



education

Department:
Education
PROVINCE OF KWAZULU-NATAL

NATIONAL SENIOR CERTIFICATE

GRADE 12

MATHEMATICAL LITERACY

COMMON TEST

MARKING GUIDELINE

MARCH 2020

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 [31 MARKS]			
Ques	Solution	Explanation	T&L
1.1.1	25 days ✓✓RT	2 RT reading from the table (2)	M L1
1.1.2	Prep. Time: 06:00 + 20 minutes ✓M = 06:20 + 1 hour 50 minutes ✓M Finishing time = 08:10 ✓CA	1M adding 20 minutes 1M adding cooking time 1CA time AO (3)	M L1
1.1.3	Return trip = R15,00 × 2 ✓M = R30,00 ✓A Monthly fare = R30,00 × 25 days ✓M = R750,00 ✓CA	1M multiplying by 2 1A fare 1M multiplication 1CA monthly fare (4)	M L1
1.1.4	Profit = R13,00 – R7,00 ✓M = R6,00 ✓A	1M subtraction 1A profit AO (2)	F L1
1.1.5	Break-even is when there is no profit and no loss. ✓✓E OR Break-even is when the cost is equal to the income. ✓✓E	2E explanation OR 2E explanation (2)	F L1
1.1.6	✓CA Cost = R30,00 + R7,00 × number of raw mealies ✓CA	1CA fixed taxi fare 1CA formula (2)	F L1
1.1.7	Income = R13,00 × number of raw mealies sold. ✓✓F	2F formula (2)	F L1
1.1.8	Cost = R30,00 +(R7,00 × number of raw mealies) = R30,00 + R7,00 × 70 ✓CA = R520,00 ✓CA Income = R13,00 × number of raw mealies = R13,00 × 40 ✓MA = R520,00 ✓A Profit = R520,00 – R520,00 ✓M = R0,00 ✓CA	1CA substitution 1CA cost 1MA multiplying 40 by R13,00 1A income 1M subtraction 1CA no profit Accept if profit is not calculated award 2 marks for no profit (6)	F L2
1.2.1	Difference = 11:49 – 5:44 ✓MA = 6 hours 05 minutes ✓A OR 5:44 – 6:44 (1 hour) 6:44 – 7:44 (1 hour) 7:44 – 8:44 (1 hour) 8:44 – 9:44 (1 hour) ✓MA 9:44 – 10:44 (1 hour) 10:44 – 11:44 (1 hour) 11:44 = 11:49 (5 minutes) Difference : 6 hours 05 minutes ✓A	1MA subtraction 1A difference OR 1MA adding 1A difference AO (2)	M L2

1.2.2	Time of low tide 12:18 ✓✓A	2A time in 24-hour format (2)	M L2
1.2.3	<p>Height = 1,91 m ✓M 1 foot = 30,48 cm ÷ 100 ✓C 1 ft = 0,3048 m ft = 1,91 m $\text{ft} = \frac{1,91\text{m}}{0,3048\text{ m}} \checkmark\text{M}$ $= 6,266\dots\dots$ $\approx 6,27\text{ ft} \checkmark\text{CA}$</p> <p style="text-align: center;">OR</p> <p>Height = 1,91 m ✓M 1 foot = 30,48 cm $1,91\text{ m} \times 100 \checkmark\text{C}$ $= 191\text{ cm}$ $\text{ft} = \frac{191\text{cm}}{30,48\text{ cm}} \checkmark\text{M}$ $= 6,266\dots\dots$ $\approx 6,27\text{ ft} \checkmark\text{CA}$</p>	<p>1M identifying correct height 1C converting cm to m</p> <p>1M dividing by 0,3048</p> <p>1CA height in ft</p> <p style="text-align: center;">OR</p> <p>1M identifying correct height 1C converting m to cm</p> <p>1M dividing by 30,48</p> <p>1CA height in ft (4)</p>	M L2
[31]			

QUESTION 2 [19 MARKS]			
2.1.1	No. of kWh in Block 1: 50 kWh – 0 kWh = 50 kWh ✓A No. of kWh in Block 2: 350 kWh – 50 kWh = 300 kWh ✓A	1A correct no. of kWh 1A correct no. of kWh AO Accept 350 kWh (2)	F L2
2.1.2	Ratio 50 : 300 ✓MA 1 : 6 ✓S	CA from 2.1.1 1MA ratio in correct order 1S simplification AO (2)	F L1
2.1.3 (a)	Amount excluding VAT = $\frac{R600,00}{1,15}$ ✓M = R521,74 VAT amount = R600,00 – R521,74 ✓M = R78,26 ✓A OR VAT amount = $\frac{15}{115} \times R600,00$ ✓✓M = R78,26 ✓A OR Amount excluding VAT = $\frac{100}{115} \times R600,00$ ✓M = R521,74 VAT amount = R600,00 – R521,74 ✓M = R78,26 ✓A	1M dividing by 1,15 1M subtraction 1A VAT amount OR 2M dividing & multiplying 1A VAT amount OR 1M multiplying by $\frac{100}{115}$ 1M subtraction 1A VAT amount (3)	F L2
(b)	No. of kWh = R521,74 – R48,465 (50 kWh) ✓C R473,275 – R350,64 (300 kWh) ✓M $\frac{R122,635}{1,2492}$ ✓M = 98,1708..... ≈ 98,17 ✓CA Total no. of kWh = 50 + 300 + 98,17 ✓M = 448,17 ✓CA	1C converting cents to rands 1M subtraction 1M dividing by rate in block 3 1CA number of kWh 1M adding 1CA no. of kWh (6)	F L2

<p>2.1.4</p>	<p>Amount = $(50 \text{ kWh} \times \frac{104,68}{100}) + (300 \text{ kWh} \times \frac{126,53}{100})$ ✓C $+ (\overset{\check{A}}{153 \text{ kWh}} \times \frac{134,91}{100})$ $= R52,34 + R379,59 + R206,4123$ ✓S $= R638,3423$ ✓A</p> <p>Amount including VAT = $R638,3423 \times 1,15$ ✓M $= R734,09$ ✓CA</p> <p style="text-align: center;">OR</p> <p>Amount = $(50 \text{ kWh} \times \frac{104,68}{100}) + (300 \text{ kWh} \times \frac{126,53}{100})$ ✓C $+ (\overset{\check{A}}{153 \text{ kWh}} \times \frac{134,91}{100})$ $= R52,34 + R379,59 + R206,4123$ ✓S $= R638,3423$ ✓A</p> <p>Amount including VAT = $R638,3423 + (15\% \times R638,3423)$ ✓M $= R734,09$ ✓CA</p> <p style="text-align: center;">OR</p> <p>Amount = $(50 \text{ kWh} \times \frac{104,68}{100}) + (300 \text{ kWh} \times \frac{126,53}{100})$ ✓C $+ (\overset{\check{A}}{153 \text{ kWh}} \times \frac{134,91}{100})$ $= R52,34 + R379,59 + R206,4123$ ✓S $= R638,3423$ ✓A</p> <p>VAT = $15\% \times R638,3423$ $= R95,75$ Amount including VAT = $R638,3423 + R95,75$ ✓M $= R734,09$ ✓CA</p>	<p>1C converting cents to rands</p> <p>1A no. of kWh in block 3</p> <p>1S simplification 1A amount 1M multiplying by 1,15 1CA amount</p> <p style="text-align: center;">OR</p> <p>1C converting cents to rands</p> <p>1A no. of kWh in block 3</p> <p>1S simplification 1A amount</p> <p>1M adding 15% 1CA amount</p> <p style="text-align: center;">OR</p> <p>1C converting cents to rands</p> <p>1A no. of kWh in block 3</p> <p>1S simplification 1A amount</p> <p>1M adding VAT</p> <p>1CA amount [maximum 3 marks if used the wrong column R678,41]</p>	<p>F L2</p> <p style="text-align: right;">(6)</p>
[19]			

QUESTION 3 [27 MARKS]

Ques	Solution	Explanation	T & L
3.1.1	Annual Taxable income = R 32 500 × 12 ✓MA = R390 000 ✓A	1MA multiplying by 12 1A annual taxable income (2)	F L2
3.1.2	Total med aid tax credit= R310+R310+R209+R209+R209✓MA = R 1247 = R 1247×12✓MA = R 14 964✓CA	1MA adding correct values 1MA multiplying by 12 1CA medical aid tax credit (3)	F L3
3.1.3	✓A Monthly tax = R63 853 + 0,31(R390 000 – R305 850)✓SF = R89 939,50✓S = R89 939,50 – (R14 220) ✓MA = R75 719,50✓CA = R75 719,50 – (R14 964) ✓CA = R60 755,50 = R60 755,50 ÷ 12 ✓MA = R5062,96 ✓CA	1A correct tax bracket 1SF correct substitution 1S simplification 1MA subtracting rebate 1CA answer 1CA subtracting medical credit from Q3.1.2 1MA dividing by 12 1CA monthly tax (8)	F L3
3.2.1	Difference in price = R21,50 – R8 ✓RG = R13,50✓A Capitec bank fee rates are lower than Absa. ✓O	1RG subtracting correct values 1A difference in price 1O opinion (3)	F L4
3.2.2	Fixed bank fee = R500÷100 ✓MA = 5 = 5 × R1.90✓MA = R9.50 = R19,50 – 9.50✓CA = R10✓CA	1MA dividing by 100 1MA multiplying by R1,90 1CA subtracting answer 1CA fixed bank fee (4)	F L3
3.2.3	✓1RG % Change = $\frac{8,00 - 8,75}{8,75} \times 100$ ✓MA = – 8,57% ✓CA	1RG and subtraction 1MA dividing by 8,75 1CA % decrease (3)	F L2
3.2.4	Withdrawal fee has a fixed cost of R11,50 therefore method is incorrect✓O Withdrawal fee = R2000 ÷ 100✓MA = 20 = R11,50 + (R2×20) ✓SF = R51,50✓A	1O opinion 1MA dividing by 100 1SF substitution into formula 1A withdrawal fee (4)	F L4
			[27]

QUESTION 4 [23 MARKS]			
4.1.1	Total number of individuals affected = $598\,948 + 97\,938$ ✓RT = $696\,886$ ✓A	1RT correct values 1A total (2)	DH L2
4.1.2	Mean = $2\,095\,571 + 1\,894\,495 + 1\,762\,131 + 1\,844\,367 + 2\,343\,507$ ✓MA = $9\,940\,071$ = $9\,940\,071 \div 5$ ✓MA = $1\,988\,014,20$ $\approx 1\,988\,014$ ✓CA	1MA adding correct values 1MA dividing by 5 1CA mean (3)	DH L2
4.1.3	Range = Max - Min ✓MA $46\,169 = 198\,199 - A$ ✓SF $198\,199 - 46\,169 = 152\,030$ ✓A	1MA concept of range 1SF correct substitution 1A value of A (3)	DH L3
4.1.4	It is fluctuating over a period of time ✓✓O OR Increasing and decreasing over a period of time ✓✓O	2O opinion OR 2O opinion (2)	DH L4
4.2.1	74 inches ✓✓RG	2RG reading correct value (2)	DH L2
4.2.2	Difference in Max heights = $85 - 76$ = 9 inches ✓RG Difference in Min heights = $67 - 64$ = 3 inches ✓RG Max height is 3 times more = $9 \div 3$ ✓MA = 3 ✓CA Claim is correct. ✓O	1RG difference in maximum heights 1RG difference in minimum heights 1MA dividing by 3 1CA max height 1O opinion (5)	DH L3
4.2.3	IQR = $74 - 66$ ✓RG = 8 inches ✓CA The middle 50% of player's heights are concentrated between 66 and 74 inches ✓O	1RG subtracting correct values 1CA IQR 1O opinion (3)	DH L4
4.2.4	Baseball ✓A IQR and range for baseball team is smaller than that of basketball team ✓✓O	1A correct team 2O opinion (3)	DH L4
		[23]	

TOTAL: [100]