



Department:
Education
PROVINCE OF KWAZULU-NATAL

**NATIONAL
SENIOR CERTIFICATE**

GRADE 11

MATHEMATICAL LITERACY

COMMON TEST

MARCH 2020

MARKS: 100

TIME: 2 Hours

This question paper consists of 9 pages, 1 answer sheet and an addendum with 1 annexure.

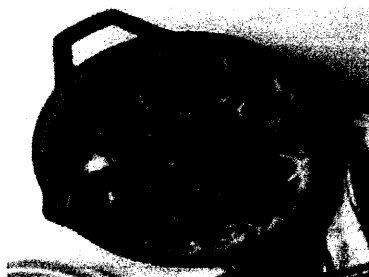
INSTRUCTIONS AND INFORMATION

1. This question paper consists of FOUR questions. Answer ALL the questions.
2.
 - 2.1 Use ANNEXURE A in the ADDENDUM to answer QUESTION 1.1
 - 2.2 Answer QUESTION 3.6 on the attached ANSWER SHEET. Write your name and grade in the spaces 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. An approved calculator (non-programmable and non-graphical) may be used, unless stated otherwise.
6. Show ALL calculations clearly.
7. Round off ALL final answers appropriately according to the given context unless stated otherwise.
8. Units of measurement must be indicated where applicable.
9. Diagrams are not drawn to scale.
10. Write neatly and legibly.

QUESTION 1

1.1

Nelson stayed in Chicago for 10 years and came back to South Africa in 2019. His favourite pizza while in America was the Chicago Style Deep Dish Pizza. He decided to open his own pizza outlet, selling the Chicago Style Deep Dish Pizza baked in a cast-iron skillet.



In America they use the Imperial System. The recipe and some of the conversions are given in ANNEXURE A.

Use the information above and ANNEXURE A to answer the questions that follow.

- 1.1.1 Calculate, in millilitres, the combined quantity of garlic powder, dried oregano, dried basil and pepper needed for the recipe on ANNEXURE A. (2)
- 1.1.2 Nelson has an order for 50 pizzas. Calculate the quantity of sliced mushrooms, in pounds, needed if the given recipe on ANNEXURE A makes 2 pizzas. (2)
- 1.1.3 Calculate the amount, in kilograms, of all-purpose flour needed for the order Mentioned in 1.1.2. (4)
- 1.1.4 Chicago Style Deep Dish Pizza bakes well in an iron-cast baking tin and the oven must be pre-heated to 450°F. Convert the temperature to °C Round off your answer to the nearest whole number.
- You may use the formula: $^{\circ}\text{C} = (^{\circ}\text{F} - 32) \div 1,8$ (3)
- 1.1.5 Nelson uses a double deck oven and each oven can take a maximum of 4 iron-cast baking tins. If Nelson starts baking the pizzas for his order at 7:15 a.m., giving an allowance of 7 minutes to put the new dough in the trays, at what time will he finish baking the 50 pizzas excluding the preparation and rising time? (7)

Downloaded from Stanmorephysics.com

1.2

Anele is employed by Nelson to assist him with baking pizzas. She contributes 7, 5% of her basic salary to a Pension Fund Scheme. UIF is 1% of the employee's gross income.

TABLE 1 below shows Anele's pay slip for January 2020.

TABLE 1: PAYSIP FOR JANUARY 2020

COMPANY		PERIOD	EMPLOYEE NAME	
NELSON FOOD OUTLET 56 Nkoninga Road Birdwood. 3900.		31/01/2020	ANELE ZONDI ID Number: 9827030127080 Employment Number: C008	
EARNINGS		DEDUCTIONS		
Description	Amount	Description	Amount	
Basic Salary	5 000,00	PAYE Tax	0,00	
		UIF Contribution	50,00	
		Pension Fund	A	
TOTAL EARNINGS	5 000,00	TOTAL DEDUCTIONS	B	
NET PAY		C		

Use the information above to answer the questions that follow.

1.2.1 Define "Net Pay". (2)

1.2.2 Write down Anele's employment number. (2)

1.2.3 Calculate the missing values A, B and C. (5)

1.3

Anele has a Standard bank Account. The cash deposit over the counter (branch deposit) services involves a *basic fee of R8,50 plus R1,85 per R100 or part thereof, with a minimum charge of R43,00.*

1.3.1 What is the minimum amount that a person can be charged for a cash deposit over the counter? (2)

1.3.2 Anele deposits R3 250,00 over the counter at Standard Bank. Calculate the amount she will be charged. (4)

1.3.3 Anele was charged R75,10, calculate how much cash she deposited into her account. (5)

[38]

QUESTION 2

2.1

Great Hope is a private high school. In 2019 the school governing body prepared a budget for 2020 to be presented to the parents for their approval. TABLE 2 below shows the projected budget for 2020.

TABLE 2: PROJECTED BUDGET FOR 2020

INCOME (2020)		EXPENDITURE (2020)	
Item	Amount (R)	Item	Amount (R)
School Fees	1 237 500	Salaries (teachers, secretaries, ancillary staff)	1 705 852
Government Subsidy	854 639	Administration + Departmental Budgets	180 100
Donations	20 000	Municipality (electricity, water, refuse coll.)	122 659
Bad Debts Recovered	4 512	School Bus Insurance and Maintenance	37 857
Sundry income	2 300	Grounds Maintenance	115 203
Fund Raising	34 821	Text Books and Additional Stationery	738 044
Tuck Shop	15 017	Sports Department Budget	86 900
Stationery Fees	350 000	Sundry (miscellaneous)	42 194
Interest Received	1 948	Annual Prize Giving	20 000
		Staff Professional Development	15 000
		Staff End of Year Function	10 000
		Computers Maintenance and Upgrade	36 500
		Capital Expense	
		Total Expenditure	3 110 309
Total Income	2 520 737	Profit/Loss	-589 572

Use the information TABLE 2 above to answer the questions that follow.

- 2.1.1 Define the term “*surplus*” in this context. (2)
- 2.1.2 Calculate the number of learners to be enrolled in 2020 if the school governing body wants a 10% increase in the 2019 fees, which was R1 500 per month. (4)
- 2.1.3 Explain the meaning of the negative sign (-) in the Profit/Loss amount. (2)
- 2.1.4 One parent in the Annual General Meeting (AGM) made a proposal that the fees for 2020 be increased to R2 500 to offset the deficit of R589 572. Verify with calculations, whether this proposal is valid. (4)
- 2.1.5 The school needs to buy a 16 Seater Quantum minibus for R412 900. The parents agreed to add this amount as a capital expense. Calculate the new deficit when parents agree to a fees increase of R2 500. (3)
- 2.1.6 Suggest ONE way of raising the minibus shortfall of R364 972 without further increasing school fees. (2)

- 2.2 The Great Hope High School SGB Fundraising Committee decided to have a fundraising supper at the end of each month to try and raise R364 972 shortfall for the minibus. The school agreed to charge the committee R150 for using the school kitchen to prepare the food for sale. This amount is also used to pay for electricity. The committee estimated that it will cost R50 to prepare a plate of food including a glass of juice. Each meal will be sold for R100, including juice.

- 2.2.1 The formula for total cost is **Total Cost** = **R150** + **R50n**, where **n** is the total number of plates of food.

Write down the formula for total income.

$$\text{Total Income} = \dots \quad (2)$$

- 2.2.2 The fundraising committee started their fundraising in January, and claim that the total amount the committee will be able to raise by the end of December 2020 will be more than R120 000 if an average of 200 meals are sold every month. Use calculations to verify the fundraising committee's claim.

You may use the formula: **Profit** = **Total Income** – **Total Cost**. (7)

- 2.2.3 Use calculations to show that it will take the committee 37 months to raise the minibus shortfall of R364 972. (3)

[29]

QUESTION 3

Nelson who lives in Umhlathuze District Municipality uses the table below to determine residential Electricity consumption charges.

TABLE 3: RESIDENTIAL ELECTRICITY CONSUMPTION CHARGES

Block	Range (kWh)	Charge/kWh (Excl. VAT)	Charge/kWh (Incl. VAT)
1	0 – 50	0,7298	0,8393
2	51 – 350	0,9373	1,0779
3	351 – 600	1,3349	1,5351
4	601 – 1 500	1,3961	1,6055
5	>1 500	1,5931	1,8321

Source: [www.umhlathuze.gov.za]

NOTE: VAT is 15%.

Use the information above to answer the questions that follow.

- 3.1 Explain the term “tariff”. (2)
- 3.2 Show how the tariff rate of R0,8393 per kWh was calculated. (2)
- 3.3 Nelson used 278 kWh of electricity. Calculate what he was charged excluding VAT. (3)
- 3.4 End of January 2020 Nelson paid R781,96 including VAT. Calculate the amount of electricity consumed. (7)

3.5 Why did Eskom introduce the inclined block tariff (IBT) or sliding scale system for domestic electricity charges? (2)

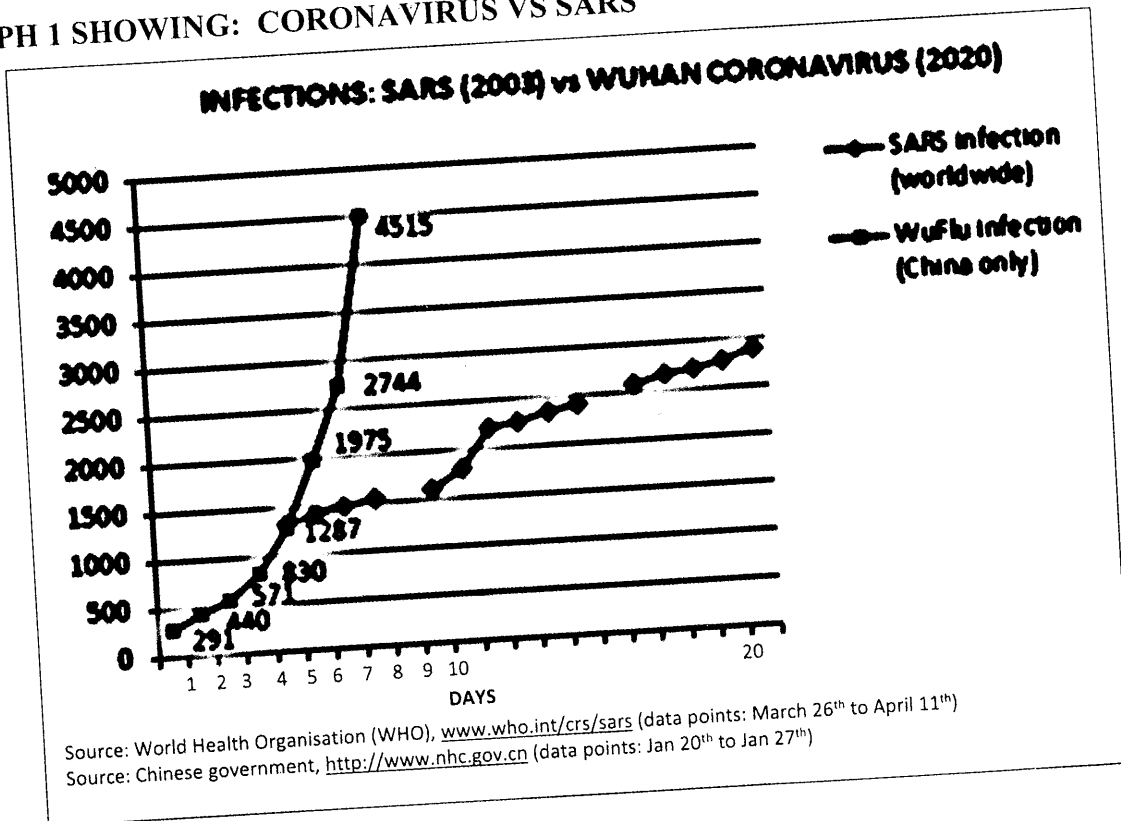
3.6 Use the tariff rates (including VAT) and sketch the stepped graph representing uMhlathuze Municipality residential electricity charge tariffs on the ANSWER SHEET provided. (5)
[21]

QUESTION 4

4.1 Coronavirus is a large family of viruses that cause illness ranging from the common cold to more severe diseases. Coronavirus infections seem to be sky rocketing at an alarming rate. The graph below compares the coronavirus infection rate (2020) with the SARS (a coronavirus that broke out in wet market) infection rate (2003). Both viruses originated in China.

Source: <https://www.who.int>health-topics>

GRAPH 1 SHOWING: CORONAVIRUS VS SARS



Use the graph above to answer the following questions.

4.1.1 What type of relationship is presented by GRAPH 1 above? Write down ONLY the letter of the correct relationship.

A: constant ratio relationship.

B: combination of relationship.

C: relationship for which there is no obvious patterns or for which the relationships arise out of engagement with a problem in context. (2)

Please Turn Over

- 4.1.2 Which graph represents data from the World Health Organisation? (2)
- 4.1.3 Calculate the percentage increase for WuFlu for the first 8 days, to ONE decimal place.

You may use the formula:

$$\text{Percentage increase} = \frac{\text{Day 8 infections} - \text{Day 1 infections}}{\text{Day 1 infections}} \times 100\%$$

- 4.1.4 Give ONE possible reason why there are gaps on the graph for SARS virus infection. (4)
- 4.1.5 Comparing the steepness of the two graphs, what conclusion can you draw about the infection rates of the two viruses? (2)
- [12]

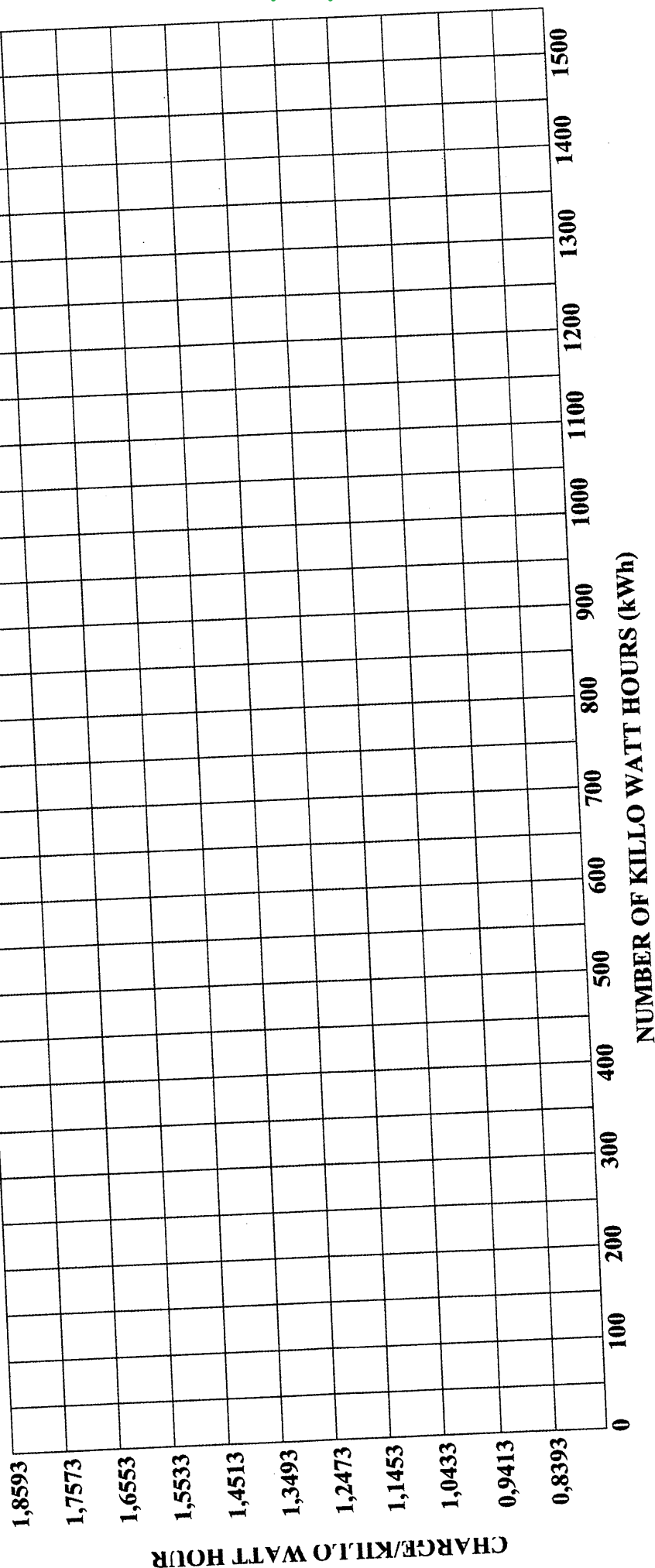
TOTAL: 100

ANSWER SHEET

NAME: _____ GRADE: _____

QUESTION 3.6

UMHLATHUZE RESIDENTIAL ELECTRICITY TARIFFS





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ADDENDUM

MARCH 2020

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This addendum consists of 2 pages.

ADDENDUM

ANNEXURE A

Question 1.1

RECIPE FOR CHICAGO STYLE REGULAR PIZZA	
BASIC PIZZA DOUGH $3\frac{1}{2}$ cups all purpose flour $\frac{1}{4}$ cup cornmeal 1 package ($\frac{1}{4}$ ounce) quick rice yeast $1\frac{1}{2}$ teaspoons sugar $\frac{1}{2}$ teaspoon salt 1 cup water $\frac{1}{3}$ cup olive oil	TOPPINGS 6 cups shredded part skim mozzarella cheese 1 can (28 ounces) decided tomatoes, well drained 1 can (8 ounces) tomato sauce 1 can (6 ounces) tomato paste $\frac{1}{2}$ teaspoon salt $\frac{1}{4}$ teaspoon each (garlic powder, dried oregano, dried basil and pepper) 1 pound bulk Italian sausage, cooked and crumbled 48 slices pepperoni $\frac{1}{2}$ pound sliced fresh mushrooms $\frac{1}{4}$ cup grated Parmesan cheese
CONVERSIONS 1 pound = 453,59 grams 1 ounce = 28,35 grams	CONVERSION FACTORS 1 cup (c) = 250ml = 17tbsp = 50tsp 1 cup (all purpose flour) = 150g 1 tablespoon (tbsp) = 15ml = 3tsp 1 teaspoon (tsp) = 5ml = $\frac{1}{3}$ tbsp
PREPARATION TIME AND BAKING TIME Preparation + Rising: 20 minutes Baking: 40 minutes N.B: THE RECIPE MAKES 2 REGULAR CHICAGO-STYLE DEEP DISH PIZZAS	



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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/Comment
D	Correct definition
SF	Substitution in formula
O	Opinion
J	Justification
P	Penalty e.g. for no units, incorrect rounding, etc
R	Rounding off / Reason

This marking guideline consist of 7 pages.

QUESTION 1			
Q	Solution	Explanation	T&L
1.1.1	$\text{Number of millilitres} = \frac{1}{4}(5 + 5 + 5 + 5) \checkmark M$ $= 5ml \checkmark A$	1M multiplying 20 by 1/4 1A correct answer (2)	M L1
1.1.2	$\frac{1}{2} \text{ pound for 2 pizzas}$ $50 \text{ pizzas} = \frac{25}{2} \text{ pounds} \checkmark M$ $= 12,5 \checkmark A$	1M for dividing 25 by 2 1A correct answer (2)	M L1
1.1.3	$50 \text{ pizzas: } 3,5 \times 25 = 87,5 \text{ pounds} \checkmark M$ $= \frac{87,5 \times 453,59 \checkmark M}{1\,000 \checkmark M}$ $= 39,69 \text{ kg} \checkmark C$	1M multiplying 3,5 by 25 1M multiplying by 453,59 1M for dividing by 1000 1C correct conversion (4)	M L2
1.1.4	$\text{Temperature} = (450 - 32) \div 1,8 \checkmark SF$ $= 232,22^\circ C \checkmark C$ $= 232^\circ C \checkmark R$	1SF correct substitution 1CA correct answer 1R Correct rounding (3)	M L2
1.1.5	$\text{Times trays will put in the oven} = 50 \div 4 \checkmark M$ $= 13 \checkmark R$ $\text{Total preparation + baking time} = 13 \times 47 \checkmark M$ $= 611 \text{ min} \checkmark A$ $611 \div 60 = 10\text{hrs } 11 \text{ minutes} \checkmark C$ $\text{Finishing time} = 7:15 + 10\text{hrs } 11 \text{ min} \checkmark M$ $= 17:26 \text{ OR } 5:26 \text{ pm} \checkmark CA$	1M dividing by 4 1R rounding off 1M multiplying 13 by 47 1A correct answer 1C correct conversion 1M addition 1CA correct time (7)	M L4 2
1.2.1	Net salary is the amount Anele received after major deductions. $\checkmark \checkmark D$	2D correct definition (2)	F L1
1.2.2	$C = 008 \checkmark \checkmark RT$	2RT correct employment number (2)	F L1

Q	Solution	Explanation	T&L
1.2.3	$A = 7,5\% \text{ of R5 000} \checkmark M$ $= R375,00 \checkmark A$ $B = R50,00 + R375,00$ $= R425,00 \checkmark A$ $C = R5 000 - R425 \checkmark M$ $= R4 575 \checkmark A$	1M multiply by 7,5% 1A the correct value of A 1A correct value of B 1M subtracting 425 from 5000 1A correct value of D (5)	F L2
1.3.1	$R43,00 \checkmark \checkmark A$	2A correct answer (2)	F L1
1.3.2	$R3 250 \div R1,85 \checkmark M = 32,5$ $\approx 33 \checkmark R$ Charge = $R8,50 + R1,85(33) \checkmark M$ $= R69,55 \checkmark CA$	1M for dividing by R1,85 1R for rounding off 32,5 1M multiplying by 33 1CA correct answer/accuracy (4)	F L2
1.3.3	$R75,10 - R8,50 \checkmark M$ $= 66,60 \div 1,85 \checkmark M$ $= 36 \checkmark A \times 100 \checkmark M$ $= R3 600 \checkmark CA$	1M subtracting R8,50 from R75,10 1M Diving by 1,85 1A correct answer 1M Multiplying by 100 1CA correct answer (5)	F L3
			[38]

QUESTION 2

2.1.1	The amount of money left over when all payment have been made. $\checkmark \checkmark D$	2D Correct definition (2)	F L1
2.1.2	New fees = $110\% \times R1 500 \checkmark M$ $= R1 650 \checkmark A$ Expected number of learners = $\frac{R1 237 500}{R1 650 \checkmark M}$ $= 750 \checkmark CA$	1M multiplying by 110% 1A for the new fees 1M dividing by 1 650 1CA correct answer/accuracy (4)	F L3
2.1.3	deficit or loss $\checkmark \checkmark D$	2D correct definition (2)	F L1
2.1.4	$(R2 500 - R1 650 \checkmark M = R 850)$ Total Income $R2 520 737 + R850(750) \checkmark M$ $= R3 158 237 \checkmark A$ $R3 158 237 > R3 110 309$ The parent's proposal is correct. $\checkmark O$	1M subtracting 1650 from 2500 1M multiplying 850 by 750 1A answer 1O correct verification (4)	F L4

Q	Solution	Explanation	T&L
2.1.5	Total Expenditure = R3 110 309 + R412 900✓M = R3 523 209✓A Deficit = R364 972✓A	1M addition 1A total expenditure 1A correct answer (3)	F L2
2.1.6	Asking for donations from well wishers. ✓✓0 OR More fundraising activities by the SGB and learners. ✓✓0	2O any good suggestion 2O any good suggestion (2)	F L4
2.2.1	Total Income = R100n✓✓A	2A for the correct formula. (2)	F L2

2.2.2	Total Cost = R50 × 200 × 12✓M = R120 000✓A Total Income = R100 × 200 × 12✓M = R240 000✓A Profit = R240 000 – R120 000✓M = R120 000✓CA Claim is not true. ✓0	1M multiplying 50 by 200 by 12 1A total cost 1M multiplying 100 by 200 by 12 1A for total income 1M for the difference 1CA answer/accuracy 1O correct conclusion (7)	F L4
2.3.3	Profit/month = R10 000✓M Number of months = R364 972 ÷ R10 000✓M = 36,5✓A ≈ 37 months	1M for R10 000 1M dividing 364 972 by 10 000 1A correct answer (3)	F L2
			[29]

QUESTION 3 [21 MARKS]			
3.1	It is the rate of charge per kWh. ✓✓D	2D correct definition (2)	F L1
3.2	Rate including VAT = R0,7298 × 1,15✓M = R0,8393✓A	1M multiplying by 1,15 1A answer (2)	F L2 F S2
3.3	Charge = 50(R0,7298)✓M + 228(R0,9373)✓M = R250,19✓CA	1M for multiplying 50 by 0,7298 1M for multiplying 228 by 0,9373 1CA Correct answer (3)	F L2

Q	Solution	Explanation	T&L
3.4	$50(R0,8393) + 300(R1,0779) \checkmark M$ $250(R1,5351 \checkmark M)$ $= R749,11$ $R781,96 - R749,11 = R32,85 \checkmark A$ Usage in Block 4 = $\frac{R32,85}{R1,6055}$ $= 20,46 \text{ kWh} \checkmark CA$ Total usage = $50 + 300 + 250 + 20,46 \checkmark M$ $= 620,46 \text{ kWh} \checkmark A$	1M for multiplying by 300 1M for multiplying by 250 1A Correct answer 1M dividing 32,85 by 1,6055 1CA answer/accuracy 1M adding correct values 1A correct answer (7)	F L3
3.5	To discourage people from reckless or careless use of electricity. The greater the usage, the more the consumer pays. $\checkmark \checkmark O$	1O correct reason (2)	F L4
3.6	Graph sheet. $\checkmark \checkmark \checkmark \checkmark \checkmark A$	1A for each correct line segment (5)	F L2
[21]			

QUESTION 4[12 MARKS]

Q	Solution	Explanation	T&L
4.2.1	(c) $\checkmark A$ because values do not increase at a constant ratio or constant rate. $\checkmark J$	1A for correct answer 1J correct reason (2)	P&R L4
4.2.2	SARS infection graph. $\checkmark \checkmark A$	2A for correct answer (2)	P&R L1
4.2.3	Percentage Increase = $\frac{4\,515 - 291 \checkmark SF}{291 \checkmark M} \times 100\%$ $= 1\,451,55\% \checkmark A$ $= 1\,451.6\% \checkmark R$	1SF correct substitution 1M dividing by 291 1A correct answer 1R correct rounding (4)	P&R L2
4.2.4	Information not reported or data not available. $\checkmark \checkmark J$	2J correct reason/justification (2)	P&R L4
4.2.5	Coronavirus infection rate is very high compared to the infection rate by SARS. $\checkmark \checkmark RG$	2RG correct reading from graph (2)	P&R L4
[12]			

TOTAL: 100

MEMO – QUESTION 3.6