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# NATIONAL SENIOR CERTIFICATE

**GRADE 12**

**JUNE 2022**

## MATHEMATICAL LITERACY P1 MARKING GUIDELINE

**MARKS: 100**

<b>Symbol</b>	<b>Explanation</b>
M	Method
MA	Method with accuracy
CA	Consistent accuracy
A	Accuracy
C	Conversion
S	Simplification
RT/RG/RM	Reading from a table/graph/map
F	Choosing the correct formula
SF	Correct substitution in a formula
J	Justification
P	Penalty, e.g., for no units, incorrect rounding off etc.
R	Rounding off/Reason
AO	Answer only
NPR	No penalty for correct rounding off to minimum of two decimal places

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This marking guideline consists of 8 pages.

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**MARKING GUIDELINES****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 nasienriglyn toegepas, maar dit hou by die tweede berekeningsfout op.*
- *Wanneer 'n kandidaat aflees van 'n grafiek, tabel, uitlegplan en kaart en ekstra antwoorde gee, penaliseer vir elke ekstra item.*

QUESTION 1 [20 MARKS]			
Que	Solution	Explanation/Marks AO: FULL MARKS	T/L
1.1.1	$\frac{18,25}{100} = \frac{1\ 825}{10\ 000} \quad \checkmark M$ $= \frac{73}{400} \quad \checkmark A$	1M fraction 1A answer in a reduced form (2)	F L1 *
1.1.2	$\% \text{ of price} = 100 - 18,25\%$ $= 81,75\% \quad \checkmark M$ $\text{Price} = \frac{81,75}{100} \times 380 \quad \checkmark M$ $= R310,65 \quad \checkmark CA$ <p style="text-align: center;"><b>OR</b></p> $\text{Reduction} = \frac{18,25}{100} \times 380$ $= R69,35 \quad \checkmark M$ $\text{Price} = R380 - 69,35 \quad \checkmark M$ $= R310,65 \quad \checkmark CA$	1M subtraction 1M % calculation 1CA answer <b>OR</b> 1M % calculation 1M subtraction 1CA answer (3)	F L1 *
1.2.1	$\text{Difference} = R469 - (-R447) \quad \checkmark CA$ $= R916 \text{ million} \quad \checkmark RT$	1 RT for the two correct values 1 CA answer (2)	F L1
1.2.2	$\text{Total} = 265 + 277 + 326 + 390 + 447 + 458 + 486 - (469 + 300) \quad \checkmark M$ $= 1880 \text{ million} \quad \checkmark CA$	1M addition (+) and subtraction (-) of the values 1CA (2)	F L1
1.3.1	$\text{Weekend wage rate} = \frac{3}{2} \times 25 \quad \checkmark MA$ $= R37,50 \quad \checkmark A$	1MA multiplication 1A answer (2)	F L1 *
1.3.2	$\text{Earnings} = 6 \times 25 + 37,50 \times 4 \quad \checkmark MA$ $= R300 \quad \checkmark CA$	1M multiplications 1MA addition 1CA answer (3)	F L1 *
1.4.1	Discrete $\checkmark \checkmark A$	2A answer (2)	D L1
1.4.2	Game $\checkmark \checkmark RT$	2RT answer (2)	D L1
1.4.3	Total games = 4 + 6 + 5 + 4 + 1 + 2 + 2 = 24 games $\checkmark M \quad \checkmark CA$	1M adding the games 1CA answer (2)	D L1
		<b>[20]</b>	

QUESTION 2 [18 MARKS]			
Que	Solution	Explanation/Marks AO: FULL MARKS	T/L
2.1.1	Time 4 hours ✓✓RT	2RT (2)	F L2
2.1.2	From graph: 2 welders complete 1 frame in 4 hours ✓M 2 : 1 20 : ? frame in 4 hours Frames = $\frac{20 \times 1}{2}$ ✓✓M = 10 frames ✓ A  <b>OR</b> $n \times t = 8$ $20 \times t = 8$ ✓SF $t = 8/20$ = 0,4 hours to make 1 frame by 20 welders ✓S In four hours = $4/0,4$ ✓M = 10 frames ✓A	1M value from graph 1M numerator 1M denominator 1A answer  <b>OR</b> 1SF substitution 1S simplification for 2,5 frames done in 1 hour by 20 welders 1M multiplication 1A answer (4)	F L3
2.2.1	$A = \frac{\sqrt{M} \cdot 28 - 25,81}{25,81} \times 100\%$ ✓MA = 8,485% = 8,5% ✓CA	1M correct values for numerator and denominator M % calculation 1CA (3) <b>(NPR)</b>	F L2
2.2.2	Cost: Up to 6 kℓ = R0 = R0 ✓M  6 – 25 kℓ = 19 k × R23,60 = R448,40 ✓M  25 – 30 kℓ = 5 kℓ × R32,20 = R161,00 ✓M  TOTAL COST = $R448,40 + R161,00$ = R606,40 ✓M ✓CA	1M cost in block 1  1M cost in block 2  1M cost in block 3 1M addition all costs 1CA answer (5)	F L3
2.3.1	Salary B = R3 192,05 + 15 761,80 ✓M = R18 953,85 ✓CA	1M adding the two balances 1 CA answer (2)	F L2
2.3.2	Bank fees for March = 42,37 + 17,47 + 100,88 ✓M = R160,72 ✓CA	1M adding fees of March 1CA answer (2)	F L1
		<b>[18]</b>	

QUESTION 3 [21 MARKS]			
Quest.	Solution	Explanation/Marks AO: FULL MARKS	T/L
3.1	2020 ✓A Reason: Covid-19 pandemic ✓J	1A year 1J reason (2)	D L1
3.2	✓M C = 25 285,1 – (2093,5+2092,8+2249,4+ 1988,8+1750,5 +1964,7+2067,1+2204,4+2308,0+2267,8+2493,4) = 1804,7 ✓M ✓CA	1M subtracting from 25 285,1 1M addition of all other values 1CA answer (3)	D L2 *
3.3	descending order: ✓RT 2493,4; 2308,0; 2267,8; 2249,4; 2204,4; 2093,5; 2092,8 2067,1; 1988,8; 1964,7; 1804,7; 1750,5 ✓CA	1RT all values including value from 3.2 <b>1CA order with value from 3.2</b> (2)	D L2 *
3.4	✓RT Range = 2 262,3 – 33,8 ✓M = 2 228,5 million ✓CA	1RT highest and lowest values 1M concept of range 1CA answer (3)	D L2
3.5	Mean income for 2018 = $\frac{\sqrt{M} 24846,4}{12} = 2 070,53$ million ✓A  Mean income for 2020 = $\frac{98 18,5}{12} = 818,21$ million ✓A  Double mean income for 2020 = $818,21 \times 2 = 1636,42$ ✓M Million  Mean income for 2018 (2 070,53) is greater than double mean income for 2020 (1636,42) Statement Valid ✓J	1M concept of mean 1A mean for 2018  1A mean for 2020  1M comparing values of mean 2018 and double mean income for 2020 1J valid statement. NPR (6)	D L4 *
3.6	From 2018 December income dropped right through up to July 2019; then increased from August 2019 to December 2019. It remained high up to March 2020. ✓J Then it dropped drastically in from April 2020 and remained low in 2020. ✓J	1J justification for the period Dec 2018 to July 2019 1J justification for the period August 2019 to 2020 (2)	D L4
3.7	May ✓A and June ✓A	1A first months 1A second months. <b>CA from 3.2</b> (2)	D L2
			[20]

<b>QUESTION 4 [20 MARKS]</b>			
<b>Que</b>	<b>Solution</b>	<b>Explanation/Marks AO: FULL MARKS</b>	<b>T/L</b>
4.1.1	Values of dependent variable at break-even point Income = R300 ✓RT Expenses = R300 ✓RT	1RT value for income 1RT value for expenses (2)	F L2
4.1.2	Total sales in a week = 37 packets ✓RT From Graph: Income = R555 ✓RT Expenses = R385 ✓RT Profit = R555 – R385 = R170 ✓CA  <b>OR</b>  Total sales = 37 ✓RT Income = $37 \times 15 = R555$ ✓SF Expenses = $200 + 37 \times 5 = R385$ ✓SF Profit = $R555 - R385 = R170$ ✓CA	1RT adding sales from table 1RT reading income from graph 1RT expenses from graph 1CA answer for profit  <b>OR</b> 1RT total sales 1SF for income 1SF for expenses 1CA answer for profit (4)	F L2
4.2.1	Year 2009 ✓✓RT	2RT for the year (2)	F L2
4.2.2	Fees in 2015 = $1,093 \times R12\,500 = R13\,662,50$ ✓M Cost of fridge in 2015 = $1,04 \times R12\,500 = R13\,000$ ✓M Difference = $R13\,662,50 - R12\,500 = R662,50$ ✓CA	1M value from multiplication with education inflation rate. 1M value from multiplication with general inflation rate 1CA answer (3)	F L4
4.2.3	The graph shows education has constantly outstripped general inflation. ✓✓J	2J justification as from graph. (2)	F L4
4.3.1	Arrangement of currencies: £; €; \$; P; R; ¥ ✓RT ✓A	1RT all currencies 1A order according to strength (2)	F L3
4.3.2	$1\text{¥} = R0,1383$ $3974,85 = R?$ Cost of 1 in Rands = $3974,85 \times 0,1383$ ✓M $= R549,72$ ✓A Cost of 500 DVD players = $500 \times 549,72$ $= R274\,860,88$ ✓CA	1M converting the Japanese yens to Rands 1A cost of one DVD  1CA answer for cost of 500 DVDs (3)	F L2
		<b>[18]</b>	

QUESTION 5 [25 MARKS]			
Quest.	Solution	Explanation/Marks AO: FULL MARKS	T/L
5.1.1	Tax bracket = 4 ✓✓RT	2RT bracket (2)	F L1
5.1.2	R128 650 ✓✓RT	2RT value of threshold (2)	F L2
5.1.3	<p>Monthly income = R35 455</p> <p>Annual income = R35 455 × 12 = R425 460,00 ✓MA</p> <p>Pension: 7,5% of R425 460 = <math>\frac{7,5}{100} \times R425 460,00</math> = R31 909,50 ✓A</p> <p>Taxable Income = R425 460,00 – R31 909,50 = R393 550,50 ✓CA</p> <p>Tax = R67 144 + <math>\frac{31}{100} \times (393 550,50 - 321 600)</math> ✓M = R67 144 + <math>\frac{31}{100} \times 71 950,50</math> = R67 144 + 22 304,655 = R89 448,655 ✓CA</p> <p>Tax less the rebates = R89 448,655 – (R14 958 + R8199) ✓RT Annual tax payable = R66 291,655 ✓M</p>	<p>1MA multiplication by 12 and annual income 1A the annual pension</p> <p>1CA taxable income 1M use of correct tax bracket</p> <p>1CA tax payable before rebates</p> <p>1RT Total value of rebates 1M subtracting rebates and tax after rebates (7)</p>	F L4
5.2.1	<p>✓RT</p> <p>2,27%; 5,04%; 5,05%; 5,90%; <b>6,68%</b>; 7,24%; 13,38%; 16,15%; 38,28%. ✓M</p> <p>Median value = 6,68% giving <b>EC</b> ✓CA</p>	<p>1RT all values from graph</p> <p>1M arranging in order descending or ascending</p> <p>1CA median value: EC (3)</p>	D L2
5.2.2	<p><math>Q1 = \frac{5,04+5,05}{2}</math> ✓M = 5,045% ✓A</p> <p><math>Q3 = \frac{13,38+16,15}{2}</math> = 14,765% ✓A</p> <p>IQR = Q3–Q1 = 14,765% – 5,045% ✓M = 9,72% ✓CA</p>	<p>1M concept of getting Quartile 1 1A for Q1</p> <p>1A for Q3</p> <p>1M method of subtracting Q3-Q1 1CA answer (5)</p>	D L3
5.2.3	Probability is the chance that an event is likely to happen. ✓✓A	2A explanation (2)	P L1



5.2.4	Probability for GP = 0,3828 ✓CA Probability for EC = 0,0668 ✓CA Probability for a car to be in GP OR EC = 0,3828 + 0,0668 = 0,4496 ✓A	1CA converting 5 to decimal for QP 1CA converting to decimal for EC 1A answer (3)	P L3
		[24]	
	<b>TOTAL:</b>		<b>100</b>