



education

MPUMALANGA PROVINCE  
REPUBLIC OF SOUTH AFRICA

**NATIONAL SENIOR CERTIFICATE**

***NASIONALE SENIOR SERTIFIKAAT***

**GRADE / GRAAD 12**

**MATHEMATICAL LITERACY P1 /**

***WISKUNDIGE GELETTERDHEID VI***

**MARKING GUIDELINES / NASIENRIGLYNE**

**SEPTEMBER 2021**

Symbol/ <i>Simbool</i>	Explanation / <i>Verduideliking</i>
M	Method/ <i>Metode</i>
MA	Method with Accuracy/ <i>Metode met akkuraatheid</i>
CA	Consistent Accuracy/ <i>Volgehoue akkuraatheid</i>
A	Accuracy/ <i>Akkuraatheid</i>
C	Conversion/ <i>Herleiding</i>
S	Simplification/ <i>Vereenvoudiging</i>
RT /RG /RM	Reading from the table/graph/map/diagram/document <i>Lees vanaf tabel/grafiek/kaart/diagram/document</i>
SF	Correct substitution in a formula/ <i>Korrekte vervanging in 'n formule</i>
O	Opinion/Example/Explanation/ <i>Opinie/Voorbeeld/Verduideliking</i>
P	Penalty e.g. for no units, incorrect rounding off, etc <i>Penalisasie, bv. Vir geen eenhede, verkeerde afronding, ens.</i>
R	Rounding off/ <i>Afronding</i>
NPR	No penalty for rounding/ <i>Geen penalisasie vir afronding nie</i>
AO	Answer only/ <i>Slegs antwoord</i>
MCA	Method with constant accuracy/ <i>Metode met volgehoue akkuraatheid</i>

**This marking guideline consists of 13 pages. / Die nasienriglyn bestaan uit 13 bladsye.**

**NOTE:**

- If a candidate answers a question TWICE, only mark the FIRST attempt.
- If a candidate has crossed out (cancelled) an attempt to a question and NOT redone the solution, mark the crossed out (cancelled) version.
- Consistent accuracy (CA) applies in all aspects of the marking guidelines; however it stops at the second calculation error.
- If the candidate presents any extra solution when reading from a graph, table, layout plan and map, then penalise for every extra incorrect item presented.

**LET WEL:**

- As 'n kandidaat 'n vraag TWEE KEER beantwoord, merk slegs die EERSTE poging.
- As 'n kandidaat 'n antwoord van 'n vraag doodtrek (kanselleer) en nie oordoen nie, merk die doodgetrekte (gekanselleerde) poging.
- Volgehoue akkuraatheid (CA) word in alle aspekte van die nasienriglyne toegepas, dit hou op by die tweede berekeningsfout.
- Wanneer 'n kandidaat aflesings vanaf 'n grafiek, tabel, uitlegplan en kaart geneem het en ekstra antwoorde gee, penaliseer vir elke ekstra verkeerde item.

<b>QUESTION/VRAAG 1 [32 MARKS/PUNTE]</b>			
<b>Q/V</b>	<b>Solution/Oplissing</b>	<b>Explanation/Verduideliking</b>	<b>T/L</b>
1.1.1	December = 27 days, January = 7 days ✓ <b>M</b> A = 34 ✓ <b>A</b>	1M adding days 1A number of days <b>AO</b> (2)	F L1
1.1.2	✓ <b>M</b> 101370 – 100611 ✓ <b>RT</b> = 759	1RT correct values 1M subtract in correct order (2)	F L1
1.1.3	R1 375 – R129,54 – R873,30 ✓ <b>MA</b> = R372,16 ✓ <b>A</b>  <b>OR</b> R1 375 – (R129,54 + R873,30) ✓ <b>MA</b> = R1 375 – R1 002,84 = R372,16 ✓ <b>A</b>  <b>OR</b> B = 159 × R2,3406 ✓ <b>MA</b> = R372,16 ✓ <b>A</b>	1MA subtract correct values 1A correct amount  <b>OR</b> 1MA subtract correct values  1A correct amount  <b>OR</b> 1MA multiplying correct values 1A correct amount <b>AO</b> (2)	F L1

Q/V	Solution/Oplossing	Explanation/Verduideliking	T/L
1.1.4	$\begin{array}{l} \checkmark\text{RT} \\ \text{R1 } 375 + \text{R206,25 } \checkmark\text{M} \\ = \text{R1 } 581,25 \end{array}$ <p style="text-align: center;"><b>OR</b></p> $\begin{array}{l} \checkmark\text{RT} \\ \text{R1 } 375 \times \frac{115}{100} \checkmark\text{M} \\ = \text{R1 } 581,25 \end{array}$	<p>1RT correct amount 1M adding both values</p> <p><b>OR</b></p> <p>1RT correct amount 1M multiplying by <math>\frac{115}{100}</math></p> <p style="text-align: right;">(2)</p>	<p>F</p> <p>L1</p>
1.2.1	Japanese spider crab $\checkmark\checkmark\text{RT}$	<p>2RT correct name</p> <p style="text-align: right;">(2)</p>	<p>D</p> <p>L1</p>
1.2.2	$\checkmark\checkmark\text{A}$ 400; 100; 100; 80; 80; 40; 34; 33; 30; 15	<p>2A ranging correct order</p> <p style="text-align: right;">(2)</p>	<p>D</p> <p>L1</p>
1.2.3	Euphasiid (Krill) $\checkmark\checkmark\text{RT}$	<p>2RT correct origin</p> <p style="text-align: right;">(2)</p>	<p>D</p> <p>L1</p>
1.2.4	$34 : 400 \checkmark\text{RT}$ $17 : 200 \checkmark\text{CA}$	<p>1RT ratio in correct order</p> <p>1CA simplified form</p> <p><b>AO</b></p> <p style="text-align: right;">(2)</p>	<p>D</p> <p>L1</p>
1.3.1	R200 $\checkmark\checkmark\text{RT}$	<p>2RT correct amount</p> <p style="text-align: right;">(2)</p>	<p>F</p> <p>L1</p>
1.3.2	$\checkmark\text{RT}$ $\text{R599} + \text{R150 } \checkmark\text{MA}$ $= \text{R749 } \checkmark\text{A}$	<p>1RT correct values 1MA adding both values 1A correct price</p> <p><b>AO</b></p> <p style="text-align: right;">(3)</p>	<p>F</p> <p>L1</p>
1.3.3	$\checkmark\text{RT}$ $\text{R1 } 799 - \text{R239,85 } \checkmark\text{M}$ $= \text{R1 } 559,15 \checkmark\text{CA}$	<p>1RT correct values 1M subtracting 1CA difference</p> <p><b>AO</b></p> <p style="text-align: right;">(3)</p>	<p>F</p> <p>L1</p>
1.3.4	$\checkmark\text{RT}$ $\text{VAT} = \text{R1 } 599 \times \frac{15}{100} \checkmark\text{MA}$ $= \text{R239,85}$	<p>1RT correct price 1MA multiply by 15%</p> <p style="text-align: right;">(2)</p>	<p>F</p> <p>L1</p>
1.4.1	One million one hundred and twenty three thousand eight hundred and ninety rand $\checkmark\checkmark\text{A}$	<p>2A correct salary in words</p> <p style="text-align: right;">(2)</p>	<p>D</p> <p>L1</p>
1.4.2	$\text{R494 } 730 \checkmark\text{RT}$ $\text{R490 } 000 \checkmark\text{R}$	<p>1RT correct salary 1R correct rounding</p> <p style="text-align: right;">(2)</p>	<p>D</p> <p>L1</p>

<b>Q/V</b>	<b>Solution/<i>Oplossing</i></b>	<b>Explanation/<i>Verduideliking</i></b>	<b>T/L</b>
1.4.3	R625 038✓✓ <b>RT</b>	2RT correct median (2)	D L1
		[32]	

<b>QUESTION / VRAAG 2 [33 MARKS / PUNTE]</b>			
<b>Q/V</b>	<b>Solution/Oplossing</b>	<b>Explanation/Verduideliking</b>	<b>T/L</b>
2.1.1	<p>Pay taxes because the government provides public services such as police services and roads to the public. ✓✓O</p> <p><b>OR</b></p> <p>Pay taxes because the government also pays salaries of civil servants and government employees.</p> <p><b>OR</b></p> <p>Pay taxes because the government is building infrastructures like schools, hospitals, community halls etc.</p> <p><b>OR</b></p> <p>Any relevant answer.</p>	<p>2O Correct reason</p> <p>(2)</p>	<p>F</p> <p>L4</p>
2.1.2	<p>Annual tax ✓CA</p> $= R105\,429 + \frac{36}{100}(R543\,600 - R445\,100) \quad \checkmark\text{SF}$ $= R105\,429 + \frac{36}{100}(R98\,500) \quad \checkmark\text{S}$ $= R105\,429 + R35\,460$ $= R140\,889 \quad \checkmark\text{CA}$ <p>Rebate = R140 889 – R14 958 – R8 199 ✓MA</p> $= R117\,732 \quad \checkmark\text{CA}$ <p>Medical credits = R117 732 – 12(R638) ✓MA</p> $= R117\,732 - R7\,656$ $= R110\,076 \quad \checkmark\text{CA}$	<p>1CA correct tax bracket</p> <p>1SF correct values in formula</p> <p>1S Simplification</p> <p>1CA correct value</p> <p>1MA subtracting both correct rebate values</p> <p>1CA correct tax</p> <p>1MA subtracting 12 months medical credit</p> <p>1CA annual tax</p> <p>(8)</p>	<p>F</p> <p>L3</p>
2.2.1	<p>02/10/2021 ✓✓RT</p> <p><b>OR</b></p> <p>2 October 2021</p> <p><b>OR</b></p> <p>2021/10/02</p>	<p>2RT correct date</p> <p>(2)</p>	<p>F</p> <p>L1</p>
2.2.2	<p><math>\frac{R1\,197}{399} \quad \checkmark\text{RT}</math></p> <p><math>\checkmark\text{M}</math></p> <p>= 3 waiters ✓CA</p>	<p>1RT correct values</p> <p>1M dividing by R399</p> <p>1CA waiters</p> <p>(3)</p>	<p>F</p> <p>L2</p>

Q/V	Solution/Oplossing	Explanation/Verduideliking	T/L
2.2.3	<p>No other bookings can be made for the wedding ✓✓O weekend. If the couple should cancel the wedding, venues have at least the deposit.</p> <p style="text-align: center;"><b>OR</b></p> <p>A lot of expenses are incurred before the wedding. If the couple should cancel, venues have at least the deposit.</p> <p style="text-align: center;"><b>OR</b></p> <p>Any relevant answer.</p>	<p>2O correct reason</p> <p style="text-align: right;">(2)</p>	<p>F L4</p>
2.2.4	<p><math>\frac{2\ 100}{1,15}</math> ✓A = R1 826,09 ✓A</p> <p style="text-align: center;"><b>OR</b></p> <p><math>R2\ 100 \times \frac{100}{115}</math> ✓MA = R1 826,09 ✓A</p> <p style="text-align: center;"><b>OR</b></p> <p><math>R2\ 100 \times \frac{15}{115}</math> ✓MA = R273,91 R2 100 – R273,91 ✓MA = R1 826,09 ✓A</p>	<p>1A correct cake price 1MA dividing by 1,15 1A VAT exclusive price</p> <p style="text-align: center;"><b>OR</b></p> <p>1A correct cake price 1MA multiply by <math>\frac{100}{115}</math> 1A VAT exclusive price</p> <p style="text-align: center;"><b>OR</b></p> <p>1MA multiply by <math>\frac{15}{115}</math></p> <p>1A subtracting from correct cake price 1A VAT exclusive price</p> <p style="text-align: right;">(3)</p>	<p>F L2</p>
2.2.5	<p><math>\frac{75}{100} \times R63\ 204</math> ✓RT = R47 403 ✓A</p> <p>Investment: ✓M</p> <p>Year 1: <math>\left(\frac{5,2}{100} \times R40\ 500\right) + R40\ 500</math> = R42 606 ✓CA</p> <p>Year 2: <math>\left(\frac{5,2}{100} \times R42\ 606\right) + R42\ 606</math> = R44 821,51 ✓CA</p> <p>Year 3: <math>\left(\frac{5,2}{100} \times R44\ 821,51\right) + R44\ 821,51</math> = R47 152,23 ✓CA</p> <p>No, the investment will not be enough. ✓O</p>	<p>1RT for R63 204 1A Wayne's father's payment</p> <p>1M multiply by 5,2%</p> <p>1CA amount after year 1 1CA amount after year 2 1CA amount after year 3</p> <p>1O opinion</p> <p style="text-align: right;">(7)</p>	<p>F L4</p>

Q/V	Solution/Oplossing	Explanation/Verduideliking	T/L
2.2.6	<p>From 18:30-22:00 = 3 hours 30 min = 7 half hours ✓A</p> <p>Cost = <math>7 \times R250</math> = R1 750 ✓CA</p> <p>From 22:00-23:45 = 1 hour 45 minutes ✓A</p> <p>Cost = <math>2 \times R600</math> = R1 200 ✓CA ✓M</p> <p>Total cost = R1 750 + R1 200 = R2 950 ✓CA</p>	<p>1A correct time</p> <p>1CA correct cost</p> <p>1A correct time</p> <p>1CA correct cost for overtime</p> <p>1M adding two costs</p> <p>1CA correct total cost</p> <p>(6)</p>	F L3
		[33]	

<b>QUESTION / VRAAG 3 [23 MARKS]</b>			
<b>Q/V</b>	<b>Solution/Oplossing</b>	<b>Explanation/Verduideliking</b>	<b>T/L</b>
3.1.1	25% ✓✓RT	2RT for 25% (2)	D L2
3.1.2	Inter-quartile range = $Q3 - Q1$ ✓RT = \$22 - \$15 ✓MA = \$7 ✓A	1RT both correct values 1MA subtracting correct values 1A correct answer (3)	D L3
3.1.3	Median wage (50%) = \$19 ✓A Per day = \$19 × 8 hours ✓MA = \$152 ✓CA Yes, statement is correct. ✓O	1A correct wage 1MA multiplying by 8 hours 1CA correct amount 1O opinion (4)	D L4
3.1.4	The Fitness Center ✓A The hourly wage of more than 25% of all the employees at The Fitness Center is more than the maximum wage at Fitness Plus. Top management will definitely earn more at The fitness center. ✓✓O	1A correct club 2O explanation (3)	D L4
3.2.1	✓RT 1 849 000 000 – 145 000 000 ✓M = 1 704 000 000 years ✓CA  OR ✓RT 1 849 million – 145 million ✓M = 1 704 million years ✓CA	1RT both correct values 1M subtracting correct values 1CA correct answer  OR 1RT both correct values 1M subtracting correct values 1CA correct answer [omitting millions max 2 marks] (3)	D L2



Q/V	Solution/Oplissing	Explanation/Verduideliking	T/L
3.2.2	<p>Mode: 100 km ✓A</p> <p>Median: 90 km ✓A</p> <p>Mean:</p> $= \frac{300+150+130+100+100+90+70+65+60+55+54}{11} \quad \checkmark \text{MA}$ $= \frac{1174}{11} \quad \checkmark \text{MA}$ <p>= 106,7 km ✓CA</p> <p>Either the median or mode will be representative, because the 300 is an outlier which affects the mean. ✓O</p>	<p>1A correct mode</p> <p>1M correct median</p> <p>1MA concept of mean</p> <p>1MA total divide by 11</p> <p>1CA correct mean</p> <p>1O explanation</p> <p>(6)</p>	<p>D</p> <p>L3</p>
3.2.3	<p><math>\frac{5}{11}</math> ✓A</p> <p><math>\frac{11}{11}</math> ✓A</p>	<p>1A numerator</p> <p>1A denominator</p> <p>(2)</p>	<p>P</p> <p>L2</p>
		[23]	

<b>QUESTION / VRAAG 4 [30 MARKS]</b>			
<b>Q/V</b>	<b>Solution/Oplissing</b>	<b>Explanation/Verduideliking</b>	<b>T/L</b>
4.1.1	$\text{Number of people in Thembisile} = 2\,398 \times 139 \checkmark \text{RT}$ $= 333\,322 \checkmark \text{CA}$	1RT both values correct 1M multiplying 1CA people (3)	D L2
4.1.2	$\text{Number of people in Emalahleni} = 2\,683 \times 170$ $= 456\,110 \checkmark \text{CA}$ $\text{Difference} = 456\,110 - 333\,322 \checkmark \text{M}$ $= 122\,788 \checkmark \text{CA}$ No, incorrect statement $\checkmark \text{O}$	1CA people 1M subtract 1CA difference 1O opinion (4)	D L4
4.1.3	$\text{Houses with piped water} = \frac{8}{100} \times 82\,738 \checkmark \text{RT}$ $= 6\,619,04 \checkmark \text{MA}$ $= 6\,619 \text{ OR } 6\,620 \checkmark \text{A}$	1RT for 8% 1MA multiplying by 82 738 1A answer (3)	D L2
4.1.4	Average annual income of Kansas City in rand: $\frac{\$45\,376 \times R1}{\$0,067} \checkmark \text{MA}$ $= R677\,253,73 \checkmark \text{A}$ $\text{Difference} = R677\,253,73 - R57\,300 \checkmark \text{M}$ $= R619\,953,73 \checkmark \text{CA}$	1MA correct exchange rate 1A correct income 1M subtract 1CA difference (4)	F L3
4.1.5	$100\% - 98,6\% \checkmark \text{MA}$ $= 1,4\% \checkmark \text{A}$	1MA subtracting from 100 1A correct probability (2)	P L2
4.2.1	$\text{Percentage increase} = \frac{R12,02 - R15,84}{R15,84} \times 100\% \checkmark \text{RT}$ $= -24,12\% \checkmark \text{CA}$	1RT correct values 1SF correct in formula 1CA correct percentage <b>[Accept -24,1 or -24,116]</b> <b>NPR</b> (3)	F L2
4.2.2	Inland prices are higher due to higher transport / storage costs. $\checkmark \checkmark \text{O}$ <b>OR</b> Most refineries are along the coast. <b>OR</b> Any relevant answer.	2O explanation (2)	F L4

Q/V	Solution/Oplissing	Explanation/Verduideliking	T/L
4.2.3	$\frac{\text{Total for the year} + A}{12} = R14,75$ $\frac{161,82 + A}{12} = R14,75$ $161,82 + A = R14,75 \times 12$ $A = 177 - 161,82$ $A = R15,18$	<p>1A total of the year</p> <p>1MA dividing by 12</p> <p>1M subtract from 177</p> <p>1CA value of A</p> <p>(4)</p>	D L3
4.2.4	<p>Petrol used:</p> <p>100 km : 10,5 litre</p> <p>750 km : <math>\frac{750 \times 10,5}{100}</math></p> <p>= 78,75 litre</p> <p>Cost of petrol:</p> <p>78,75 litre <math>\times</math> R15,52</p> <p>= R1 222,20</p> <p>Yes, the subsidy was enough.</p>	<p>1MA correct exchange</p> <p>1CA litre</p> <p>1MA multiply by R15,52</p> <p>1CA total cost</p> <p>1O opinion</p> <p>(5)</p>	F L4
		[30]	

<b>QUESTION / VRAAG 5 [32 MARKS]</b>			
<b>Q/V</b>	<b>Solution/Oplossing</b>	<b>Explanation/Verduideliking</b>	<b>T/L</b>
5.1.1	<p>A system by which one pays for a product in regular instalments while having the use of it. ✓✓O</p> <p><b>OR</b></p> <p>Under an agreement, you hire the goods and then pay an agreed amount by instalments.</p> <p><b>OR</b></p> <p>Making regular instalments at a certain cost that are made on an item that one can't afford to pay in cash while using the item.</p> <p><b>OR</b></p> <p>Any relevant answer.</p>	<p>2O definition</p> <p>(2)</p>	<p>F</p> <p>L1</p>
5.1.2	R2 100 ✓✓RT	<p>2RT correct amount</p> <p>(2)</p>	<p>F</p> <p>L1</p>
5.1.3	<p>Discount = R16 895 – R12 999 ✓MA</p> <p>= R3 896 ✓CA</p>	<p>1MA subtract correct values</p> <p>1CA discount</p> <p>(2)</p>	<p>F</p> <p>L1</p>
5.1.4	<p>Percentage discount = <math>\frac{R3\,896}{R16\,895} \times 100\%</math> ✓SF</p> <p>= 23,06007695 ✓CA</p> <p>= 23,1% ✓R</p>	<p><b>CA from Q 5.1.3</b></p> <p>1SF correct values in formula</p> <p>1CA percentage</p> <p>1R one decimal</p> <p>(3)</p>	<p>F</p> <p>L2</p>
5.1.5	<p>Total amount = R688,00 × 36 ✓MA</p> <p>= R24 768 ✓A</p>	<p>1MA multiplying correct values</p> <p>1A total amount</p> <p>(2)</p>	<p>F</p> <p>L1</p>
5.1.6	<p>Discount = <math>\frac{15}{100} \times R12\,999</math></p> <p>= R1 949,85 ✓A</p> <p>Discounted price = R12 999 – R1 949,85 ✓M</p> <p>= R11 049,15 ✓CA</p> <p><b>OR</b></p> <p>Discount = <math>\frac{85}{100} \times R12\,999</math> ✓A ✓M</p> <p>= R11 049,15 ✓CA</p>	<p>1A discount amount</p> <p>1M difference</p> <p>1CA new price</p> <p><b>OR</b></p> <p>1A correct percentage</p> <p>1M multiply</p> <p>1CA new price</p> <p>(3)</p>	<p>F</p> <p>L2</p>
5.2.1a	<p>✓RT ✓A ✓MA</p> <p>R25,26 + 26,76 + R109,27 + 3(R10) ✓MA</p> <p>= R191,29</p>	<p>1RT correct prices of products</p> <p>1A printing price</p> <p>1MA adding correct values</p> <p>(3)</p>	<p>F</p> <p>L2</p>

Q/V	Solution/Oplossing	Explanation/Verduideliking	T/L
5.2.1b	Total cost = R1 000 + R191,29 × 50 ✓ <b>SF</b> = R10 564,50 ✓ <b>A</b>	1SF correct substitution 1A total cost (2)	F L2
5.2.2	$A = \frac{R6\,300}{R315}$ ✓ <b>MA</b> = 20 athletes ✓ <b>A</b>  $B = 35 \times R315$ ✓ <b>MA</b> = R11 025 ✓ <b>A</b>	1MA dividing by R315 1A athletes  1MA multiplying by R315 1A athletes (4)	F L2
5.2.3	The break-even point refers to the amount of income Jakes need to generate, to cover the total fixed and variable expenses of the camp. ✓✓ <b>O</b>  <b>OR</b> When Jakes reaches a break-even point for the camp, his total income will be equal to his total costs.  <b>OR</b> The break-even point can be defined as a point where total costs (expenses) of the camp and total income (revenue) of the camp are equal. <b>OR</b> The break-even point is when no money is lost or gained by Jakes.	2O correct definition          (2)	F L1
5.3.1	12-13 years age group = 100% – (14+50+12+4)✓ <b>MA</b> = 20% ✓ <b>CA</b>	1MA subtracting correct values 1CA correct difference (2)	D L1
5.3.2	Probability = 14%+50% ✓ <b>MA</b> = 64% ✓ <b>CA</b> = 0,64 ✓ <b>CA</b>	1MA adding correct values 1CA correct percentage 1CA decimal (3)	P L2
5.3.3	Total athletes >17 years = $\frac{16}{100} \times 50$ ✓ <b>MA</b> = 8 athletes ✓ <b>CA</b>	1MA multiplying by correct percentage 1CA athletes (2)	D L2
		[32]	
		<b>TOTAL: 150</b>	