education

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GRADE 12

MATHEMATICAL LITERACY P1/
WISKUNDIGE GELETTERDHEID V1

SEPTEMBER 2021

MARKING GUIDELINES/*NASIENRIGLYNE*

MARKS/*PUNTE*: 150

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

This marking guideline consists of 12 pages/Hierdie nasienriglyne bestaan uit 12 bladye.

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. NO CA MARK AFTER A BREAKDOWN.
- If the candidate presents any extra solution when reading from a graph, table , layout plan and map, then penalize for every extra item presented.
- The general principle of marking is that if a candidate makes one mistake and there is sound mathematics thereafter, the candidate loses one mark.

LET WEL:

- *As 'n kandidaat 'n vraag TWEE KEER beantwoord, sien slegs die EERSTE poging na.*
- *As 'n kandidaat 'n antwoord van die vraag doodtrek (kanselleer) en nie oordoen nie, sien die doodgetrekte (gekanselleerde) poging na.*
- *Volgehoue akkuraatheid (CA) word in ALLE aspekte van die nasienriglyne toegepas, dit hou by die tweede berekeningsfout op. GEEN CA PUNT NA FOUTIEWE BEWERKING.*
- *Wanneer 'n kandidaat aflesings vanaf 'n grafiek, tabel, uitlegplan en kaart geneem en ekstra antwoorde gee, penaliseer vir elke ekstra item.*
- *Die algemene beginsel van merk is as 'n leerder een fout maak verloor die leerder een punt.*

QUESTION/*VRAAG* 1 [30 MARKS/*PUNTE*] AO			
Q/*V*	**Solution/*Oplossing***	**Explanation/*Verduideliking***	**T&L**
1.1.1	✓MA A = 5 × 9 = R45 ✓A	1MA divide by 9 1A answer (2)	F L1
1.1.2	✓MA B = 12÷ 0,50 = R24 ✓A	1MA dividing by 0.50 1A answer (2)	F L1
1.1.3	C = 5 + 1 + 0,50 + 0,25 + 8 ✓MA = R14,75 ✓A	1MA adding correct values 1A answer (2)	F L1
1.1.4	✓M ✓M R35,00 × 580 R20 300 ✓CA	1M correct value 1M multiply by 580 1CA Simplification (3)	F L1

Q/*V*	Solution/*Oplossing*	Explanation/*Verduideliking*	T&L
1.1.5	R20 300 × 15% = R3 045✓MA R20 300 ─ R3 045✓MCA = R17 255✓CA **OR/*OF*** 100% ─ 15% = 85% ✓MA R20 300 × 85% ✓MCA = R17 255✓CA **OR/*OF*** R35 × 15% = R5,25 R 5,25 × 580 = R3 045 ✓MA R20 300 ─ R3 045✓MCA = R17 255✓CA	1MA multiply by 15% 1MCA subtracting R3 045 1CA answer **OR/*OF*** MA subtracting 15% 1MCA multiply by 85% 1CA answer **OR/*OF*** 1MA multiply R35 by 15% by 580 1MCA subtracting R3 045 1CA answer (3)	F L1
1.1.6	580 ÷ 9 = 64,44 ✓MA ≈ 65 meters of material ✓CA	1MA dividing by 9 1CA answer rounded up (2)	F L1
1.1.7	✓MCA R14,75 × 580 = R8 555 R17 255 ─ R8 555 ✓MCA = R8 700 ✓CA **OR/*OF*** Profit (one mask) = Income ─ Expenses 　　　　= R35 ─ (35 × 15%) ─ R14,75 　　　　= R29,75 ─ R14,75 ✓MCA 　　　　= R15 For 580 = R15 × 580 ✓MCA 　　　　= R8 700 ✓CA	**(CA from 1.1.3 and 1.1.5)** 1MCA unit price multiply with 580 1MCA subtract R8 555 1CA answer **OR/*OF*** 1MCA Income subtract expenses 1MCA unit price multiply by 580 1CA answer (3)	F L1
1.2.1	9053; 6493; 5737; 1075; 258; 220; 198; 150; 89✓✓A	1A correct values 1A descending order　(2)	D L1
1.2.2	Western Cape/*Wes Kaap*✓✓A	2A answer (2)	D L1
1.2.3	✓RT 22 580 ─ 584✓M = 21 996 ✓A	1RT correct values 1M subtracting values 1A answer (3)	D L1
1.2.4	Total deaths/*Aantal sterftes* A = 66 + 140 + 444 + 35 + 2 + 2 + 2 +6 + 0✓MA 　= 697✓A	1MA adding correct values 1A answer (2)	D L1

Q/*V*	Solution/*Oplossing*	Explanation/*Verduideliking*	T&L
1.2.5	Percentage recoveries/ *Persentasie herstel* $B = \frac{9\,053}{23\,273} \times 100\%$ ✓MA $= 38,9\%$ ✓A **OR/*OF*** $B = 100 - (24,65 + 27,9 + 4,62 + 1,11 + 0,64 + 0,95 + 0,85 + 0,38)$ ✓M $= 100 - 61,10$ $= 38,9\%$ ✓A	1MA correct values divided and multiplied by 100% 1A answer **OR/*OF*** 1M subtracting percentages from 100 1A answer (2)	D L1
1.2.6	3 383 ✓✓A	2A answer (2)	D L1
		[30]	

QUESTION/*VRAAG* 2 [44 MARKS/*PUNTE*]

Q/*V*	Solution/*Oplossing*	Explanation/*Verduideliking*	T&L
2.1.1	Yen ✓✓A	2A answer (2)	F L1
2.1.2	Two hundred and ninety-two million three hundred and eighteen thousand four hundred and sixty rand/ *Twee honderd twee en negentig miljoen driehonderd en agtien duisend en vier honderd en sestig rand* ✓✓A	2A answer (2)	F L1
2.1.3	To have a more accurate value, especially when it is a large amount of money/*Om 'n meer akkurate waarde te bereken veral as dit 'n groot bedrag is*✓✓A	2A answer (2)	F L1
2.1.4	Amount to be spent on ventelators/ *Bedrag nodig om op ventelators te spandeer* ✓M R292 318 460 × $\frac{4}{7}$ ✓MA = R167 039 120 ✓CA	 1M correct values 1MA multiplying with $\frac{4}{7}$ 1CA answer (3)	F L2

2.2.1	USA: 10 000$ × ✓MA
	     = R177 645,90 ✓A
	Italy: 8 583,59€ × 20,87989✓MA
	     = R179 224,42 ✓A
	Japan: 1 065 847,24 ¥ × 0,16719✓MA
	     = R178 199 ✓A ✓O
	The statement is NOT correct, it cost less in the USA/ *Dit is NIE korrek, dit kos minder in USA*✓R
		1MA multiply by 17,76459
		1A answer
		1MA multiply by 20,87989
		1A answer
		1MA multiply by 0,16719
		1A answer
		
		1O NOT correct
		1R reason less in USA
		(8)
			F
			L4

Q/*V*	Solution/*Oplossing*	Explanation/*Verduideliking*	T&L
2.2.2	New price in 2023/*Nuwe prys in 2023* 8583,59 € × 109,63% ✓M = 9 410,189717 ✓A 9 410,189717 × 109,63% ✓M = 10 316,39099 € ≈ 10 316,39 € ✓A **OR/*OF*** 8583,59 € × 9,63% ✓M = 826,599717 826,599717 + 8583,59 € ✓MA = 9 410,189717 9 410,189717 × 9,63% ✓M = 906,2012697 906,2012697 + 9 410,189717 ≈ 10 316,39 € ✓A	1M multiplying by 109,63% 1A simplification 1M multiplying new value by 109,63% 1A answer rounded to 2 decimals 1M multiplying by 9,63% 1MA adding to principal amount 1M multiplying new value by 9,63% 1A answer rounded to 2 decimals (4)	F L2
2.3.1	$\qquad\qquad$✓MA R1 202 050 + R1 203 708 + R1 198 236 ✓RT = R3 603 994✓CA	1RT correct values 1MA adding the correct values 1CA answer (3)	F L1
2.3.2	$\qquad$✓MA R16 580 ÷ 10 =R1 658 ✓A R1 658 × 736✓MA	1MA divided by 10 1A answer 1MA multiplying by 736 (3)	F L2
2.3.3	Percentage difference/*Persentasie verskil* $\qquad$✓RT $= \dfrac{R11\,507\,508 - R11\,943\,582}{R11\,943\,582} \times 100\%$ ✓MA $= -3,65\%$✓A	 1RT correct values 1MA multiplying by 100 1A negative answer (3)	F L2
2.3.4	R1 658 × 7 275✓MCA = R12 061 950 ✓S R12 061 950 – R11 507 508✓MA = R554 442✓A	**CA from Q 2.3.2** 1MCA multiplying correct values 1S simplification 1MA subtracting correct value from R12 061 950 1A answer (4)	F L2

Q/*V*	Solution/*Oplossing*	Explanation/*Verduideliking*	T&L
2.3.5	Predicted amount/*Voorspelde bedrag* R1 658 × 721 = R1 195 418 ✓A Percentage received/*Persentasie ontvang* $\quad\quad$ ✓MA $\frac{1\,061\,531}{1\,195\,418} \times 100\%$ ✓MA = 88,79998% ≈ 88,8% ✓A Percentage less received/*Persentasie minder ontvang* 100% - 88,8% = 11,2% ✓A $\quad\quad\quad\quad\quad$ ✓CA Her prediction was incorrect, they received 11,2% less/*Haar voorspelling is verkeerd, hulle ontvang 11,2% minder*	 1A amount predicted 1MA dividing actual amount with predicted amount 1MA multiplied by 100% 1A answer 1A percentage NOT received 1CA conclusion $\quad\quad\quad\quad\quad\quad\quad\quad$ (6)	F L4
2.3.6	$\quad\quad\quad\quad\quad\quad\quad\quad$ ✓✓A In 2020 the number of learners **decreased** due to covid-19 pandemic where many parents lost their jobs or received less income and could not pay school fees and/or some of the learners left school and started home schooling. ✓✓R $\quad\quad\quad\quad\quad\quad$ ✓✓A *In 2020 het die getal leerlinge **afgeneem** agv die covid-19 pandemie waar baie ouers hulle werk veloor het asook leerlinge wat skool verlaat het om tuis studie te doen.* $\quad$ ✓✓R Any other relevant answer/ *Enige ander relevante antwoord*	2A decreasing in 2020 2A reason $\quad\quad\quad\quad\quad\quad\quad\quad$ (4)	F L4
			[44]

QUESTION/*VRAAG* 3 [39 MARKS/*PUNTE*]			
Q/*V*	Solution/*Oplossing*	Explanation/*Verduideliking*	T&L
3.1.1	A value that lies outside most of the other values in a specific set of data/'n Waarde lê buite die meeste waardes in 'n stel data ✓✓A Outlier/Uitskieter ~ 9 ✓✓A **OR/OF** An outlier is a number that is at least 2 standard deviations away from the mean/'n Uitskieter is 'n getal wat met ten minste 2 standaard afwykings weg is vanaf die gemiddeld. ✓✓A Outlier/Uitskieter ~ 9 ✓✓A (4)	2A explanation 2A outlier 9	D L2
3.1.2	IQR Term 1 = Q3 – Q1 ✓M 　　　　 = 25 – 18 ✓MA 　　　　 = 7 ✓A IQR Term 3 = 19 – 5 ✓MA 　　　　 = 14 ✓A Term 3 had the largest IQR /Termyn 3 het die grootste IKO ✓J	1M concept of IQR 1MA subtracting correct values 1A answer 1MA subtracting correct values 1A answer term 3 1A conclusion (6)	D L3
3.1.3	The learners performed much better in term 1 than in term 3/Die leeders het baie beter gevaar in termyn 1 as termyn 3. ✓✓A The range of term 1 is less than term 3 ✓✓A Die omvang van termyn 1 is minder as termyn 3 **OR/OF** Term 3 has a bigger IQR than term 1 ✓✓A Termyn 3 se IKO is heelwat groter as termyn 1. **OR/OF** Term 1's Q1 is 18 which is higher than term 3 which is 5/ Termyn 1 se K1 is 18 wat heelwat hoer is as termyn 3 wat 5 is✓✓A	2A performance dropped 2A comparing the measures of central tendency (4)	D L4
3.2.1	35,4 ✓✓A (2)	2A answer	D L1
3.2.2	Mode is the value that appears the most in a data set. ✓✓A *Modus is die waarde wat die meeste voorkom in 'n data stel.* (2)	2A answer	D L2
3.2.3	✓A 36,4 and 36,9 ✓A (2)	1A 36,4 1A 36,9 answer	D L2

Q/V	Solution/Oplossing	Explanation/Verduideliking	T&L
3.2.4	35,4 ; 36 ; 37,5 ; **37,5** ; 37,7 ; 38 ; 38,3 ✓MA Median: 37,5✓CA	1MA sort data in order 1A answer (2)	D L2
3.2.5	A – 36,4 = 2,7 ✓MA A = 36,4 + 2,7 ✓MA A = 39,1 ✓A	1A concept of range 1A adding values 1A answer **AO** (3)	D L3
3.2.6	✓MA $\text{Mean} = \dfrac{37,2 + 37,5 + B + 38,9 + 38,6 + B + 37,1}{7}$ $= 37,87$ $\dfrac{2B + 189,3}{7} = 37,87$ $2B + 189,3 = 37,87 \times 7$ ✓MA $2B + 189,3 = 265,09$ $2B = 265,09 – 189,3$ ✓MA $2B = 75,79$ ✓MA $B = 37,895$ $B \approx 37,9$ ✓CA	1MA concept of mean 1MA multiplying with 7 both sides 1MA subtracting 189,3 1MA dividing by 2 1CA answer to 1 decimal (5)	D L3
3.2.7	The learner is absent from the school/ *Die leerling is afwesig van die skool*✓✓A **OR/OF** The learner probably is in isolation at home. Last temperature is very high/*Die leerling is heel moontlik in isolasie tuis agv hoë temperatuur.* ✓✓A	2A answer (2)	D L4
3.2.8	$\dfrac{3}{9}$ ✓A $= \dfrac{1}{3}$ ✓A	1A fraction 1A simplest form (2)	P L2
3.2.9	✓A $\dfrac{4}{7} \times 100$ ✓A $= 57,14$ ≈ 57 ✓CA	1A correct fraction 1A multiplied by 100 1CA answer correctly rounded (3)	P L2
3.2.10	The percentage and fraction are easier to visualize compared to decimal/ *Die persentasie en breuk is makliker herkenbaarin vergelyking met desimale.* ✓✓A	2O opinion that is relevant and true (2)	P L4
			[39]

QUESTION/*VRAAG* 4 [37 MARKS/*PUNTE*]

Q/*V*	Solution/*Oplossing*	Explanation/*Verduideliking*	T&L
4.1.1	**COST OF LIVING WITH PERCENTAGES** — PERCENTAGES(%) vs COST OF LIVING / LEWENSKOSTE		F L2
	1A Transport & food /*Vervoer en voedsel* 1A Housing and Dept payments / *Behuising en departementele betalings* 1A Personal & Discretionary and Savings / *Persoonlik en diskresionêr* 1A Utilities, Medical and outing / *Nutsdienste, medies en uitstappies* 1A Labelling the x-axis / *Benoeming van x-as* 1A Histogram (no spaces between bars / *Geen spasie tussen kolomme* (6)		
4.1.2	Salary per month/*Salaris per maand* Salary/*Salaris* × 35% = R9 782,50 ✓MA Salary/*Salaris* = R9 782,50 ÷ 35% ✓M Salary/*Salaris* = R27 950 ✓A (3)	1MA correct equation 1M dividing by 35% 1A answer	F L3
4.2.1	Plant management/*Aanlegbestuurder* ✓A R70 286 ✓A	1A answer occupation 1A answer salary (2)	F L1
4.2.2	R39 286✓✓A	1A answer (2)	F L1
4.2.3	✓MA R79 002 – R54 435 ✓MA = R24 567 ✓A	1MA correct values 1MA subtracting correct values 1A answer (3)	F L1

Q/*V*	Solution/*Oplossing*	Explanation/*Verduideliking*	T&L
4.2.4	R48 875 × 12✓MA =R586 764 ✓A Statement not correct/ Bewering nie korrek ✓O	1MA multiplying by 12 1A answer 1O conclusion (3)	F L2
4.3.1	Annual salary/ *Jaarlikse salaris* R78 264 × 12 ✓MA = R939 168 ✓A	1MA Multiplying correct salary by 12 1A answer (2)	F L1
4.3.2	R708 311 and above ✓✓A	2A answer (Accept 708 311 – 1 500 000) (2)	F L1
4.3.3	South African Revenue Service/ *Suid Afrikaanse Inkomste dienste* ✓✓A	2A answer (2)	F L1
4.3.4	Medical tax crediet/ *Mediese belasting krediet* ✓MA (2 × R310) + (3 × R209) ✓MA R620 + R627 = R1 247 ✓A R1 247 × 12 = R14 964 ✓A	1MA multiplying 310 by 2 1MA multiplying 209 by 3 1A answer for adding 2 values 1A answer (4)	F L3

4.3.5	Monthly tax payable/*Maandelikse belasting betaalbaar*
	R78 264 × 108% = R84 525,12 ✓MA
	R84 525,12 – R6 339,38 (7,5% pension) ✓MCA
	= R78 185,74
	R78 185,74 × 12
	= R938 228,88 (annual taxable income) ✓MCA
	
	Bracket 6/*Kategorie 6*
	= 207 448 + 41% (938 228,88 – 708 310) ✓MCA
	= 207 448 + 41% (229 918,88)
	= 207 448 + 94 266,74
	      ✓CA
	= 301 714,74 – 14 220 – (1 247 × 12) Medical aid
	      ✓MA
	= 301 714,74 – 14 220 – 14 964 ✓MCA
	= R272 530,74 ÷ 12
	= R22 710,90 ✓CA
		1MA multiplying correct value with 108%
		1MCA correct pension value subtracted
		1MCA multiplying taxable income with 12
		
		1MCA substitution of taxable income into bracket 6
		1CA simplifying
		
		1MA subtracting correct tax rebate
		1MCA from 3.3.4 medical aid subtracted
		1CA monthly tax deductible (8)
			F L3

			[37]
			TOTAL: 150

TAXONOMY LEVELS: MATHEMATICAL LITERACY PAPER 1								
September 2021								
QUESTION	Finance	Data Handling	Probability	TL 1	TL 2	TL 3	TL 4	Total
1.1.1	2			2				
1.1.2	2			2				
1.1.3	2			3				
1.1.4	3			2				
1.1.5	3			3				
1.1.6	2			2				
1.1.7	3			3				
1.2.1		2		2				
1.2.2		2		2				
1.2.3		3		3				
1.2.4		2		2				
1.2.5		2		2				
1.2.6		2		2				
TOTAL QUESTION 1	**17**	**13**		**30**				**30**
2.1.1	2			2				
2.1.2	2				2			
2.1.3	2					2		
2.1.4	3				3			
2.2.1	8						8	
2.2.2	4					4		
2.3.1	3			3				
2.3.2	3				3			
2.3.3	3				3			
2.3.4	4				4			
2.3.5	6						6	
2.3.6	4						4	
TOTAL QUESTION 2	**44**			**5**	**15**	**6**	**18**	**44**

QUESTION	Finance	Data Handling	Probability	TL 1	TL 2	TL 3	TL 4	Total
3.1.1		4			4			
3.1.2		6				6		
3.1.3		4					4	
3.2.1		2			2			
3.2.2		2		2				
3.2.3		2			2			
3.2.4		2			2			
3.2.5		3				3		
3.2.6		5				5		
3.2.7		2					2	
3.2.8			2		2			
3.2.9			3		3			
3.2.10			2				2	
TOTAL QUESTION 3		**32**	7	**2**	10	14	6	**39**
4.1.1		6			6			
4.1.2		3				3		
4.1.1	2			2				
4.2.2	2			2				
4.2.3	3				3			
4.2.4	3						3	
4.3.1	2			2				
4.3.2	2				2			
4.3.3	2			2				
4.3.4	4				4			
4.3.5	8					8		
TOTAL QUESTION 4	**28**	**9**		**8**	20	11	5	**37**
TOTAL	89	54	7	45	45	31	29	
%	59.3%	36%	4.7%	30%	30%	20.7%	19.3%	
EXAM GUIDELINE	90	52.5	7.5	45	45	30	30	
%	60%	35%	5%	30%	30%	20%	20%	