education

Department:
Education
PROVINCE OF KWAZULU-NATAL

NATIONAL SENIOR CERTIFICATE

GRADE 11

MATHEMATICAL LITERACY

COMMON TEST

MARCH 2019

MARKS: 100

TIME: 2 hours

This question paper consists of 8 pages, 1 answer sheet and an addendum with 4 annexures.

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INSTRUCTIONS AND INFORMATION

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

2. 2.1 Use the ANNEXURES in the ADDENDUM to answer the following questions:
   - ANNEXURE A for question 1.1
   - ANNEXURE B for question 2
   - ANNEXURE C for question 3
   - ANNEXURE D for question 4.2

   2.2 Answer question 4.1.1 and 4.1.5 on the attached ANSWER SHEET

   2.3 Write your surname and name in the spaces proved on the ANSWER SHEET. Hand in the ANSWER SHEET with your ANSWER BOOK.

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

4. Start EACH question on a NEW page.

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

6. Show ALL calculations clearly.

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

8. Indicate the units of measurement, where applicable.

9. Diagrams are not necessarily drawn to scale.

10. Write neatly and legibly.

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QUESTION 1

1.1

ANNEXURE A shows Tumelo's Grade 11 school timetable for 2019. Learners are given 5 minutes to change from one lesson to the other.

Use the ANNEXURE A to answer the questions that follow.

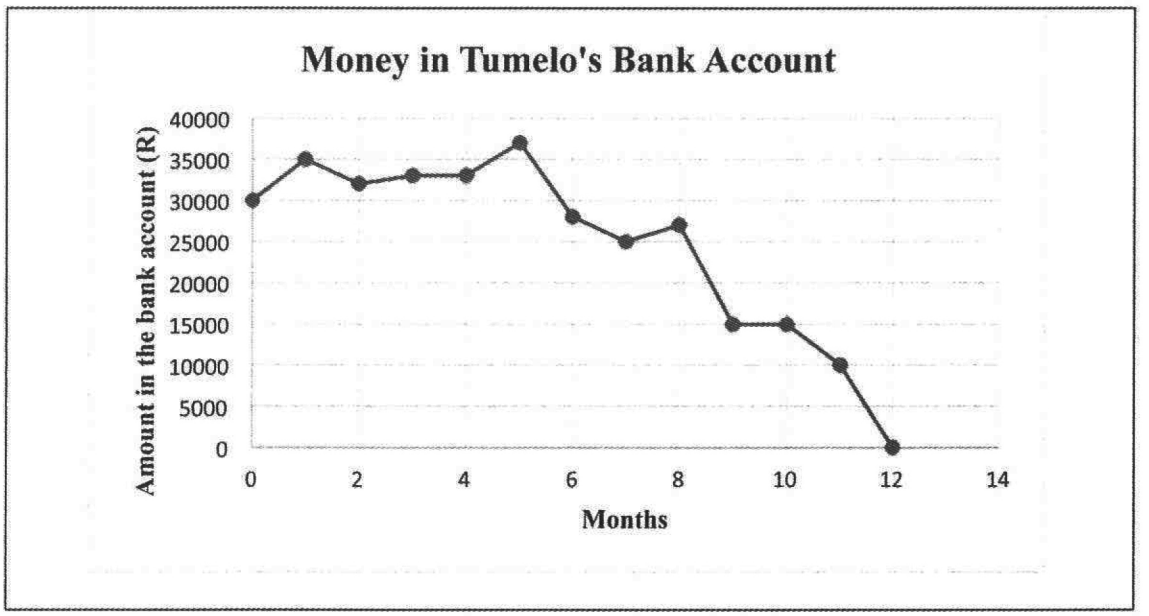
1.1.1 How long is the second break? (2)

1.1.2 How many subjects is Tumelo doing? (2)

1.1.3 How many days in an eight-day cycle does Tumelo have Mathematics? (2)

1.1.4 Why is it important to schedule breaks on the time table? (2)

1.2 The graph below shows the amount of money into Tumelo's bank account over a period of twelve months.



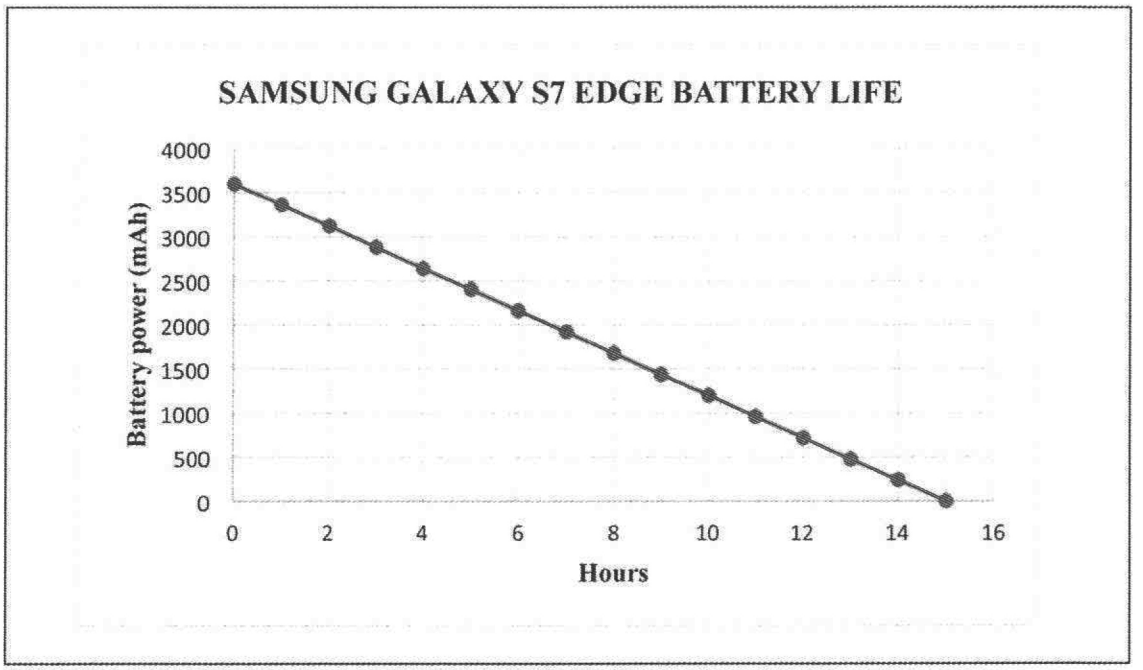
Study the graph above and answer the questions that follow.

1.2.1 How much money did Tumelo deposit into his bank account? (2)

1.2.2 Describe the trend of the graph from month 8 to month 12. (2)

1.2.3 Give one possible reason why the balance in Tumelo's account was R0,00 at the end of month 12. (2)

1.3 Tumelo's parents bought him a Samsung Galaxy S7 Edge. He monitored the battery power drainage when using 4G to access the internet and drew a graph as shown below.



Use the information from the graph above to answer the questions that follow:

1.3.1 Determine how long it will take for the battery to run down one sixth of its capacity of 3 600 milli-Ampere-hours (3 600 mAh) in 15 hours. (2)

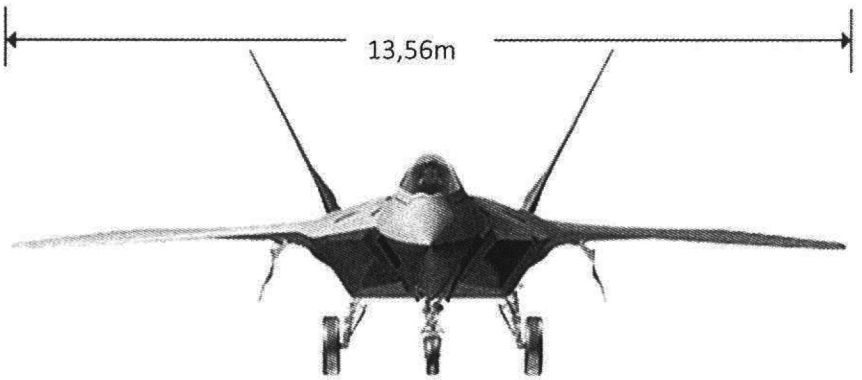
1.3.2 Calculate the rate of power drainage per hour if the capacity of the cell phone is 3 600 mAh. (3)

1.3.3 Write down the formula for battery power or strength after a number of hours in the form: $\boldsymbol{Battery\ strength} = \cdots - \cdots$ (3)

1.3.4 With excessive use, the cell phone's CPU (Central Processing Unit) can reach a maximum temperature of 34°C. Convert this temperature to degrees Fahrenheit (°F). You may use the formula: $°F = (\mathbf{1,8} \times °C) + \mathbf{32}$ (2)

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1.4 The picture below shows the US f-22 fighter plane wingspan.



USA f-22 fighter plane wingspan

Distance from New York to London is 5 585 km. It takes the f-22 fighter plane 2,32 hours flying nonstop, at maximum speed to get to London.

(source: www.lockheedmarti.com)

1.4.1 Convert the f-22 fighter plane's wingspan to centimetres. (2)

1.4.2 Calculate the f-22 fighter plane's top speed to the nearest 100 km/h.
You may use the formula: $\boldsymbol{Speed} = \frac{\boldsymbol{Distance}}{\boldsymbol{Time}}$. (3)

1.4.3 The speed of a bullet is 47 548,8 m/min. Tumelo claims that the f-22 fighter plane's top speed exceeds that of a bullet. Use your answer obtained in 1.3.2 to verify Tumelo's claim. (4)

[33]

QUESTION 2

Thandeka's parents spent the New Year celebration in Johannesburg with their eldest son. They flew back on Friday the 4th of January. Thandeka and her cousin picked them at King Shaka International Airport. The plane was due to arrive at 16:00 but it delayed by 2 hours 17 minutes.

ANNEXURE B shows the different parking areas and their respective tariffs.

Use ANNEXURE B to answer the questions that follow.

2.1 What is the maximum number of cars that can be parked at King Shaka International Airport? (2)

2. 2 At what time did the plane arrive? (2)

2. 3 Thandeka and her cousin arrived at the airport at 15:45 only to be told that the flight was delayed by 2 hours 17 minutes. If they parked at P1-Pick Up parking area, how much were they going to be charged? (2)

2. 4 Finally they decided to park at P3-Short Staying parking area. Unfortunately, Thandeka's cousin lost the parking ticket. Calculate the total parking fees. (3)

2.5 Give one reason why the parking fees for P3-Short Staying parking area is cheaper. (2)

[11]

QUESTION 3

ANNEXURE C is an invoice of services that were rendered to Mr D. K Gabela dated January 18, 2019

Use ANNEXURE C to answer the questions that follow.

3.1 Give one service that was rendered to Mr Gabela? (2)

3.2 What is the due date for the payment? (2)

3.3 Mr Gabela was unable to pay on the due date. Calculate the total amount he was charged. (3)

3.4 Show how the total VAT amount of R977,43 was calculated. (2)

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3.5 If Mr Gabela had paid before the due date, the dealer was going to give him a 7% discount on the amount excluding 15% VAT.

3.5.1 Calculate the discount given on the amount excluding VAT. (2)

3.5.2 State whether the discount will affect the amount of VAT? Justify your answer (2)

3.5.3 Who should be contacted for any queries? (2)

3.5.4 Calculate the rate per hour for Rear Bumper painting. (3)

3.5.5 Show how the amount of R6 516,23 was calculated. (2)

[20]

QUESTION 4

4.1 Reliance Car Hire owns two minibus taxis, one 16 seater and a 14 seater. The charges are as follows:

16 Seater Minibus
R3 000 which includes 100 free kilometres after which he charges R5 per kilometre.



14 Seater Minibus
R2 000 deposit and R7,00 per kilometre.



TABLE 1: Hiring cost for 16 and 14 seater minibus taxis

Number of km	0	50	100	150	200	250	300	350	400	450	500
Cost for 16 Seater	3 000	3 000	3 000	3 250	3 500	3 750	4 000	4 250	4 500	4 750	5 000
Cost for 14 Seater	2 000	2 350	2 700	3 050	3 400	**A**	4 100	4 450	4 800	5 150	5 500

Use the information above and the ANSWER SHEET provided to answer the questions that follow.

4.1.1 Which minibus charge is represented by the line drawn on the ANSWER SHEET? Justify your answer. (3)

4.1.2 Calculate the missing value **A**. (3)

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4.1.3 Define "break-even" according to the given context above. (2)

4.1.4 Write down the co-ordinates of the break-even point. (2)

4.1.5 Draw the missing line graph on the same ANSWER SHEET provided. (6)

4.1.6 State whether TABLE 1 above or the GRAPH on ANSWER SHEET is the most appropriate representation to use to make sense of the given context in 4.1 above. Justify your answer. (3)

4.2 ANNEXURE D shows the half-year Income and Expenditure statement for Reliance Car Hire for 01 July 2018 to 31 December 2018.

Use ANNEXURE D to answer the questions that follow:

4.2.1 Define "variable expenses". (2)

4.2.2 Calculate the employer's monthly UIF contribution? (3)

4.2.3 Calculate the missing value **X** (Total Expenditure). (2)

4.2.4 Calculate the missing value **Y** (Net Income). (2)

4.2.5 Calculate (rounded off to one decimal place) the percentage of salaries on the total expenditure. (4)

4.2.6 Calculate the profit (rounded off to a whole percentage) for Reliance Car Hire. You may use the formula:

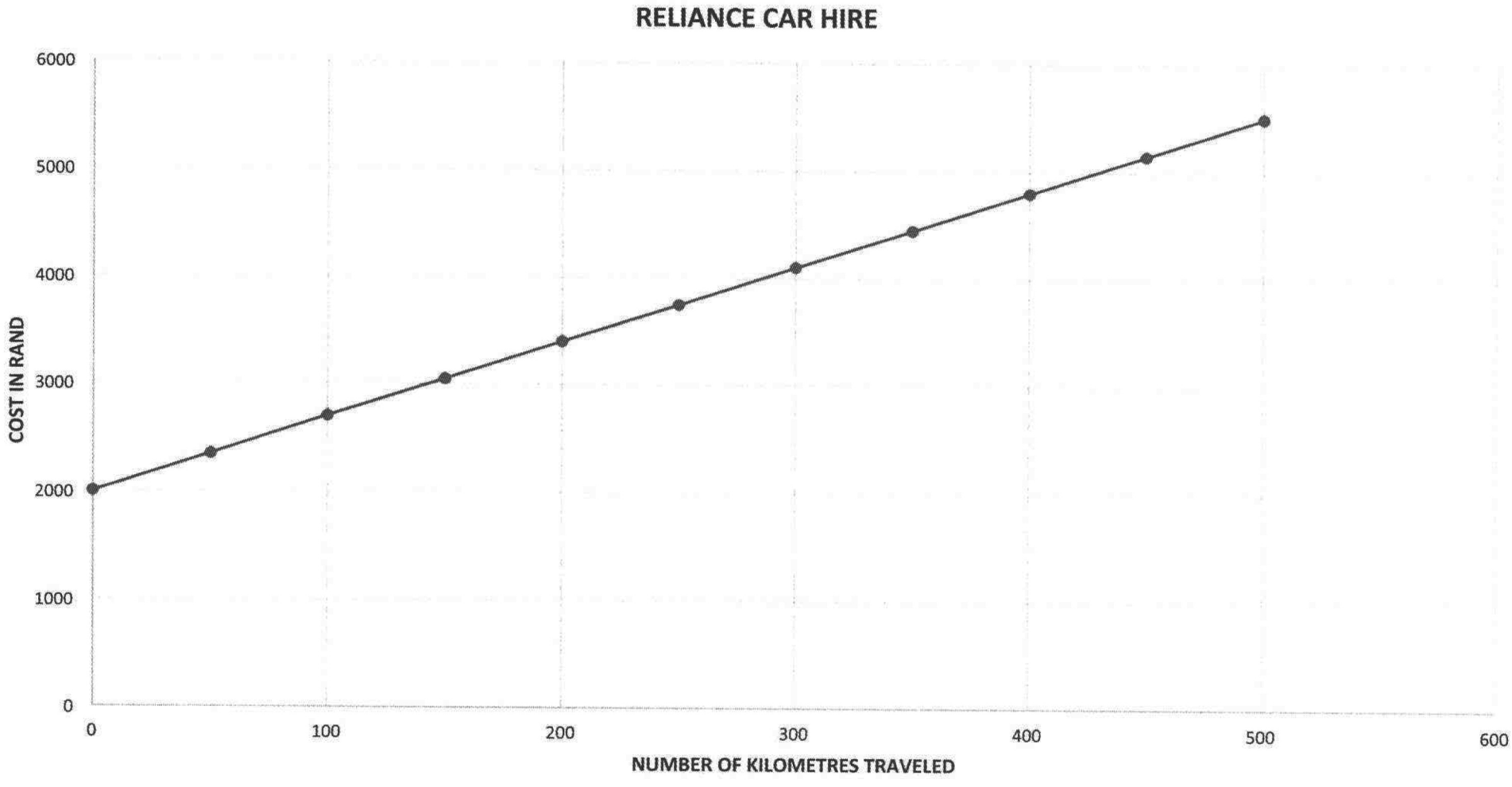
$$\textbf{\textit{Percentage Profit}} = \frac{\textit{Total Income} - \textit{Total Expenditure}}{\textit{Total Expenditure}} \times 100\%$$ (4)

[36]

TOTAL: [100]

NAME: _____

ANSWER SHEET
Question 4.1.5



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ADDENDUM

MARCH 2019

This addendum consists of 5 pages with 4 annexures.

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ANNEXURE A – TUMELO'S TIMETABLE 2019

Question 1.1

	Period 1 (07:45 – 08:45)	Period 2 (08:50 – 09:50)	Break	Period 3 (10:15 -11:15)	Period 4 (11:20 – 12:20)	Break	Period 5 (12:55 – 13:55)
Day 1	Life Sciences	Physical Science	09:55 – 10:10	Mathematics	English	12:20 – 12:50	IsiZulu
Day 2	Physical Science	Life Sciences		Physical Education	Life Orientation		Mathematics
Day 3	Mathematics	IsiZulu		English	Life Sciences		Geography
Day 4	Cycle Test	CIVR		Geography	IsiZulu		English
Day 5	Geography	IsiZulu		Physical Science	Life Sciences		English
Day 6	Mathematics	IsiZulu		Geography	Life Orientation		Physical Science
Day 7	Geography	Mathematics		English	Physical Science		Life Sciences
Day 8	Mathematics	Geography		English	Physical Science		Life Sciences

NOTE: CIVR – Civic Responsibility Lesson

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ANNEXURE B

Question 2

KING SHAKA INTERNATIONAL AIRPORT PARKING TARIFFS

P1-PICK UP PARKING 40 Parking Spaces		**P2-MULTI STOREY PARKING 500 Parking Spaces**		**P3-SHORT STAY PARKING 1500 Parking Spaces**		**P4-LONG STAY PARKING 500 Parking Spaces**	
Short stay pick up arrivals		3 Levels quite close to airport terminal		Slightly further from airport terminal		Stays of 3 days or more	
Time Period	Tariff	Time Period	Tariff	Time Period	Tariff	Time Period	Tariff
0 - 20 min	free	0 - 5 min	free	0 - 1 hour	R12	0 - 3 days	R200
21 - 30 min	R20	6 - 30 min	R10	> 1 - 2 hours	R15	Each extra day thereafter	R50
31 - 60 min	R30	31 - 60 min	R15	> 2 - 3 hours	R20	Lost ticket	R50 + Tariff
> 1 - 2 hours	R50	> 1 - 2 hours	R20	> 3 - 4 hours	R25		
> 2 - 3 hours	R100	> 2 - 3 hours	R30	> 4 - 6 hours	R40		
Extra hour or part thereof	R50	> 3 - 4 hours	R40	> 6 - 10 hours	R60		
Lost ticket	R50 + Tariff	> 4 - 6 hours	R80	> 10 - 24 hours	R80		
		> 6 - 10 hours	R120	Lost ticket	R50 + Tariff		
		> 10 - 24 hours	R160				
		Lost ticket	R50 + Tariff				

Source: [http://kingshakaairport.info/airport/airport-parking.php]

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ANNEXURE C

Question 3

Fix Panel Beaters

Invoice #: 100.1
Date: January 18, 2019

SERVICES TO	BILL TO
Invoice #: 100.1	Denny K. Gabela
Date: January 18, 2019	47 Wayside Lane
Customer ID: 57922	Richards Bay
Bill To: Denny K. Gabela	(035) 783 45 67
Contact: denkgabs@gmail.com	denkgabs@gmail.com

SERVICES

DECRIPTION	HOURS	RATE	AMOUNT
Rear Bumper painting	2.5	750	R1 875,00
Rear Fender painting	3	750	R2 250,00
Panel Realign	3	560	R1 680,00
Dent Repairs, Coin Size	1	284,49	R284,49
Dent Repairs, Up to A4 Size	1	426,74	R426,74

NOTES

SUBTOTAL	R6 516,23
VAT	15.00%
TOTAL VAT	R977,43
OTHER	0
TOTAL	R7 493,66

Due Date: 31/01/2019. **5% interest charged on late payment**

Please contact James on 082 555 0011 for any queries regarding this invoice.

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ANNEXURE D

Question 4.2

Income and Expenditure Statement for Reliance Car Hire (01 July 2018 to 31 December 2018)			
Income (R)		**Expenses (R)**	
Income from 16 Seater Quantum Hire	353 061,17	**Fixed Expenses**	
Income from 14 Seater Quantum Hire	332 985,49	Salaries	201 600,00
		Employer's UIF Contribution	2 016,00
		Premises Rentals	97 219,44
		16 Seater Quantum Instalments	64 280,82
		14 Seater Quantum Instalments	60 770,04
		Vehicle Tracking Devices	2 868,00
		Vehicle Insurance	16 668,00
		Variable Expenses	
		Diesel (14 Seater Quantum)	23 879,00
		Diesel (16 Seater Quantum)	27 501,60
		Services and Repairs	16 715,82
		Water and Electricity	10 776,90
		Telephone/Internet Bill	17 381,34
TOTAL INCOME	686 046,66	TOTAL EXPENDITURE	**X**
NET INCOME = TOTAL INCOME **LESS** TOTAL EXPENDITURE			**Y**

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MARKING GUIDELINE

MARKS: 100

Symbol	Explanation
M	Method
M/A	Method with Accuracy
CA	Consistent Accuracy
A	Accuracy (Answer)
AO	Answer only full marks
C	Conversion
S	Simplification
RT / RG / RM/RP	Reading from table / Reading from graph / Reading from map/Reading from plan
F	Choosing the correct formula
E	Explanation
SF	Substitution in formula
O	Opinion
J	Justification
P	Penalty e.g. for no units, incorrect rounding, etc
R	Rounding off / Reason
NPR	No penalty for rounding / units.

This marking guideline consists of 5 pages.

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QUESTION 1 [33 marks]

Question	Solution	Explanation	T&L
1.1.1	12:50 – 12:20✓MA 30 minutes✓A	1MA subtraction 1A correct answer **AO** (2)	M L2
1.1.2	7✓✓A	2A correct answer (2)	M L1
1.1.3	6 days✓✓A	2A correct answer (2)	M L1
1.1.4	To allow the brain to relax. ✓✓O **OR** To make study sessions, learning more effective **OR** To have time to eat	2O for opinion (2)	M L4

1.2.1	R30 000 ✓✓RD	2RD correct reading (2)	F L1
1.2.2	The account balance is decreasing ✓✓E	2E correct explanation (2)	F L4
1.2.3	Tumelo has all the money✓✓O	2O correct opinion (2)	F L4

1.3.1	$\frac{6}{6}-\frac{1}{6}$ $=\frac{5}{6}\times 15$ ✓MA = 12hrs 30 min ✓A	1MA Multiply by 15 1A for correct hours and minutes (2)	M L2
1.3.2	$\frac{3\,600\checkmark M}{15\checkmark M} = 240\ mAh/hour\checkmark A$	1M for 3 600 1M dividing by 15 1A correct answer **AO** (3)	M L3
1.3.3	3 600✓A – 240✓A × number of hours✓A	3A correct equation (3)	M L2
1.3.4	$°F = (1{,}8 \times 34) + 32\checkmark SF$ $= 93{,}2\checkmark A$	1SF substitution 1A correct answer **AO** (2)	M L2

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QUESTION 1 [33 MARKS]

Question	Solution	Explanation	T&L
1.4.1	13,56 X 1 000✓C = 13 560 cm✓A	1C conversion 1A correct answer (2)	M L2
1.4.2	$\text{Speed} = \frac{5\,585}{2{,}32}$ ✓SF = 2 407,33 ✓A = 2 400 km/h✓R	1SF substitution 1A correct answer 1R rounding off AO (3)	M L3
1.4.3	$\frac{2\,407{,}33\times1000}{60}$ ✓C ✓M = 40 122,17m/min✓CA Tumelo's claim is incorrect✓O	1C conversion 1M divide by 60 1CA for answer 1O correct conclusion (4)	M L4
		[33]	

QUESTION 2 [11 MARKS]

2.1	Maximum parking space = 40 + 500 + 1 500 + 500✓M = 2 540✓A	1M adding parking spaces 1A correct answer **AO** (2)	F L1
2. 2	18 : 17 or 6 : 17 pm✓✓A	2A correct answer (2)	M L1
2 3	R100✓✓RT	2RT correct answer (2)	F L1
2. 4	Total payment = R20 + R50✓✓RT = R70✓A	2RT correct reading 1A correct answer (3)	F L1
2. 5	It is slightly further from the airport terminal✓✓J	2J correct justification (2)	F L4
		[11]	

QUESTION 3 [20 MARKS]

Question	Solution	Explanation	T&L
3.1	Rear bumper painting .✓✓RD **OR** rear fender painting, .✓✓RD **OR** Panel realign .✓✓RD **OR** dent repairs.✓✓RD	2RD services (2)	F L2
3.2	31/01/2019✓✓RD	2RD correct reading from invoice (2)	F L1
3.3	Interest charged = 5% of R7 493,66✓M = R374,68 + R7493,66✓A Total Payment = R7868,34 **OR** $\frac{105}{100}\times7493{,}66$.✓✓M = R7 868,34✓A	1M 15% of R7 493,66 1A for the interest 1A for the total payment (3) 1M multiply by 105% 1M multiply by R7493.66 1A for total payment	F L3
3.4	VAT = 15% x R6 516,23✓M = R977,43✓A	1M multiplying by 15% 1A correct answer (2)	F L2
3.5.1	Amount excluding VAT = R6 516,23 Discount = 7% x R6 516,23✓M = R456,14✓A	1M multiplying by R6516.23 1A correct amount (2)	F L2
3.5.2	Yes ✓A Because it reduced the sub-total by R456,14✓J	1A answer 1J Justification (2)	F L4
3.5.3	James✓✓A	2A correct name (2)	F L1
3.5.4	$\frac{750}{2.5}$ ✓A ✓MA = R300 per hour✓A	1A 750 1MA dividing by 2.5 1A correct amount (3)	F L2
3.5.5	R1 875 + R2 250 + R1 680 + R284.49 + R426.74 ✓✓MA = R6 516.23	2MA adding correct values (2)	F L2
		[20]	

QUESTION 4 [36 MARKS]

Question	Solution	Explanation	T&L
4.1.1	14 Seater Minibus ✓A The first point on the vertical axes is R2 000 which represents the deposit for the 14 seater minibus✓✓J	1A correct minibus 2J justification (3)	F L4
4.1.2	$A = R2\,000 + R7{,}00 \overset{\checkmark M}{\times} 250 \checkmark SF$ $= R3\,750 \checkmark A$	1SF substitution 1M multiplying R7 by 250 1A correct answer (3)	F L2
4.1.3	It is the point where the total cost for the 16 Seater is equal to the total cost for the 14 Seater.✓✓E	2E correct definition (2)	F L2
4.1.4	(250 ; R3 750)✓✓A	2A correct co-ordinates (2)	F L1
4.1.5	Refer to answer Sheet	4A four correct points 1A joining points 1A labelling graph (6)	F L2
4.1.6	The graph is more appropriate✓A It is easy to read and compare the costs✓✓J **OR** The table is more appropriate✓A It gives accurate or exact figures, no need to estimate✓✓J	1A answer 2J justification **OR** 1A answer 2J justification (3)	F L4
4.2.1	Changing costs that depend on the number of kilometres travelled excluding the fixed cost.✓✓E	2E correct explanation (2)	F L1
4.2.2	$\frac{R2\,016{,}00 \checkmark A}{6 \checkmark M} = R336 \checkmark CA$	1A for R2 016 1M dividing by 6 1CA correct answer (3)	F L2
4.2.3	Total Expenditure = R541 676,96✓✓A	2A correct answer **AO** (2)	F L2

Question	Solution	Explanation	T&L
4.2.4	Net Income = R686 046,66 – R541 676,96✓M = R144 369,70✓A	1M difference 1A correct answer (2)	F L2
4.2.5	$\frac{R201\,600 \checkmark M}{R541\,676{,}96 \checkmark M} \times 100\% = 37{,}22\% \checkmark A$ = 37,2% ✓R	1M for R201 600 1M dividing by R541 676,96 1A correct percentage 1R correct decimal place (4)	F L2
4.2.6	Percentage profit = $\frac{686\,046{,}66 - 541\,676{,}96 \checkmark SF}{R541\,676{,}96} \times 100\% \checkmark M$ $= 26{,}65\% \checkmark A$ = 27%✓R	1SF correct substitution 1M multiplying by 100% 1A correct answer 1R rounding (4)	F L2
		[36]	

TOTAL: 100