 8.285; 8.29

2. Senzo slept at 10.30 p.m and woke up at 5.20 a.m the following morning.
Calculate the time, in hours and minutes, that Senzo slept. [2]

Correct answer

6 hours 50 minutes

A relatively large proportion of this year's cohort of candidates failed to obtain the correct time interval in this question. Seemingly, the candidates were not reading the question with understanding before attempting to answer it. Most candidates were just subtracting or adding the two times given in the question. Some candidates showed a method of cumulative addition of hours from 10.30 p.m to the next 5.20 a.m but failed to get the accurate answer.

Common errors

5 hours 10 minutes; 15 hours 50 minutes; 7 hours 50 minutes

3. **(a)** In an easter conference attended by 2 000 people, the ratio of males to females was 2 : 3 respectively.
Calculate the number of males who attended this conference. [2]

(b) The price off a book is increased from E250 to E270.

Calculate the percentage increase of the book. [2]

Correct answers

(a) 800
(b) 8 %

This question was **not** well performed by a majority of the candidates. The challenge in part (a) was in formulating the correct fraction of males from the given ratio. Some candidates were using $\frac{2}{3}$ instead of $\frac{2}{5}$ and hence obtaining incorrect answers. In part (b) a relatively large proportion of the candidature were able to find the increase in the price of the book, but presenting the increase as a percentage of the original price was a challenge.

Common errors

(a) $\frac{2}{3} \times 2000 = 1333.3$; $\frac{2000}{5} = 400$
(b) 270 – 250 = 20 ; $\frac{20}{270} \times 100 = 7.41$; $\frac{250}{270} \times 100 = 92.6$; $\frac{270}{250} \times 100 = 108$; $\frac{20}{100} \times 250 = 50$

4. **(a)** Write $2\frac{2}{3}\%$ as a fraction, in its simplest form. [2]

(b) Write down the highest common factor of 72 and 108. [2]

Correct answers

(a) $\frac{2}{75}$
(b) 36

Generally, this question was **not** well performed by a majority of the candidates. Very few candidates managed to get part (a) correct. Most of the candidates seemed to have forgotten the meaning of the percentage symbol (%). Part (b) was fairly performed since a significant number of the candidates managed to get the HCF of 72 and 108 correct. However, there were those candidates who mistook factors for multiples. Some of the candidates were failing to list all the factors of the given numbers and hence they ended up writing common factors other than the highest.

Common errors

(a) $\frac{8}{3} = 2.67$; $\frac{8}{3} \times 100 = 266.7$
(b) 9 ; 12 ; 18 ; 216

5. Given that $x = -2$ and $y = 4$.
Calculate the value of $-x^2y$. [2]

Correct answer

– 16

Performance in this question was **not** satisfactory. A large proportion of the candidates were failing to substitute correctly in the given algebraic expression. Some of those candidates who substituted correctly failed to work out the value of the expression due to the negatives that were involved. It looked like candidates were not aware of the difference between the expressions, -4^2 and $(-4)^2$.

Common errors

$-2^2 \times 4 = 4 \times 4 = 16$; $-8 \times 4 = -32$

6. The favourite colours of 24 Grade 1 pupils of a particular school were recorded.
A pie chart showing this information is to be drawn.
Complete the table below. **(Do not draw the pie chart)**

Colour	Number of pupils	Sector angle
Red	10	150°
Blue	5	75 °
Yellow	9	135 °

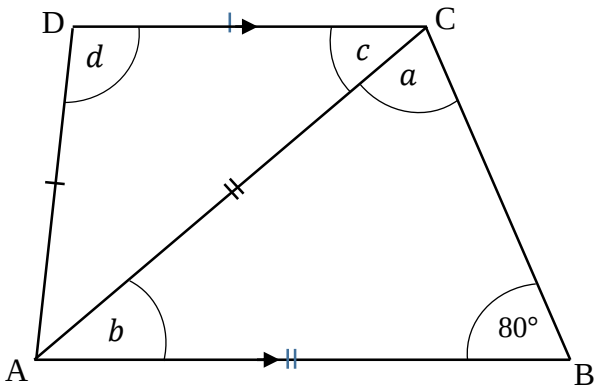
[4]

This question was fairly performed by this year's cohort of candidates. A significant number of the candidates obtained the correct answers to the question. Noteworthy was also the fact that to some candidates, it was easy to work out the sector angles, but working backwards to find the number of pupils from the sector angle was problematic.

Common errors

Swapping the number of learners who liked red with those who likes yellow.

7. ABCD is a trapezium.
AB is parallel to CD, AB = AC and AD = DC.
$A\hat{B}C = 80°$.



NOT TO SCALE

Calculate the angles marked a, b, c and d. [4]

Correct answers

a = 80

b = 20

c = 20

d = 140

This question was **not** well done by a majority of the candidates. The candidates seemed to have forgotten the angle properties of a triangle and the angle pair properties in parallel lines and a cutting line. It was noted also that even though some candidates got the size of a correct (base angles of the isosceles triangle), they then failed to get a, c and d correct. That was an indication that those candidates had forgotten that the sum of interior angles in a triangle is 180° and that alternate angles formed by parallel lines and a cutting line (transversal) are equal in size.

Common errors

a = 50, 40, 45

b = 50, 40, 45

c = 40, 50, 45

d = 80

8. Evaluate

$3^2 \times 4^{-2}$ [2]

Correct answer

$\frac{9}{16}$

Performance in this question was bad. A relatively small number of the candidates got the answer to this question correct. The main challenge here was the power of 4 with a negative index. Some candidates would ignore the negative in the index of 4 and work as if it was a positive index. There were also those candidates who attempted using the method of multiplying powers of the same base thus obtaining incorrect answers.

Common errors

12^0 ; 12^4 ; $9 \times -16 = -144$

9. Simplify

(a) – 3 – 4(2 – 5y). [2]

(b) $\frac{2t}{3} \div \frac{4t}{9}$ [3]

Correct answers

(a) $-11 + 20y$

(b) $1\frac{1}{2}$

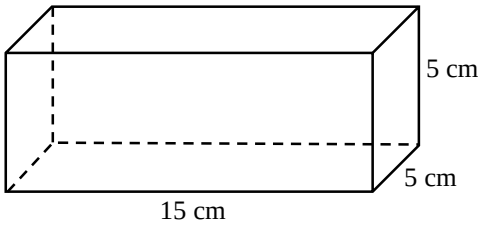
This question was fairly done. A significant number of candidates were getting some, if not all, of the marked allocated for the question. The challenge in part (a) was in removing the brackets with the negative number outside. Some candidates managed to remove the brackets correctly but then struggled with collecting the like terms. There were other candidates who started by operating together the numerical values outside the brackets and hence obtaining an incorrect answer. In part (b), some candidates would reciprocate even the algebraic fraction being divided and thus obtain a wrong answer. There were also those candidates who did the reciprocating step correctly but then left their answers unsimplified.

Common errors

(a) $-11 - 20y$; $11 + 20y$; $-5 + 20y$; $-14 + 35y$
(b) $\frac{2t}{3}$; $\frac{3}{2t}$; $\frac{3t}{2t}$

10. The diagram shows a cuboid.
The cuboid has a length of 15 cm, width of 5 cm and height of 5 cm.

NOT TO SCALE



Calculate

(a) the volume of the cuboid, [2]
(b) the total surface area of the cuboid. [2]

Correct answers

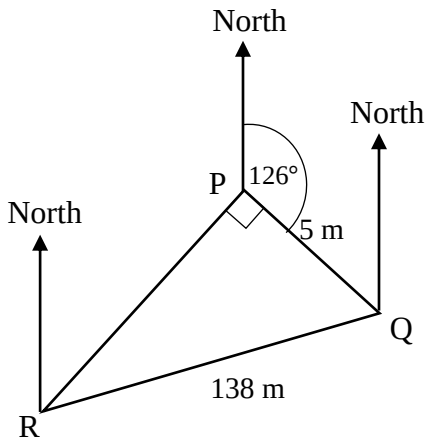
(a) 375
(b) 350

This question was fairly performed by the candidates. Part (a) was performed better than part (b) which means the candidates found the volume of the cuboid easier to calculate than the total surface area. It was noted also that some candidates confused the concepts of, and thus interchanged the answers for, surface area and volume. Although some candidates knew the correct formulas for the volume and surface area of the cuboid, they had challenges with calculating the numerical values correctly.

Common errors

(a) 25 ; 350
(b) 375 ; $(15 \times 5)^2 + (15 \times 5)^2 + (5 \times 5)^2$

11. The diagram shows the positions of P, Q and R in a triangular plot.
PQ = 5 m, QR = 13 m and $R\hat{P}Q = 90°$.
Q is on a bearing of 126° from P.



NOT TO SCALE

(a) Calculate
(i) the bearing of P from Q, [2]
(ii) the bearing of P from R. [2]

(b) (i) Work out PR. [2]
(ii) Write down the value of cos $P\hat{Q}R$ as a fraction. [1]

Correct answers

(a)(i) 306

(ii) 036

(b)(i) 12

(ii) $\frac{5}{13}$

Performance in this question was poor. A relatively large proportion of the candidature were failing to obtain the correct answers to the part questions. The candidates' responses to part (a) indicated that most of them lacked the proper conception of bearings. Part (b)(i) was also problematic to the candidates but not as much as part (a). There were those candidates who demonstrated lack of knowledge of the rule of Pythagoras. However, some had an idea of the rule but had challenges writing it properly ad performing the calculations correctly. Part (b)(ii) was accessible to a majority of the candidates, but it made little difference since it was allocated only 1 mark.

Common errors

(a) (i) 54, 36

(ii) 36

(b) (i) 13 – 5 = 8 ; 13 + 5 = 18 ; $\sqrt{194}$
(iii) cos 54 = $\frac{5m}{13m}$; $\frac{13}{5}$; cos $\frac{5}{13}$; $\cos^{-1}\frac{5}{13}$

12. Solve the equation.

$2 + 3x = 10 - x$ [2]

Correct answer

$x = 2$

This question was well done by a majority of the candidates. Most of the candidates were getting the correct answer. However, there were candidates who were failing to rearrange the equation properly to have like terms on the same side of the equal sign and thus their answers were incorrect.

Common errors

4 ; 3 ; – 2

13. Express as a single fraction in its simplest form.

$\frac{2y-5}{3} - \frac{y+1}{4}$ [3]

Correct answer

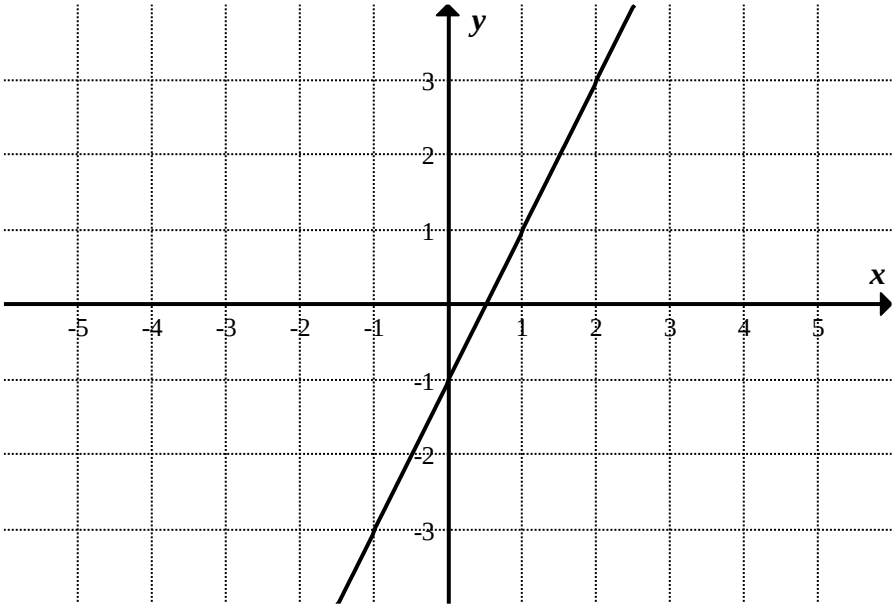
$\frac{5y-23}{12}$

Candidates performed fairly in this question. Candidates' performance in this question is in four categories. In the first category are the candidates who scooped all the marks in this question. The second category is the category of learners who performed the first two steps correctly but failed to operate together the directed numbers in the numerator. Thirdly, there were those candidates who could only do the first step correctly and then failed to remove the brackets in the second step and hence miss the answer. The last category is that of the candidates who would cancel the denominators and remain with a correct numerator only which resulted to them getting the mark, zero. Also noteworthy was a number of cases of candidates leaving the denominator as a pair of bracketed factors. i.e (3)(4).

Common errors

$\frac{5y-17}{12}$; $\frac{8y-20-3y+3}{12}$; $5y - 23$; $\frac{5y-23}{(3)(4)}$

14. The diagram shows a straight line.



Work out the equation of the line. [3]

Correct answer

$y = 2x - 1$

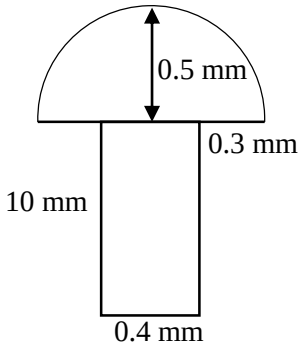
Performance in this question was **not** good. A majority of the candidates failed to find the correct equation for the given straight line. Some of the candidates could not identify the y-intercept from the graph. Attempts to work out the gradient of the line for some candidates were unsuccessful. Some of the candidates did not even know the gradient-intercept form of the equation of a straight line.

Common errors

$y = 2x + a\ (a \neq -1)$; $y = bx - 1\ (b \neq 2)$; $y = -1$

15. The diagram shows the cross section of a screw. It is made of a semi-circle of radius 0.5 mm and a rectangle.
Take π as 3.14 for this question.

NOT TO SCALE



Calculate the perimeter of the cross-section of the screw. [3]

Correct answer

22.57

This question was the most challenging question for the candidates. Very few candidates managed to get the correct answer in this question. The main challenge was finding the length of the arc forming part of the perimeter of the diagram. Another problem was the inclusion of two 0.4 mm distances in the calculation of the perimeter when in actual fact only one 0.4 mm distance is part of the perimeter.

Common errors

$(3.14 \times 0.5 \times 0.5) + (2 \times 10) + (2 \times 0.3) + (2 \times 0.4) = 22.185$;
$3.14 \times 0.5 = 1.57$
$(\frac{1}{2} \times 3.14 \times 1) + (2 \times 10) + (2 \times 0.3) + (2 \times 0.4) = 22.97$

SECTION B (Multiple Choice)

General performance in this section was fair. There were few candidates who scored all the marks in Section B and also few others who scored zero in the section. A majority of the candidates continued to use the answer grid appropriately. However, there were some candidates who did not use the grid but indicated their perceived correct options on the question paper. There were few candidates who did not finish responding to the questions in Section B.

The following table shows the correct options to each of the questions and the content tested by each question.

Question	Correct option (Key)	Content tested
16	C	Order of operations
17	B	Types of angles
18	D	Matrices (addition and scalar multiplication)
19	D	Percentages
20	A	Solving linear inequalities
21	C	Perimeter (application)
22	B	Prime factors
23	C	Statistics i.e mean
24	B	Indices
25	C	Scale of a map
26	D	Column vectors
27	A	Symmetry (line and rotational)
28	B	Standard form (division)
29	D	Angle properties of polygons i.e the triangle
30	B	Transformations i.e translation
31	C	Statistics i.e median

Errors observed in Section B include a few cases of indication of more than one response to the same question. Some candidates also presented untidy work due to excessive cancellation.

Compiled by: Principal Examiner.

JC MATHEMATICS

Paper 309/02

General comments

The paper was accessible to most students, but the performance was, on average, lower than for previous years. There were many blank/unanswered questions left by candidates (some would state they had not done a certain topic). There was also a high number of absent candidates for this examination, probably due to COVID -19 pandemic challenges.

There were questions which were very difficult for the candidates and some were easy. Candidates continue to have challenges with topics which were done early in Forms 1 and 2, which implied that there was not enough revision of those concepts before candidates sat for the examination. Examples of such topics would be percentage change and conversion; the candidates used 100m to represent 1km, they could not identify as a reduction in price. Most errors resulted from lack of paying attention to detail, such as not reading a question to the end or giving an irrelevant answer. In 6(c), for example, candidates were asked to find distance and they would state cardinal position such as 'South'; in 8(b)(iii) candidates stated 'impossible, not applicable, etc', instead of giving value of probability as 0.

Candidates found the most difficult questions to be 6 , 9 and 2(b). The easiest question was Question 8 though there was a general problem of reading the bar chart for some candidates.

The scores ranged from 0 to 100.

The time available for writing the paper was enough as even the lowest scoring candidate had written a lot of responses.

**** Please insert Question paper here****

Question 1

(a) Fairly done

- Most candidates failed to convert 2km t o 2000 m, hence they would perform the following wrong calculation $\frac{250}{2} \times 100$. Most candidates considered 1km to be 100m to give 2km = 200m.
- Those who recognised what the question required would further round off the correct answer 12.5% to 13% while some did not multiply by 100 hence they got $\frac{1}{8}$.

Common wrong answers: 12500%, 125%, $\frac{1}{8}$, 13%

Correct Answer: 12.5%

(b) Fairly done

- Most candidates were able to find 20% of 30 000 but some would give this as their final answer, while some were adding to 30 000 to give 36 000.
- Some candidates found that 20% of 30 000 is 600 hence their final answer was 30 000 ± 600 = 29 400.

Common wrong answers: 6000, 29400, 36 000

Correct Answer: E24 000

(c) **(i)** Fairly done

- candidates had a challenge of dividing by a decimal. Some of the candidates who had a clue on what the question required failed to get the correct answer due to failure to manipulate decimals.
- Some candidates were dividing 1880 by 100 or even 1 instead of 18.8.

Common wrong answers: 1880, 18800, 35 344, 10

Correct answer: ₤100

(d) **(ii)** Most candidates noticed that they were required to multiply 80 by 18.8 but they would fail to insert the decimal point in the right place on their final answer.

Common wrong answers: 150400, 150.40, 23.5

Correct answer: E 1504

Question 2

Generally, this question was poorly done.

(a) **(i)** Most candidates would round-off and truncate their final answers.

Common wrong answers: 479, 47800, 478

Correct answer: 47900

(ii) Some candidates did not concentrate on the finer details of the question. Such candidates wrote the original number 478 541 to standard form.

Common wrong answers: 4.78541×10^5; 4.79^5; 4.79×10^2; 479.000×10^3; 4×10^5; 479 x 10^3

Correct answer: 4.79×10^5

(b) Very Poorly done.

- This was the most challenging question for the candidates.
- Quite a number of candidates did not attempt this question.
- Most candidates who attempted it failed to use the correct degree of accuracy to find the lower and upper bound of 18 700 written correct to the nearest 50.

Common wrong answers: $18650 \leq x18750$, $18699.5 \leq x \leq 18700.5$, $186905 \leq x < 18705$

Correct answers: Lower Bound = 18 675, Upper Bound = 18 725

Question 3

(a) Fairly done

- Candidates had problems adding directed numbers e.g. $-7 + 5 = -12$.
- Some candidates had a problem with multiplication of decimals in this question, e.g. some will say $2.3 \times 4 = 92$
- Some answers were not left in standard form.

Common wrong answers: 9.2×10^{-12}, 92×10^{-12}, 92×10^{-2}

Correct Answer: 9.2×10^{-2}

(b) Poorly done

- Candidates had a challenge with subtraction of numbers in standard form. Some candidates performed the following wrong calculations.
- $(9.2 - 7.3) \times 10^8 \times 10^7$
- $7.300000000 - 9.2000000$
- $0000000073 - 0000000092$

Common wrong answers: 1.9×10^2, 1.9×10^{15}, 6.38×10^7

Correct Answer: 6.38×10^8

Question 4.

(a) (i) Fairly done

- Some candidates used $\frac{change\ in\ x}{change\ in\ y}$ while some were mixing their x_1 , x_2, y_1 and y_2 in the formula e.g. $\frac{6-2}{5-3}$.
- Some candidates were leaving their answers as $\frac{-4}{2}$ while some evaluated $\frac{-4}{2}$ as 2.
- There were cases where answers were column vectors e.g $\begin{pmatrix}-4\\2\end{pmatrix}$

Common wrong answers: 2, $-\frac{1}{2}$, $\frac{1}{2}$, $-2x$

Correct Answer: $^-2$

(ii) Poorly done.

- Candidates were using the formula $y = mx + c$ but would swap the x- coordinate with the y – coordinate; e.g. $3 = m(6) + c$.
- Some candidates wrote the equation of the line in the answer space of this question.
- Some presented their solution as coordinates

Common wrong answers: 12, 8, c, $y = -2x + c$, $y = -2x + 12$

Correct answer: 12

(iii) fairly done

- Most candidates were able to use their gradients and y-intercepts to write the equation of the line with a few exceptions of not including the x-variable in the equation.

Common wrong answers: $2x + 12$, 2, 12, $y = -2 + 12$, $y = -2(3) + 12$

Correct answer: $y = -2x + 12$

(b) (i) Poorly done

- Candidates had a problem of opening the second brackets as it involved multiplying by a negative. It was very common to have $12t - 3 - 10t + 6$ after opening brackets on the left hand side of the equation.
- Some candidates were multiplying the numbers outside the brackets only with the first terms inside the brackets giving answers like $12t - 1 - 10t + 3$

Common wrong answers: $t = 3, t = 0, t = -2,$

Correct answer: $t = 6$

(b) (ii) Poorly done

- Candidates had difficulty with getting rid of the denominators by multiplying by the correct LCM.
- Some candidates tried to present the answer $\frac{2}{3}$ as a decimal failed to get the correct decimal.
- There were candidates who did not simplify their answers.

Common wrong answers: $x = 3, x = 1\frac{1}{2},\ 0.66,\ \frac{9}{6}, 0.7$

Correct answer: $x = \frac{2}{3}$

(c) Fairly done

- There were candidates who missed the sign, some used an equal sign.
- Some candidates were changing the sign even if they were not dividing by a negative number.
- Manipulating directed numbers was a challenge even in this question.

Common wrong answers: $p < -2,\ p = -2,\ 5p > -10, -p > 2,\ p > 2$

Correct Answer: $p > -2$

Question 5

(a) (i) Fairly done

- Some candidates failed to interpret $3st$ correctly. They interpreted this as $3 + s + t$.
- Most candidates had the following wrong calculation
  $7 - 3 \times -5 \times 3 = 7 - 45 = -38$

Common wrong answers: $-38, -60$

Correct Answer: 52

(ii)

- There were candidates who did not substitute but write to the same denominator.
- Some of those who substituted interpreted -5^2 as -25 i.e. $\frac{3}{5} + \frac{-5^2}{20} = \frac{3}{5} + \frac{-25}{20}$.

Common wrong answers: $\frac{4t+s^2}{20}, \frac{t}{5} + \frac{s^2}{20}, \frac{3}{5} - \frac{25}{20}$, -38

Correct Answer: $1\frac{17}{20}$

(b) (i) Fairly done

- Most candidates who failed to open the brackets correctly were confusing q with 9, more especially in the second bracket, such that they got $8pxy - 12qxy + 27xy + 21pxy$
- Candidates successfully removed the brackets to get $8pxy - 12qxy + 3pxy + 21pxy$ but failed to collect like terms correctly such that they got $29pxy - 15qxy$.

Common wrong answers: $8pxy - 12qxy + 27xy + 21pxy$, $29pxy - 15qxy$

Correct Answer: $29xy - 9qxy$

(ii)

- Some candidates confused this question with part (a) such that they substituted $t = 3$ into the expression.
- There were those candidates who got rid the denominator.

Common wrong answers: $\frac{3t-9-14t-7}{21}$, $\frac{11t-2}{21}$

Correct answer: $\frac{-11t-2}{21}$

(iii)

- Most candidates were multiplying by the reciprocal $\frac{4}{x}$ but proceeded to confuse the expression $\frac{x-1}{3} \times \frac{4}{x}$ into $\frac{4x-1}{3x}$ or cancel the x to get $-\frac{4}{3}$
  Common wrong answer: $-\frac{4}{3}$

  Correct answer: $\frac{4x-4}{3x}$

(c) This question was poorly done by most candidates.

Most candidates failed to interpret the statement '3cm shorter than the length' to mean 3 – *x* mostly or 3x or 3 + *x*. The very few who understood what the statement meant would not simplify the resulting expression representing the perimeter, so they would have x – 3 + x – 3 +x + x at best.

Common wrong answer: blank space; 2x

Correct answer: 4x – 6

Question 6

This question was fairly done for (b) and poorly done for the other part questions.

(a) Most candidates did not label their sketches correctly. Most North lines were not drawn to be parallel or were missing. In some cases the 130° would be brawn on line TS to give angle TSP = 130, thereby distorting the whole map for T, S and P.

(b) Most candidates chose their own scale, mostly 1cm to 1km. Other candidates could not convert between cm and km, making the rest of the answers wrong. The North lines continued not to be parallel, and mostly the angles were measured against these, hence off the mark.

(c) Most candidates were getting 7 cm / km from a wrong diagram. Most candidates simply added 3km and the 5km to get 8km for the direct distance. Some candidates were stating that the distance is 'South'.

Correct answer: 7km

(d) Most candidates got wrong answers from their wrong diagrams or from rounding off their answers.

Common wrong answer: 110°, due to their inaccurate diagrams.

Correct answer: 108(±1)°

(e) **(i)** Bisecting line PS was well done in spite of wrong length of PS for the candidates who had drawn line PS.

(ii) This part question was very poorly done. Candidates could not interpret the required locus. Sometimes there would be more than one locus for this description.

(iii) the point X would mostly not be shown on the diagram by candidates or multiple positions of X given.

(f) The distance of T from X was mostly given in centimetres. It depended on where the X was located. This question was also left blank by a large number of candidates.

Correct answer: 4.5km

Question 7

Most candidates found this accessible, it was fairly done.

(a) Candidates were confusing tally marks with frequency – they gave frequency in tally marks column. Some candidates could not draw tally marks. There was cumulative frequency under the frequency column.

Correct answer: 5, 5, 7, 3, 3, 2

(b) Most candidates got this question correct, but there were candidates who had 7 (which was the frequency for 57) as their mode. Some learners had 58 and 59 for their mode.

Correct answer: 57

(c) Some candidates were looking for the median in the variable column of the frequency table such that they had the following common error $\frac{57+58}{2} = 57.5$. There were those candidates who presented the median position (13) as their median.

Correct answer: 57

(d) Most candidates who missed this question were just adding the numbers in the variable column then divide by 6, i.e. $\frac{55+56+57+58+59+60}{6} = \frac{345}{6} = 57.5$. Some candidates had $\frac{345}{25} = 13.8$. Some of the candidates who understood what the question required were struggling to get the correct sum of variable × frequency, while those who got it were dividing by 6.

Correct answer: 57

Question 8

This was a generally easy question to the learners, it was fairly done.

(a) Some candidates were not getting this question correct hence their performance in the subsequent question was affected. A general problem encountered by the candidates was failure to read the vertical scale more especially for the colour "Green". Most candidates read this as 7 or 5 or 4 instead of 6. There were cases of giving the total number of students as 24 which was the last number appearing in the in the vertical axis.

Correct answer: 54

(**b**) **(i)** Some candidates did not give their probabilities as fractions but as whole numbers like 16. Some candidates tried to simplify $\frac{16}{54}$ to get $\frac{8}{17}$ which was an incorrect answer.

Correct answer: $\frac{16}{54}$

(b) **(ii)** Candidates failed to mathematically interpret "or" such that there were answers like $\frac{20}{54}$ *or* $\frac{6}{54}$ and $\frac{20}{54} \times \frac{6}{54}$. Like in part (i) some candidates were wrongly simplifying $\frac{26}{54}$ to get $\frac{13}{17}$. There were cases of presenting probabilities as whole numbers or as fractions greater than 1.

Correct answer: $\frac{26}{54}$

(iii) Most candidates forced to include a denominator when the probability is 0, e.g. $\frac{0}{0}$. There were answers like, "no one", "no grey", "impossible", "none", "not applicable" and even $\emptyset$.

Correct answer: 0

Question 9

This question was poorly done.

(a) Candidates could not differentiate between radius and diameter. They were using 40 cm as their radius instead of 20 cm.
Formulas were not used correctly. A candidate would write $\pi r^2 h$ but eventually uses πdh. $V = lbh$ was also common in this question such that candidates were drawing cuboids in the question papers. Another challenge in this question was multiplying by a decimal.

Common wrong answers: 3768; 1200

Correct answer: 37680cm^3

(b) **(i)** Most candidates did not understand what the question required. They were using $2\pi r^2$.

Correct answer: 3768cm^2

(ii) Candidates could not figure out that the solution for part **(i)** was supposed to be used in part **(ii)** such that they would re-calculate the curved surface area.

Correct answer: 6280cm^2

The use of $\pi r^2 h$ was common in this question but r=40cm mostly.

Question 10

This question was fairly done.

(a) Spelling was a serious problem in this question. There were answers like "octagone", "eight sided polygon", "eightagone", "oxagone" etc. Other common wrong answers were regular polygon, hexagon, pyramid, octagonal prism, rhombus.

Correct answer: Octagon

(b) Most candidates got the correct answer from no working. Common wrong answer was $\frac{6\times180}{8} = \frac{1080}{8} = 135$

Correct answer: 45°

(c) Common wrong answer was $45 + 45 = 90$ or $\frac{135}{2} = 67.5$.

Correct answer: 135°

(d) Most candidates recognised this transformation as rotation. Those who were able to recognise that it was reflection were unable to describe it. They were describing reflection with centre (0, 0) or centre O. Some were giving the line of reflection as line O while some called the line of reflection as a line of symmetry.

Correct answer: Reflection on CG

(e) This question was performed better than part (d). Candidates encountered problems on the angle and direction of rotation. Some candidates were giving such description as "$-90°$ anticlokwise".

Correct answer: Rotation, about O through 90°, clockwise.