Province of the
EASTERN CAPE
EDUCATION

NATIONAL
SENIOR CERTIFICATE

GRADE 10

NOVEMBER 2019

MATHEMATICAL LITERACY P2

MARKS: 75

TIME: 1½ hours

This question paper consists of 8 pages.

INSTRUCTIONS AND INFORMATION

Read the following instructions carefully and answer ALL the questions.

1.   This question paper consists of FOUR questions. Answer ALL the questions.

2.   Number the answers correctly according to the numbering system used in this question paper.

3.   Start EACH question on a NEW page.

4.   You may use an approved calculator (non-programmable and non-graphical), unless stated otherwise.

5.   Show ALL calculations clearly.

6.   Round off ALL final answers appropriately according to the given context, unless stated otherwise.

7.   Indicate units of measurement, where applicable.

8.   Maps and diagrams are NOT drawn to scale, unless stated otherwise.

9.   Write neatly and legibly.

QUESTION 1

1.1 Your friend, Kim, has asked you to help him with his bank statement. He is sure there are some errors on the bank statement as some things just do not make sense to him. Below is a copy of Kim's bank statement.

<table>
<tr><td colspan="11" align="center">**FIRST NATIONAL BANK**</td></tr>
<tr><td colspan="5">Mr Kim de Villiers
28 Nahoon Street
Nahoon
5241</td><td colspan="3">Statement
for January 2019</td><td colspan="3">Account number 23456799
Vincent Park Branch
Branch code: 211021</td></tr>
<tr><td>**Date**</td><td colspan="2">**Details**</td><td colspan="2">**Debit**</td><td colspan="2">**Credit**</td><td colspan="2">**Fees**</td><td colspan="2">**Balance**</td></tr>
<tr><td>1/1/19</td><td colspan="2">Opening balance</td><td colspan="2"></td><td colspan="2"></td><td colspan="2"></td><td>12 783</td><td>56</td></tr>
<tr><td>3/1/19</td><td colspan="2">Deposit</td><td colspan="2"></td><td>1 000</td><td>00</td><td>15</td><td>00</td><td>13 768</td><td>56</td></tr>
<tr><td>5/1/19</td><td colspan="2">Payment: Con Cars</td><td>876</td><td>45</td><td></td><td></td><td>2</td><td>50</td><td>12 889</td><td>61</td></tr>
<tr><td>5/1/19</td><td colspan="2">Payment: M Smith</td><td>2 000</td><td>00</td><td></td><td></td><td>2</td><td>50</td><td>10 887</td><td>11</td></tr>
<tr><td>12/1/19</td><td colspan="2">EFT Purchase</td><td>125</td><td>60</td><td></td><td></td><td>1</td><td>00</td><td>**A**</td><td></td></tr>
<tr><td>26/1/19</td><td colspan="2">Payment: S Yusuf</td><td>2 600</td><td>00</td><td></td><td></td><td>2</td><td>50</td><td>8 158</td><td>01</td></tr>
<tr><td>28/1/19</td><td colspan="2">Salary</td><td></td><td></td><td>11 560</td><td>00</td><td></td><td></td><td>19 718</td><td>01</td></tr>
<tr><td></td><td colspan="2"></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td></tr>
</table>

(NOTE: EFT means electronic funds transfer.)

- The fee for deposits is R2,00 plus R1,00 for every R100,00.
- Stop order payments cost R2,50 regardless of the amount.
- Card purchases cost R1,00 regardless of the amount.
- Rent is Kim's biggest expense.

Use the above bank statement to answer the questions below.

1.1.1 Determine the missing value of **A**. (2)

1.1.2 Kim claims that there is a mistake in the fees column. Indicate where this mistake occurred and verify, with the necessary calculations, whether his statement is valid or not. (4)

1.1.3 The bank has confirmed that there is indeed an error on his statement. If the error is corrected, what should Kim's balance be on the 28 January 2019? (2)

1.1.4 Kim states that her bank fees for January 2019 will be more than R30,00. Verify, with the necessary calculations, whether his estimation is valid or not. Keep in mind that the error has been corrected. (3)

1.1.5 State ONE possible reason why banks are charging fees (to their customers). (2)

1.2 Kim received an increase in his salary of 3,5% in April 2019. He wants to save his monthly increment and is planning to use it to build a concrete floor for his bird cage.

Concrete   Wheelbarrow
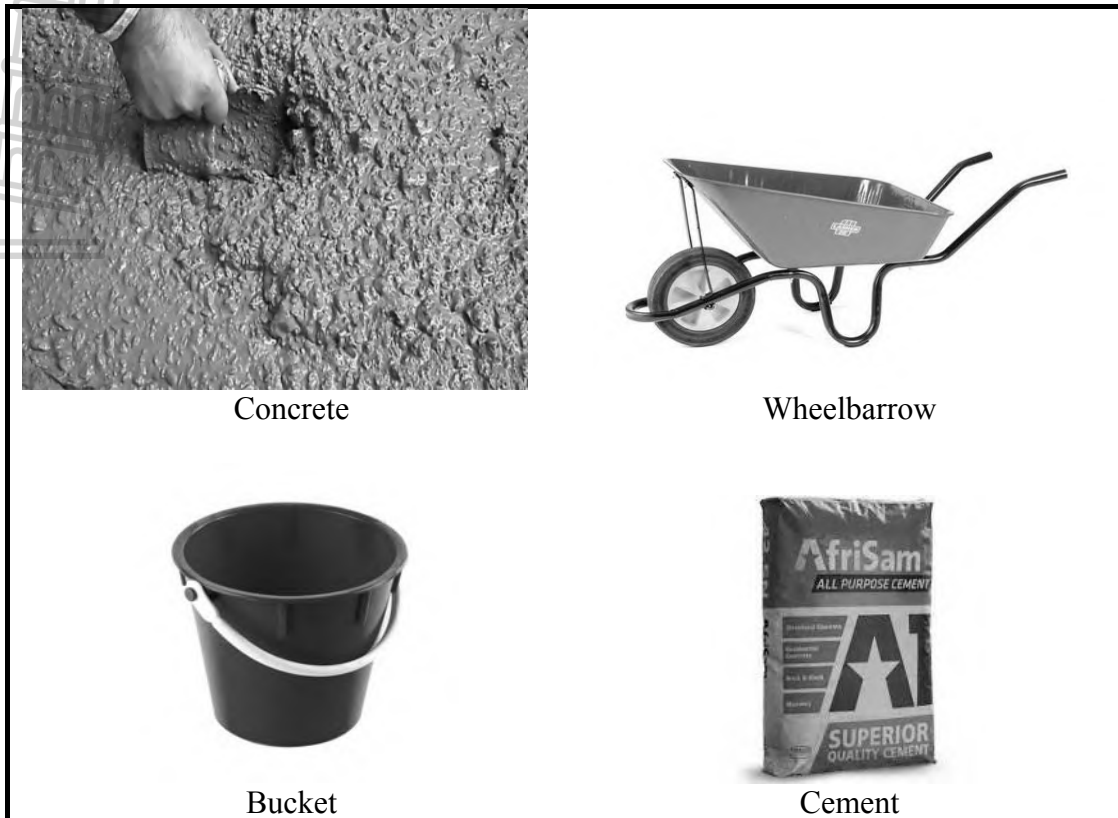
Bucket   Cement

Kim needs a concrete mixture of 0,27 cubic metres of cement, sand and gravel to make a concrete floor for his bird cage. He has a bucket with a capacity of 8 ℓ and a wheelbarrow with a capacity of 50 ℓ.

Assume that 1 m³ = 1 000 litres

1.2.1 Calculate how much litres of concrete mixture will Kim need to build a floor for his cage. (2)

1.2.2 The ratio of cement to sand to gravel is 1 : 3 : 5. How many litres of each cement, sand and gravel is needed? Assume that the volume of the concrete is more or less the same as the sum of the volumes of all the ingredients (cement, sand and gravel). (4)

1.2.3 Kim has asked Thato to do this work for him and he has agreed to do it on a Saturday. Calculate the amount of money Kim will have to pay Thato if the rate is R45,75 per hour (and part thereof) and he will finish the job in 5,4 hours. [**NOTE: The rate is double on weekends.**] (3)

1.2.4 The total cost for building material is R1 524,99, excluding labour. Kim saves his increment for six months. Verify, with the necessary calculations, whether Kim will have enough money to start the project early in October 2019. (4)
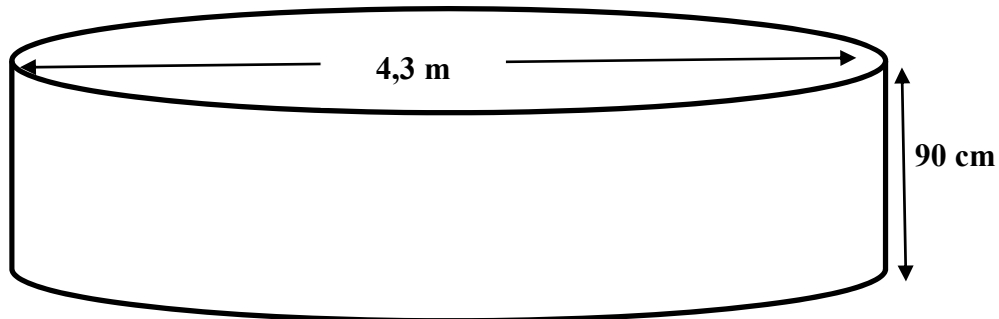
[26]

QUESTION 2

2.1 Thembinkosi wants to put a trampoline in his yard as entertainment for his children.

The dimensions for the trampoline are shown below:

4,3 m

90 cm

He has started by digging a hole in order for the trampoline to be placed in the hole. Although Thembinkosi has used some of the dug-up sand, he has two-thirds of the sand left over. A company is prepared to collect the leftover sand free of charge, provided there is more than 5 m³ sand.

    2.1.1 Calculate the area of the base of the hole in square metres, rounded off to 2 decimal places.
          You may use the formula: **Area** $= \pi r^2$; where r = radius and $\boldsymbol{\pi}$ = 3,142   (2)

    2.1.2 Determine, showing ALL calculations, whether there is enough sand for the company to come and collect it free of charge.
          You may use the formula:
          Volume = Area of base x height   (4)

2.2 Thembinkosi has a backyard with an area of 929 m².

    2.2.1 Thembinkosi has prepared a space of 3% of the area in his backyard for the construction of the trampoline. Verify, with the necessary calculations, whether the prepared space will be enough or not.   (3)

    2.2.2 Thembinkosi currently pays R2 534 per month for insurance on his household. His broker told him that his insurance premium will go up by 2,5% after the trampoline has been installed. He predicts that his new monthly insurance premium will be R2 800. Verify, with the necessary calculations, whether his statement is valid or hot.   (4)

                                                        [13]

QUESTION 3

Montego Pet Nutrition is a company that manufactures premium quality pet food that is distributed nationally and globally. The factory has undergone a R70 million-rand upgrade to its premises in Graaff-Reinet, Eastern Cape.
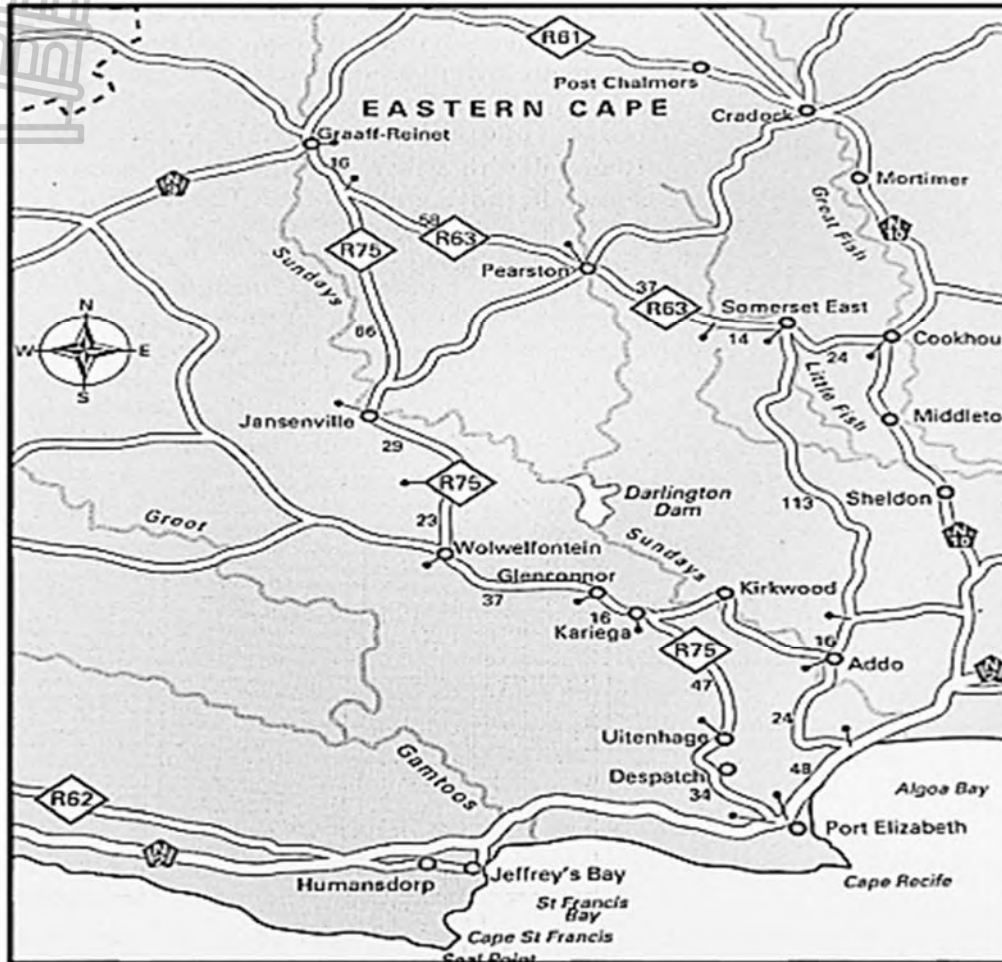
Scale: 1 : 2500 000

3.1   3.1.1   Determine the shortest route, with a motor vehicle by road for delivering boxes of the pet food to the harbour in Port Elizabeth. (3)

      3.1.2   In which direction would they travel from Graaff-Reinet to Port Elizabeth? (2)

      3.1.3   Why do you think the boxes are being delivered to the harbour in Port Elizabeth? (2)

3.2   3.2.1   Use the number scale to determine the straight-line distance from Addo to Port Elizabeth. Give your answer in kilometres. (4)

      3.2.2   The driver travels at a speed of 100 km/h and leaves Addo at 10h00. He predicts that he will reach Port Elizabeth at 10h55. Verify, with the necessary calculations, whether his statement is valid or not.
Use the formula:
Distance = speed × time (4)

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Please turn over

QUESTION 4

Mrs Base, a Mathematical Literacy teacher at Zinako High School, recorded the results of her Grade 10 learners in the final examination as a percentage, as shown below.

63	57	32	96	90	60	73	87	57	78
46	48	80	88	33	55	46	67	60	78
57	60	50	47	54	71	84	85	77	81

4.1   4.1.1   Calculate the average mark of the Grade10 Mathematical Literacy learners in the final examination. (3)

        4.1.2   Mrs Base claims that the mode of the data will be 78%. Explain what *the mode* is and verify whether her statement is valid or not. (3)

4.2   Mrs Base's learners' performance in the examination are summarised in the table below:

**TABLE 1:   RATING CODE WITH SUMMARY OF LEARNER'S PERFORMANCE**

7	Outstanding	80–100	**A**
6	Meritorious	70–79	5
5	Substantial	60–69	5
4	Adequate	50–59	**B**
3	Moderate	40–49	4
2	Elementary	30–39	2
1	**Not Achieved**	**0–29**	**0**

4.2.1   Determine the values of **A** and **B**. (2)

4.2.2   What is the probability that a learner from Mrs Base's Mathematical Literacy class scored less than 60% in final examinations? Write your answer as a percentage. (2)

4.3 Study the pie charts below that show the Amathole District municipality's service delivery for a particular period. The number of households for this particular period is 324 292. Answer the questions that follow.
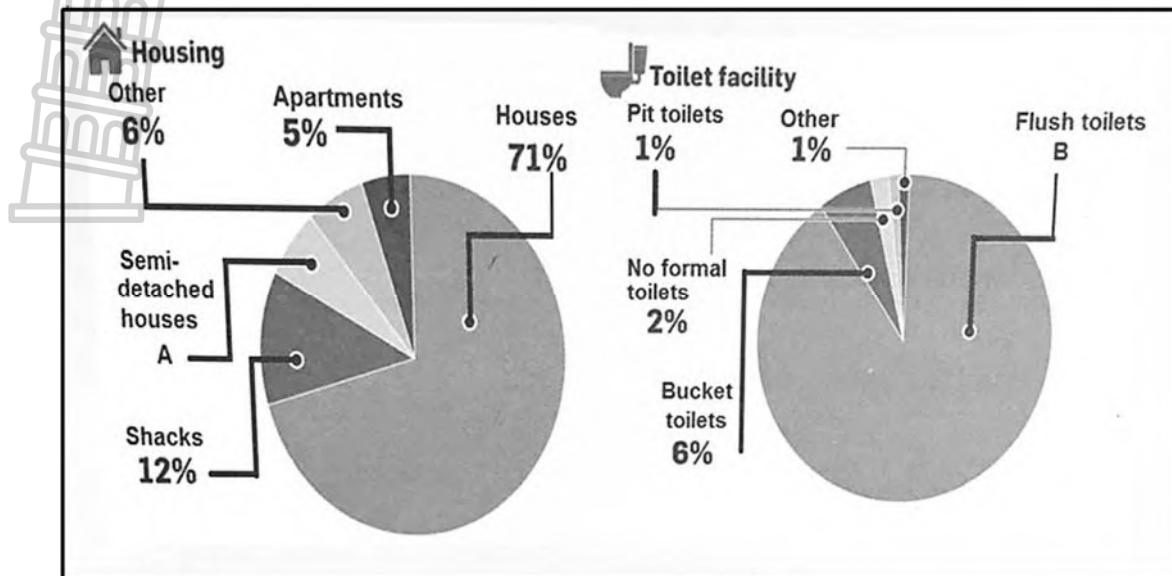
Refer to the pie chart above to answer the questions below.

4.3.1 Determine the missing value of **A** and calculate how many semi-detached houses are in the Amathole District Municipality. (4)

4.3.2 Determine the number of households which has flush toilets. (3)

4.3.3 Write down the percentage of shacks as a ratio to the number of 'other'. (2)

4.3.4 Give an example of the type of housing referred to as 'other' in the pie chart above. (2)

[21]

TOTAL: 75

Province of the EASTERN CAPE EDUCATION

EXAMINATIONS AND ASSESSMENT
Steve Vukile Tshwete Complex , Private Bag X0032, Zwelistsha, 5605
REPUBLIC OF SOUTH AFRICA, Website: www.ecdoe.gov.za
E-mail:nomvuyo.mbeleki@ecdoe.gov.za

Ref. no.	13/P	Tel.:	(040) 602 7028/082 391 1342
Enquiries:	Ms N. Mbeleki	Fax:	040 602 7295

ERRATA

TO: **PRINCIPALS OF SCHOOLS IN THE FET BAND**
DISTRICTS HEADS OF EXAMINATIONS

FROM: **MS N. MBELEKI**
CES: INSTRUMENT DEVELOPMENT UNIT

DATE: **13 NOVEMBER 2019**

SUBJECT: **MATHEMATICAL LITERACY P2 GRADE 10 ERRATA**

The Mathematical Literacy P2 Grade 10 November was written on Monday, 11 November 2019. We were made aware of certain errors that were discovered during the writing and marking process.

The following amended guidelines with regard to marking was prepared in conjunction with the examiner and moderator. In order to address this and to ensure that learners are not disadvantaged, the following standardised approach to marking must be adopted across the Province.

ERRATA

QUES.	OMISSION/ERROR	AMENDMENT
2.2.1		$\frac{14,52}{929} \times 100$ ✓ $= 1,56\%$ needed ✓ Therefore 3% will be sufficient ✓
2.2.2		$\frac{2\,800 - 2\,534}{2\,534} \times 100$ ✓✓ $= 10,5\%$ increase ✓ Statement is not valid ✓
3.1.1	Using R75 only **Using distances on map**	R75 only **FULL MARKS** ✓✓✓ **OR** R75: 16+66+29+23+37+16+47+34 = 268 km ✓ R63: 16+58+37+14+113+16+24+48 = 326 km ✓ Shortest route – R75 ✓
3.2.1	Due to printing distances changed	2,3 cm (**Accept 2,1 cm – 2,5 cm**) **OR** **Addo – PE = 72 km (calculated with distances given on map)**

3.2.2	Another option	Distance = 100 km/h x (55 min ÷60) ✓✓ = 91,67 km travelled ✓ Not valid, he travelled further than 57,5 km ✓ **REMEMBER CA from 3.2.1**
4.1.1		**NPR** – Accept 65,3 or 65
4.1.2	CORRECT MODE is 57 and 60	Mode – 57% **and** 60% Do **NOT** penalise for **not** mentioning mode
4.3.3	Never mentioned simplify	**Only** 12:6 (FULL MARKS) **OR** **Accept** unit form – 1 : 0,5

We request that this must be brought to the attention of all educators marking these papers and sincerely apologise for the inconvenience.

Yours in quality education.

_____
CES: INSTRUMENT DEVELOPMENT UNIT
MS N. MBELEKI

_____
13 November 2019
DATE

Province of the
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GRADE 10

NOVEMBER 2019

MATHEMATICAL LITERACY P2
MARKING GUIDELINE

MARKS: 75

Codes	Explanation
M	Method
MA	Method with Accuracy
CA	Consistent Accuracy
A	Accuracy
C	Conversion
D	Define
J	Justification/Reason/Explain
S	Simplification
RD	Reading from a table **OR** a graph **OR** a diagram **OR** a map **OR** a plan
F	Choosing the correct formula
SF	Substitution in a formula
O	Opinion
P	Penalty, e.g. for no units, incorrect rounding off, etc.
R	Rounding Off
AO	Answer only
NPR	No penalty for rounding **OR** omitting units

This marking guideline consists of 6 pages.

MATHEMATICAL LITERACY P2

QUESTION 1 [26 marks]

Question	Solution	Explanation	Topic and Level
1.1.1	A= R10 887,11 – R125,60 – R1,00 ✓M = R10 760,51 ✓ CA	1M subtracting R1 1CA for answer (2)	F L2
1.1.2	✓ Deposit = R2,00 + R1,00 x (number of R100's) ✓M Fees for 03/1/2019 = R2 + R1 x (R1 000 ÷ R100) = R2 + R10 = R12 ✓A The statement is valid ✓O	1 Number of R100 1M Method 1A Answer 1CA Opinion (4)	F L4
1.1.3	Balance 28/1/19 = R19 718,01 + (R15 – R12)✓ M = R19 721, 01 ✓ CA	1M Method 1 CA correct value (2)	F L3
1.1.4	✓ M Bank fees =R12 + R2,50 + R 2,50 + R1,00 + R2,50 = R20,50 ✓ A His statement is not correct ✓C	1M adding values 1A correct value 1 Conclusion (3)	F L3
1.1.5	So that they can be able to do their daily operations. ✓✓ O **OR** To be able to pay their employees ✓✓ O **OR** That is their way of getting the income ✓✓ O **OR** **Accept other relevant reasoning.**	2O Opinion (2)	F L4
1.2.1	0,27 x 1 000 ✓M = 270 ℓ ✓CA	1M multiply by 1 000 1CA Answer (2)	M L4
1.2.2	Ratio: = 1 + 3+ 5 = 9 ✓M Cement = $\frac{1}{9}$ × 270 ℓ = 30 ℓ ✓ A Sand = $\frac{3}{9}$ × 270 l = 90 ℓ ✓ A Gravel = $\frac{5}{9}$ × 270 l = 150 ℓ ✓ A	1M addition 1A correct value 1A correct value 1A correct value (4)	M L3

1.2.3	✓A Amount to be paid = R45,75 x (5 + 1) x 2 ✓M = R549 ✓CA	1A Correct hours 1M multiply by 2 1CA Answer (3)	F L2
1.2.4	Total Costs = R1 524, 99 + R549 ✓M = R2 073, 99 ✓CA Total Savings = (3,5% x R11 560) x 6 months = R2 427,60 ✓A Kim will have enough money for the project. ✓C	1M adding material and cost 1CA Total Cost 1A Total Savings 1 Conclusion (4)	F L4
		[26]	

QUESTION 2 [13 marks]			
Question	**Solution**	**Explanation**	**Topic and Level**
2.1.1	Area = $\pi\, r^2$ $\quad$ = 3,142 x 2,15 x 2,15 ✓ M $\quad$ = 14,52 m² ✓CA	1M Using correct radius in the formula (M) 1CA for Answer (2)	M L2
2.1.2	Volume of the cylinder = 14,52 x 0,9 ✓SF $\quad$ = 13,07 m $\quad$ = $\frac{2}{3} \times 13{,}07$ ✓M $\quad$ = 8,71 m³ There is enough sand to collect it free ✓ C	1 SF 1CA from 2.1.1 1M Method using $\frac{2}{3}$ 1 for Conclusion (4)	M L3
2.2.1	Space prepared $\quad$ = 3% x 929 m² ✓M $\quad\quad\quad\quad\quad\quad$ = 27, 87 m² ✓CA Area of trampoline = 14,52 m² He will have enough space ✓ O	1M using 3% 1CA for Answer 1O for Opinion (3)	M L4
2.2.2	$\quad\quad\quad\quad\quad\quad$ ✓ M $\quad\quad\quad\quad$ ✓M New premium = (2,5% x R2 534) + (R2 534) $\quad\quad\quad\quad$ = R2 597,35 ✓ CA His estimation is not correct. ✓ C	1M Method using 2,5% 1M Adding 1CA Answer 1 Conclusion (4)	F L4
		[13]	

Please turn over

QUESTION 3 [15 marks]			
Question	**Solution**	**Explanation**	**Topic and Level**
3.1.1	✓ From Graaff-Reinet you go straight with the R75 route pass Jansenville, Wolwefontein, Kariega, pass Uitenhage until you reach Port Elizabeth ✓✓A	1 R75 2A Mention at least 2 towns (3)	MP L2
3.1.2	South East ✓✓ A	2A Correct direction (2)	MP L2
3.1.3	The boxes will be sent overseas. ✓✓O **OR** **Any other logical reason.**	2O Opinion (2)	MP L4
3.2.1	Distance from Addo to Uitenhage = 2 cm or 20 mm ✓M [**Accept 1,9 – 2,4 cm**] 　　　　　Scale: 1 : 2 500 000 　　　　　Actual distance = 2 x 2 500 000 ✓M 　　　　　　　$= \frac{5\ 000\ 000}{100\ 000}$　✓ SF 　　　　　　　= 50 km ✓ A	1M measure from map 1M using scale 1SF using correct values 1A Answer in km (4)	MP L4
3.2.2	Time $= \frac{distance}{speed}$ ✓ M 　　$= \frac{50\ km}{100\ km/h}$✓ SF 　　= 30 min. ✓ A His prediction is not valid, he will reach PE at 10:30. ✓O	1M changing subject of formula 1 SF 1A Answer 1O Opinion (4)	MP L4
		[15]	

QUESTION 4 [21 marks]

Question	Solution	Explanation	Topic and Level
4.1.1	Average $= \dfrac{Total\ of\ marks}{number\ of\ learners}$ $= \dfrac{1\,960}{30}$ ✓ A ✓ M $= 65{,}33$ ✓ CA	1A Adding total 1M Method divide by 30 1CA Answer (3)	Data L3
4.1.2	Mode is the number that appears the most on the data. ✓ E ✓A Mode = 57% therefore her statement is invalid. ✓C	1 Explanation 1 Correct mode 1 Conclusion (3)	Data L4
4.2.1	A = 8 ✓ A B = 6 ✓ A	1A for 8 1A for 6 (2)	Data L2
4.2.2	P (less than 60%) $= \dfrac{(6+4+2+0)}{30} \times 100$ ✓M $= 40\%$ ✓CA	1M finding probability 1CA Answer CA (2)	Data L3

4.3.1	A = 100% – (6+5+12+71) % ✓M
	    = 6% ✓ A
	
	 Semi-detached houses= 6% × 324 292 ✓M
	          =19 457,52
	          =19 458 ✓CA
		1M Subtracting from 100%
		 1A Answer
		 1M finding 6%
		
		 1CA Answer
		 (4)
			Data L3

4.3.2	Flush toilets = 90% x 324 292 ✓M
	         = 291 862,8 ✓ CA
	         = 291 863 ✓ R
		1M using 90%
		 1CA Answer
		 1R Rounding up
		 (3)
			F L2

4.3.3	Ratio = 12%: 6% ✓M = 2 : 1 ✓S	1M using correct percentages 1 Simplification (2)	Data L2
4.3.4	Granny flats ✓✓O **OR** RDP houses ✓✓O **Accept any other relevant answer.**	2O Opinion (2)	Data L4
		[21]	
		TOTAL: 75	