KWAZULU-NATAL PROVINCE
EDUCATION
REPUBLIC OF SOUTH AFRICA

NATIONAL SENIOR CERTIFICATE

GRADE 12

MATHEMATICAL LITERACY P1

COMMON TEST

JUNE 2023

MARKS: 100

TIME: 2 hours

This question paper consists of 11 pages.

INSTRUCTIONS AND INFORMATION

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. Diagrams are NOT necessarily drawn to scale, unless stated otherwise.
9. Write neatly and legibly.

QUESTION 1

1.1 Mrs. Nkosi wants to buy a Chest Freezer on hire-purchase. She saw an advert at OK Furniture.

HIRE PURCHASE TERMS	CASH PRICE: R6 299,00
Deposit: 10 % of the Cash Price	
Monthly Instalment: R361,99	
Contract Terms: 30 Months	
Initiation Fee: R474,96	
Credit Life Insurance: R443,70	
Interest Rate: 24,75 %	
Interest Value: R2 201,80	
Contractual Total: R10 859,70	

[Adapted from www.okfurniture.co.za**]**

Use the information above to answer the questions that follow.

1.1.1 Define the term hire *purchase* in the given context. (2)

1.1.2 Write down the contract terms in years. (2)

1.1.3 Calculate the deposit to be paid. (2)

1.1.4 Determine the outstanding balance after paying the deposit. (2)

1.1.5 Show how the contractual total (R10 859,70) was determined. (2)

1.2 A survey was conducted in one of the high schools in KZN about the types of movies learners prefer. The table below shows the type of movies that learners prefer.

TABLE 1: TYPES OF MOVIES PREFERRED BY LEARNERS

Type of Movies (A)	**Number of Learners (B)**
Action	238
Horror	90
Romance	452
Drama	67
Science Fiction	31
Thriller	9
Comedy	105
Soap	208
Crime	50

Use TABLE 1 above to answer the questions that follow.

1.2.1 State the difference between categorical and numerical data. (2)

1.2.2 Classify each of the columns above **(A** and **B)** as categorical or numerical. (2)

1.2.3 Arrange the type of movie preferences from the most popular to the least popular. (2)

1.2.4 Write down the movie type that can be used to determine the median. (2)

1.2.5 Calculate the total number of learners who took part in the survey. (2)

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QUESTION 2

2.1 Sandile, a self-employed tree feller (tree cutter), has to pay income tax directly to SARS every year. He invests 25% of all the money he earns every month in a savings account that pays 8,3% interest per annum compounded monthly to raise enough money for income tax.

TABLE 2 below shows Sandile's month-by-month earnings with missing information.

TABLE 2: SANDILE'S MONTH-BY-MONTH EARNINGS AND INTEREST

Month	Income	Opening Balance	Amount Saved	Interest Earned	Closing Balance
January	R8 976,00	R 0,00	R2 244,00	R15,52	R 2 259,52
February	R7 478,63	R 2 259,52	R1 869,66	R12,93	R 4 142,11
March	R9 021,51	R 4 142,11	R2 255,38	R15,60	R 6 413,09
April	R7 937,00	R 6 413,09	R1 984,25	R13,72	R 8 411,06
May	R6 825,73	R 8 411,06	R1 706,43	R11,80	R10 129,29
June	R5 204,99	**A**	R1 301,25	R 9,00	R11 439,54
July	R9 858,12	R11 439,54	R2 464,53	R17,05	R13 921,12
August	R9 904,03	R13 921,12	R2 476,01	R17,13	R16 414,26
September	R7 211,29	R16 414,26	R1 802,82	R12,47	R18 229,55
October	R8 771,64	R18 229,55	R2 192,91	R15,17	R20 437,63
November	R9 999,01	R20 437,63	R2 499,75	R17,29	R22 954,67
December	R4 365,47	R22 954,67	R1 091,37	**B**	**C**

[Adapted from Sandile's savings account]

NOTE: INTEREST IS EARNED ON AMOUNT SAVED

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

2.1.1 Define *closing balance* according to the given context. (2)

2.1.2 Calculate the monthly interest rate as a percentage, rounded off to 4 decimal places. (3)

2.1.3 Write down the value of **A** (opening balance for June). (2)

2.1.4 Sandile claims that the closing balance for December was **R1 098,92** more than the opening balance for December.

Calculate the missing values **B** and **C**, to verify his claim. (7)

2.2 Sandile's sister lives and works in Australia. She wants to send Sandile money to buy more machines for tree felling. Given below are Standard Bank currency exchange rates.

Standard Bank

FOREX OPENING INDICATION RATES FOR 26 April 2023 as at 16:00

Rates for amounts up to R 200 000

Closing rate history for date : 2023-04-26 16:00:34.035 Load

Country	Cur	Bank Buying T/T	Bank Buying Cheques	Bank Buying Foreign Notes	Bank Selling Cheques and T/T	Bank Selling Foreign Notes
QUOTATIONS ON BASIS RAND PER UNIT FOREIGN CURRENCY						
BRITSH POUND	GBP	22.6327	21.2081	22.6334	23.3485	23.3487
EURO	EUR	20.0661	18.0047	20.0661	20.7292	20.7295
UNITED STATES DOL	USD	18.2098	15.9193	18.2090	18.5743	18.5740
QUOTATIONS ON BASIS FOREIGN CURRENCY PER R1						
UAE DIRHAM	AED	.2045			.1949	
AUSTRALIAN DOLLAR	AUD	.0838	.0924	.0838	.0806	.0806
BRAZILLIAN REAL	BRL	.2784			.2729	
BOTSWANA PULA	BWP	.7504	.7987	.7504	.6886	.6886
CANADIAN DOLLAR	CAD	.0754	.0861	.0754	.0727	.0727
SWISS FRANC	CHF	.0491	.0603	.0491	.0472	.0472
CHINESE YUAN	CNY	.3841		.3841	.3697	.3697

[Adapted from www.standardbank.co.za]

Use the exchange rates above to answer the following questions.

2.2.1 Sandile's sister sends him Australian dollars, identify the rate the bank is going to use to give him South African rands. (2)

2.2.2 Sandile is expecting to get R5 970 if his sister sends him 500 AUD (Australian dollars). Verify with calculations whether or not his expectation will be met. (3)

2.2.3 Sandile is planning to visit his brother in America. Nedbank sells 1 USD for R18,8637 and charges a commission of 2,02% on the rands amount, with a minimum charge of R101,00.
Calculate the US dollars he will get from R20 000. (6)

2.3 Financial institutions use loan factor tables to help customers know what the monthly repayment on their bond will be. TABLE 3 below is a factor table from Cape Town Properties.

TABLE 3: CAPE TOWN PROPERTIES FACTOR TABLE

Interest %	Years					
	5	10	15	20	25	30
9,75	21,12	13,08	10,59	9,49	8,91	8,59
10,00	21,25	13,22	10,75	9,65	9,09	8,78
10,25	21,37	13,35	10,90	9,82	9,26	8,96
10,50	21,49	13,49	11,05	9,98	9,44	9,15
10,75	21,62	13,63	11,21	10,15	9,62	9,33
11,00	21,74	13,78	11,37	10,32	9,80	9,52
11,25	21,87	13,92	11,52	10,49	9,98	9,71
11,50	21,99	14,06	11,68	10,66	10,16	9,90
11,75	22,12	14,20	11,84	10,84	10,35	10,09
12,00	22,24	14,35	12,00	11,01	10,53	10,29

[Adapted from capetownproperty.blaauwberg.net]

Monthly Repayment = Loan Amount ÷ 1 000 × Loan Factor

Use TABLE 3 above to answer the following questions.

2.3.1 Calculate the monthly repayment on a home loan of R1 250 000 to be paid over a period of 30 years at 11,75% p.a interest. (2)

2.3.2 Mrs Fulcher bought a house for R1 250 000 in Cape Town and her monthly bond repayment is R12 612,50 for 30 years. She claims that the real cost of the loan is exactly R4 540 500.
Use calculations to verify her claim.

(4)

Real cost of loan = Monthly Repayment × Loan Period in Months

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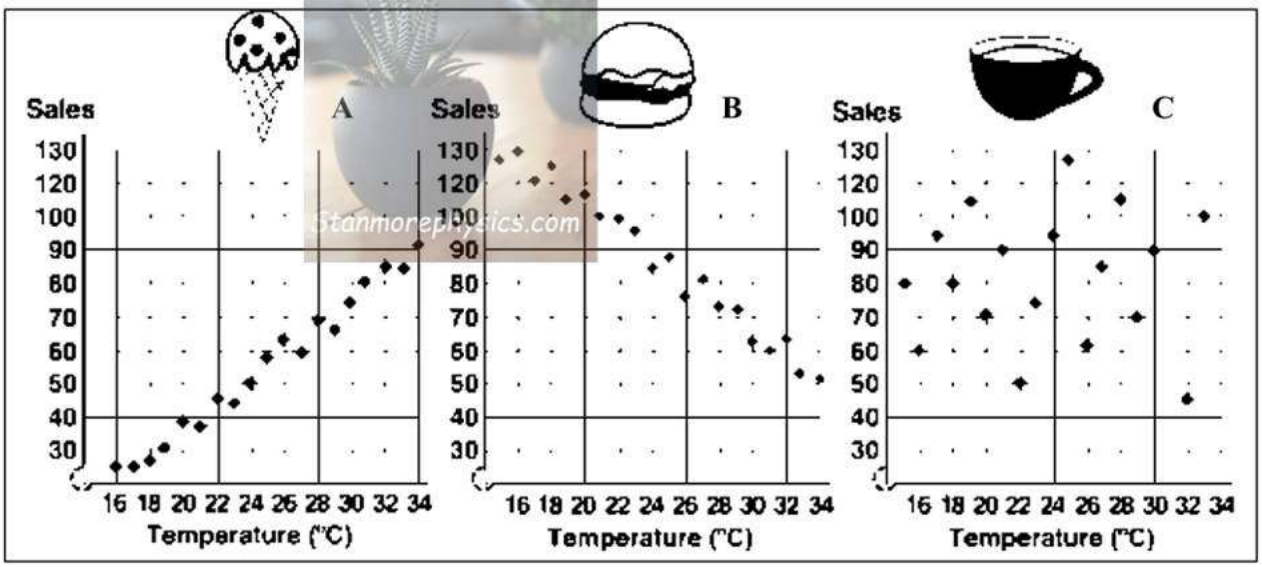
QUESTION 3

3.1 Eddie Kiosk management asked a group of Mathematical Literacy learners to draw graphs that will assist to determine if there is a relationship between daily temperatures and the sales of ice cream (A), burgers (B) and coffee (C). The graphs are shown below.



[Adapted from Eddie Kiosk]

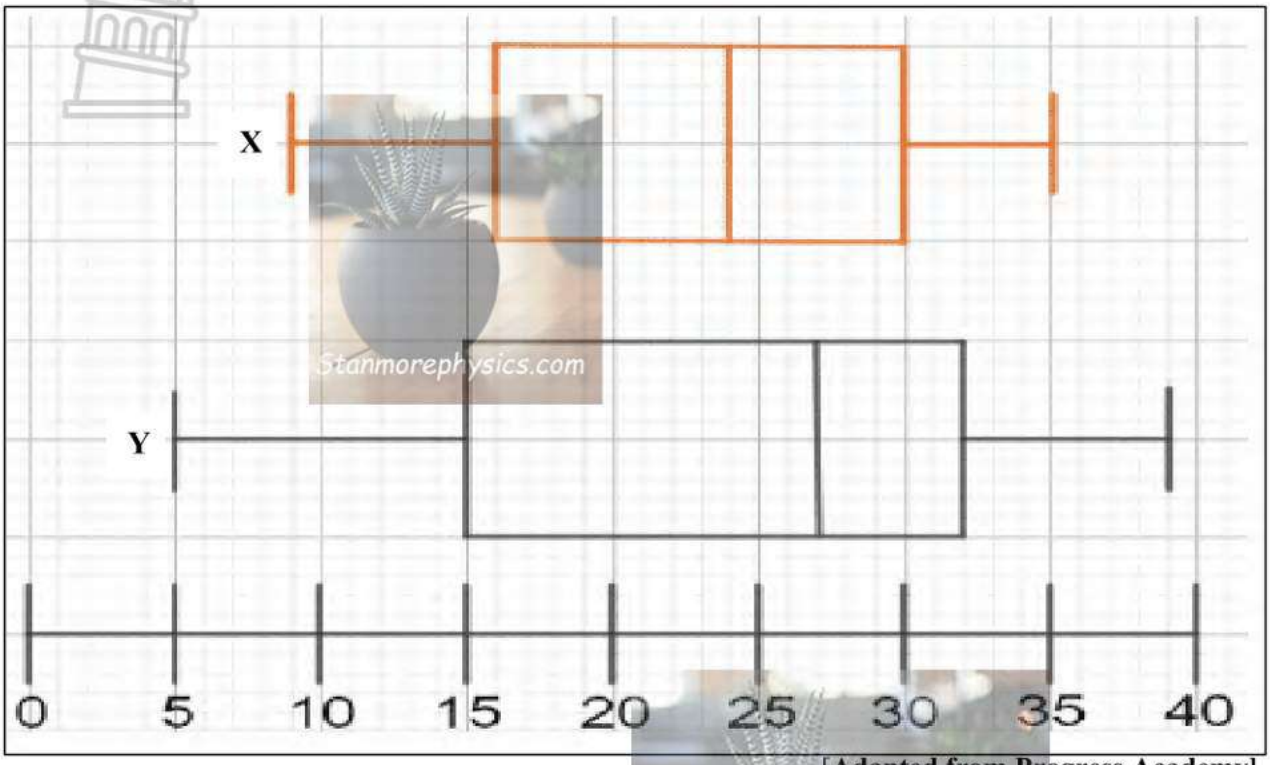
Use the graph and the information above to answer the questions that follow.

3.1.1 Name the type of graphs drawn above. (2)

3.1.2 Match each graph with the correct type of relationship (no correlation, positive correlation, negative correlation). Write the letter and type of correlation next to it. (3)

3.1.3 Based on the graphs above, what advice would you give to Eddie Kiosk management if the Kiosk would like to stock the product that is not weather dependent? (2)

3.2 The following box and whisker plots show the number of hours Grade 12 (X) and Grade 10 (Y) learners of Progress Academy spent watching TV in a given month.



[Adapted from Progress Academy]

Use the diagram and information above to answer the questions that follow.

3.2.1 Write down the median number of hours Grade 10 learners spent watching TV. (2)

3.2.2 Calculate the range for the number of hours Grade 12 learners spent watching TV. (2)

3.2.3 Find the inter quartile ranges for the two grades. (4)

3.2.4 By comparing the box and whisker plots, which grade do you think spent more time watching TV? (4)

3.2.5 128 Grade 10 learners took part in the survey. Calculate the number of learners who spent less than 32 hours watching TV. (3)

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QUESTION 4

4.1 The Zondi household gets its electricity supply from uMlalazi Municipality. Given below are the tariff rates for 2022/2023.

Block	Consumption (kWh)	Service Charge (R)	Rate (R) per kWh Excluding VAT
1.	0 - 50	446	2
2.	51 - 350	446	3
3.	351 - 600	446	3
4.	Greater than 600	446	3

[Adapted from www. umlalazi.gov.za]

N.B: Service charge includes 15% VAT.

Use the tariff rates to answer the questions that follow.

4.1.1 Calculate the percentage increase in the tariff rate for Block 2 from Block 1. (2)

4.1.2 The Zondi household used 283 kWh of electricity in March 2023. Calculate the total amount paid by the household including VAT. (5)

4.1.3 In February 2023, the household paid R1 209,83 for electricity including VAT. Calculate:

(a) Charge excluding VAT and Service Charge. (2)

(b) Total electricity consumption for February 2023. (6)

4.2 Given below are the 10 most downloaded apps (in million) worldwide in 2022 .

1	TikTok 672M	(672)	6	Telegram 310M	(310)
2	Instagram 548M	(548)	7	Subway Surfers 304M	(304)
3	WhatsApp 424M	(424)	8	Facebook 298M	(298)
4	CapCut 357M	(357)	9	Stumble Guys 254M	(254)
5	Snapchat 330M	(330)	10	Spotify 238M	(238)

[Extracted from www.verloop.io]

Use the information and the graph to answer the questions that follow.

4.2.1 Write down the app with the highest number of downloads from the data above. (2)

4.2.2 Determine the total number of people who downloaded the apps in 2022. (3)

4.2.3 Calculate the mean number (in full) of people downloading social media apps in 2022. (4)

4.2.4 If a person who downloaded an app in 2022 was chosen at random, calculate the probability (as a decimal fraction) that the person downloaded WhatsApp. (3)

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TOTAL MARKS [100]

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MARKING GUIDELINE

MARKS: 100

SYMBOL	EXPLANATION
M	Method
MA	Method with accuracy
CA	Consistent accuracy
A	Accuracy
C	Conversion
S	Simplification
RT/RG/RD/RM	Reading from a table/ graph/ diagram/map
SF	Correct substitution in a formula
O	Opinion/ reason/deduction/example/Explanation
J	Justification
R	Rounding off
F	deriving a formula
AO	Answer only full marks
P	Penalty e.g. for units, incorrect rounding off etc.
NPR	No penalty for rounding / units

This marking guideline consists of 7 pages.

QUESTION 1 [20 MARKS]: ANSWER ONLY FULL MARKS			
Ques	**Solution**	**Explanation**	**T & L**
1.1.1	It is an arrangement whereby Mrs Nkosi agrees to a contract to acquire the chest freezer by paying a deposit and then settle the outstanding balance over 30 monthly equal repayments. ✓✓A	2A correct answer (2)	F L1
1.1.2	$\text{No of years} = \frac{30}{12\checkmark MA}$ $= 2{,}5\checkmark A$	1MA dividing 30 by 12 1A answer **Accept two and half years** (2)	F L1
1.1.3	Deposit = R6 299,00 × 10%✓MA = R629,90✓A	1MA multiplying by 10% 1A answer (2)	F L1
1.1.4	Outstanding balance = R6 299,00 − R629,90✓MCA = R5 669,10✓CA **OR** Outstanding balance = R6 299,00 × 90%✓MA = R5 669,10✓A	**CA from 1.1.3** 1MCA subtracting deposit 1CA answer 1MA multiplying by 90% 1A answer (2)	F L1
1.1.5	✓RT ✓M Contractual total = 30 × R361,99 = R10 859,70	1RT for 30 1M multiplying by R361,99 (2)	F L1
1.2.1	Categorical data is descriptive or qualitative, as data is classified and organised into categories and Numerical data consists of quantities or numerical values. ✓✓A	2A correct explanation (2)	DH L1
1.2.2	**A**: categorical✓A **B**: numerical✓A	1A for categorical 1A for numerical (2)	DH L1
1.2.3	Romance, Action, Soap, Comedy, Horror, Drama, Crime, Science Fiction, Thriller✓✓A	2A correct answer (2)	DH L1
1.2.4	Horror✓✓CA	**CA from Q1.2.3** 2CA correct answer (2)	DH L1
1.2.5	Total number of learners = 1 250✓✓A	2A correct answer (2)	DH L1
		[20]	

QUESTION 2 [31 MARKS]			
2.1.1	It is the amount of money in Sandile's account at the end of each month. ✓✓A	2A correct definition (2)	F L1
2.1.2	Monthly interest rate $= \frac{8,3✓RT}{12✓M}$ $\approx 0,6917\%✓R$	1RT for 8,3 1M dividing by 12 1R Rounding (3)	F L2
2.1.3	**A** = R10 129,29✓✓RT	2RT correct amount (2)	F L1
2.1.4	**B** $= \frac{8,3}{12}\% \times$ R1 091,37✓M = R7,55✓A **C** = R22 954,67 + R1 091,37 + R7,55✓M = R24 053,59✓CA Difference = R24 053,59 − R22 954,67✓M = R1 098,92✓CA His claim is CORRECT✓O **OR** **B** $= \frac{8,3}{12}\% \times$ R1 091,37✓M = R7,55✓A **C** = R22 954,67 + R1 091,37 + R7,55✓M = R24 053,59✓CA Total of amount saved and interest earned = R1 091,37 + R7,55✓M = R1 098,92✓CA His claim is CORRECT✓O **OR** B $= \frac{8,3}{12}\% \times$ R1 091,37✓M = R7,55✓A Total of amount saved and interest earned = R1 091,37 + R7,55✓M = R1 098,92✓CA	1M multiplying by R1 091,37 1A correct interest **CA from B** 1M adding amounts 1CA closing balance **CA from C** 1M subtracting 1CA answer 1O opinion **OR** 1M multiplying by R1 091,37 1A correct interest **CA from B** 1M adding amounts 1CA closing balance **CA from C** 1M adding 1CA answer 1O opinion **OR** 1M multiplying by R1 091,37 1A correct interest 1M adding 1CA answer	F L4

	C = R22 954,67 + R1 098,92✓M = R24 053,59✓CA His claim is CORRECT✓O	1M adding amounts 1CA closing balance 1O opinion (7)	
2.2.1	R1 = 0,0838 AUD✓✓A	2A correct answer (2)	F L1
2.2.2	Amount = 500 AUD ÷ 0,0838✓M = R5 966,59✓CA His expectation will NOT be met. ✓O	**CA from 2.2.1** 1M dividing 500 by 0,0838 1CA correct answer 1O opinion (3)	F L4
2.2.3	Commission = 2,02% × R20 000✓M = R404,00✓A Amount to be exchanged = R20 000,00 − R404,00✓M = R19 596✓A US Dollars = R19 596 ÷ 18,8637✓M = $1 038,82✓CA	1M multiplying by 2,02% 1A correct answer 1M subtracting R404 from R20 000 1A correct answer 1M dividing R19 596 by 18,8637 1CA answer (6)	F L3
2.3.1	✓RT Monthly repayment = R1 250 000 ÷ 1 000 × 10,09 = R12 612,50✓A	1RT loan factor 1A correct answer (2)	F L2
2.3.2	Loan period = 360 months✓C Real Cost of Loan = R12 612,50 × 360✓SF = R4 540 500,00✓CA Her claim is valid. ✓O	1C converting to months 1SF for substitution 1CA answer 1O opinion (4)	F L4
		[31]	

QUESTION 3 [22 MARKS]			
3.1.1	Scatter plots✓✓A	2A correct answer (2)	DH L1
3.1.2	A: positive correlation✓A B: negative correlation✓A C: no correlation✓A	1A positive correlation 1A negative correlation 1A no correlation (3)	DH L2
3.1.3	It is better for the company to sell coffee because sales do not depend on weather. ✓✓O	2 O for reason (2)	DH L4
3.2.1	27✓✓RG	1RG correct reading (2)	DH L3
3.2.2	Range = 35 − 9✓M = 26✓A	1M subtracting 9 from 35 1A correct answer **AO** (2)	DH L2
3.2.3	Grade 12 IQR = 30 − 16✓M = 14✓CA Grade 10 IQR = 32 − 15✓M = 17✓CA	1M subtracting 16 from 30 1CA answer 1M subtracting 15 from 32 1CA answer (4)	DH L2
3.2.4	Grade 10✓A Greater median✓O Greater IQR✓O Greater maximum✓O	1A correct grade 1O greater median 1O greater IQR 1Ogreater maximum (4)	DH L4
3.2.5	Upper Quartile = 75%✓M Number of learners = 75% × 128✓M = 96✓A	1M for 75% 1M multiplying 128 by 75% 1A answer (3)	DH L3
		[22]	

QUESTION 4 [27 MARKS]			
4.1.1	✓M Percentage increase $= \frac{3-2}{2} \times 100\%$ $= 50\%$✓A	1M for subtracting correct values 1A correct answer (2)	F L2
4.1.2	$283\ \text{kWh} = 50\ \text{kWh} + 233\ \text{kWh}$ Cost excluding VAT $= (50 \times \text{R2})$✓M $+ (233 \times \text{R3})$✓M $= \text{R799,00}$✓S Cost including VAT $= \text{R446,00} + (115\% \times \text{R799,00})$✓M $= \text{R1 364,85}$✓CA **OR** Cost excluding VAT $= (50 \times \text{R2}) + (233 \times \text{R3})$✓M $= \text{R799,00}$✓S VAT $= 15\% \times \text{R799,00}$ $= \text{R119,85}$✓A Cost including VAT $= \text{R446,00} + \text{R799,00} + \text{R119,85}$✓M $= \text{R1 364,85}$✓CA	1M multiplying 50 by 2 1M multiplying 233 by R3 1S simplifying 1M adding R446 and multiplying by 115% 1CA answer **OR** 1M multiplying by R2 and R3 1S simplifying 1A for VAT 1M adding VAT and R446 to R799 1CA answer (5)	F L3
4.1.3 a	Charge excluding VAT $= (\text{R1 209,83} - \text{R446,00}) \div 1{,}15$✓M $= \text{R664,20}$✓A **OR** Charge excluding VAT $= (\text{R1 209,83} - \text{R446,00}) \times 100 \div 115$✓M $= \text{R664,20}$✓A	1M subtracting R446 & dividing by 1,15 1A correct answer **OR** 1M subtracting R446 & dividing by 115 1A correct answer	

4.1.3b	Block 1 Cost: R2 × 50 = R100 ✓A Block 2 usage = $\frac{\text{R664,20} - \text{R100}\checkmark\text{M}}{3\checkmark\text{M}}$ = 188,07 kWh✓CA Total usage = 50 kWh + 188,07 kWh✓M = 238,07 kWh✓CA **OR** 50(R2) + kWh(R3) = R664,20✓M $R3 \times$ kWh = R664,20 − R100✓M = R564,20 ÷ R3✓M kWh = 188,07 ✓S Total usage = 50 kWh + 188,07 kWh✓M = 238,07 kWh✓CA	1A Correct cost for block 1 1M subtracting R100 from R664,20 1M dividing by 3 1CA answer 1M adding kWh 1CA answer **OR** 1M equation 1M subtracting R100 1M dividing by 3 1S simplifying 1M Adding correct values 1CA answer (6)	F L3
4.2.1	Tik Tok . ✓✓A	1A correct answer (2)	DH L2
4.2.2	✓M Total = 672M + 548M + 424M + 357M + 330M + 310M + 304M + 298M + 254M + 238M✓M = 3 735 million✓A	1M for a set of 5 figures 1M for the second set 1A answer (3)	DH L2
4.2.3	Mean = $\frac{3\ 735\ \text{million}\checkmark\text{MCA}}{10\checkmark\text{A}}$ = 373,5 million✓CA = 373 500 000✓C	**CA from 4.2.2** 1MCA for numerator 1A denominator 1CA answer 1C conversion (4)	DH L2
4.2.4	P(WhatsApp) = $\frac{424\text{M}\checkmark\text{A}}{3\ 735\text{M}\checkmark\text{MCA}}$ ≈ 0,11✓CA	**CA from 4.2.2** 1A for 424 million 1MCA for dividing by 3 735 million 1CA answer **NPR** (3)	DH L2
		[27]	
		TOTAL MARKS: 100]	