education

Department:
Education
North West Provincial Government
REPUBLIC OF SOUTH AFRICA

NATIONAL SENIOR CERTIFICATE
NASIONALE SENIOR SERTIFIKAAT

GRADE/*GRAAD* 12

MATHEMATICAL LITERACY P1/
WISKUNDIGE GELETTERDHEID V1

SEPTEMBER 2023

MARKING GUIDELINES/*NASIENRIGLYNE*

MARKS/*PUNTE*: 150

Symbol/*Kode*	Explanation/*Verduideliking*
M	Method/*Metode*
MA	Method with accuracy/*Metode met akkuraatheid*
MCA	Method with consistent accuracy/*Metode met volgehoue akkuraatheid*
CA	Consistent accuracy/*Volgehoue akkuraatheid*
A	Accuracy/*Akkuraatheid*
C	Conversion/*Herleiding*
S	Simplification/*Vereenvoudiging*
RT	Reading from a table/graph/document/diagram/*Lees vanaf tabel/grafiek/dokument/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*
RCA	Rounding consistent with accuracy/ *Afronding met volgehoue akkuraatheid*
NPU	No penalty for omitting unit, but wrong unit is penalised/ *Geen penalisasie indien die eenheid uitgelos is, maar wel indien 'n verkeerde eenheid gebruik word*

These marking guidelines consist of 13 pages.
Hierdie nasienriglyne bestaan uit 13 bladsye.

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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.
- NOTE: consistent accuracy (CA) does not apply in cases of a breakdown.
- If the candidate presents any extra solution when reading from a graph, table, layout plan and map, then penalise for every extra item presented.
- As a general marking principle, if a candidate has incurred one mistake and there is evidence of sound mathematics thereafter, then that candidate should lose one mark only.
- Rounding is an independent mark.
- In opinion type questions marks will only be awarded if relevant calculations are shown.

LET WEL:
- *As 'n kandidaat 'n vraag TWEE KEER beantwoord, sien slegs die EERSTE poging na.*
- *As 'n kandidaat 'n antwoord van 'n 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 egter op by die tweede berekeningsfout.*
- *LET WEL: volgehoue akkuraatheid (CA) geld nie in die geval van 'n afbreek nie.*
- *Wanneer 'n kandidaat aflesings vanaf 'n grafiek, tabel, uitlegplan en kaart geneem en ekstra antwoorde gee, penaliseer vir elke ekstra item.*
- *'n Algemene nasien beginsel is dat indien 'n kandidaat een fout maak en daarna voortgaan met korrekte wiskunde, dat die kandidaat slegs een punt verloor.*
- *Afronding tel as 'n afsonderlike punt.*
- *In opinie tipe vrae sal punte slegs toegeken word indien relevante berekeninge aangetoon is.*

Note: Questions marked with *refers to notes/*Vrae gemerk met*, vewys na die notas.*
Questions where the numbers are encircled are the ones where we have a tolerance range.
Vrae waar die nommer omkring is, is waar ons 'n toleransie omvang het.

QUESTION/*VRAAG* 1 [29 MARKS/*PUNTE*] ANSWER ONLY FULL MARKS			
Q/*V*	**Solution/*Oplossing***	**Explanation/*Verduideliking***	**T&L**
1.1.1	✓MA $30 \times 2 = 60$ ✓A	1MA correct value multiplied by 2 1A number of eggs (2)	F L1
1.1.2	Baked, poached, boiled, scrambled eggs ✓✓A *Gebak, posjeer, gekook, roereier*	2A any two correct/*enige* twee (2)	F L1
1.1.3	✓MA R14,99 × 2 = R29,98 ✓A	1MA multiplying correct value by 2 1A correct amount/*korrekte bedrag* (2)	F L1
1.1.4	✓MA R34,99 ÷ 18 = R1,94 ✓A	1CA dividing R34,99 with 18/*deling* 1A unit cost per egg/*eenheidskoste per eier* (2)	F L1

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1.1.5	✓MA R64,99 × 22% = R14,2978 ✓MCA R64,99 – R14,2978 = R50,69 ✓CA **OR/*OF*** 100% – 22% = 78% ✓MA R64,99 × 78% ✓MCA = R50,69 ✓CA	1MA multiplying correct value with 22% 1MCA adding answer to original amount 1CA price for egg tray 1MA subtracting 22% from 100% 1MCA multiplying amount with 78% 1CA price for egg tray (3)	F L1
1.1.6	✓MA 360 × 8 boxes/*bokse* = 2 880 eggs/*eiers* ✓MCA ✓CA 2 880 × 4 = 11520 eggs/*eiers*	1MA multiply 360 by 8 1MCA multiply answer by 4 weeks 1CA correct number of eggs (3)	F L1
1.1.7	✓CA 11 520 ÷ 60 = 192 eggs/*eiers* 192 × R95,50 ✓MCA = R18 336 ✓CA	**CA** from 1.1.6 1CA divide by 60 1MCA multiply with R95,50 1CA amount paid/*bedrag betaal* (3)	F L1
1.2.1	✓RT 19 800 million; 20 100 million; 43 800 million; 44 500 million; 56 900 million; 57 200 million; 111 600 million; 112 100 million; 114 400 million; 596 500 million ✓A	1RT correct values/*korrekte waarde* 1A ascending order/*stygende orde* (2)	D L1
1.2.2	Fifty-Six Billion Nine Hundred Million ✓✓A *Ses en vyftig biljoen, negehonderd miljoen.*	2A correct wording/*korrekte bewoording* (2)	D L1
1.2.3	Japan ✓✓A	2A correct country/*korrekte land* (2)	D L1
1.2.4	✓RT ✓MA 596 500 million – 114 400 million = 482 100 million ✓A	1RT correct values 1MA subtracting correct values/*aftrekking van korrekte waarde* 1A number of eggs (3)	D L1
1.2.5	19 800 million : 57 200 million ✓A ✓A ✓A 9 : 26	1RT correct values in correct order 1A correct simplification 1A written in correct ratio(3)	D L1
		[29]	

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QUESTION/*VRAAG* 2 [30 MARKS/*PUNTE*]			
Q/*V*	**Solution/*Oplossing***	**Explanation/*Verduideliking***	**T&L**
2.1.1	R1 508,62÷ 100 ✓MA = R15,09 ✓A	1MA conversion/*herlei* 1A answer in rand/*antwoord in rand* (2)	F L1
2.1.2	Cost for diesel/*Dieselkoste* 7 × 3 = 21 ✓MA 21 × 2540,44 ✓MA = 53 349,24 c/ℓ ✓A	1MA multiply 7 litres with 3 1MA multiply answer with correct value 1CA correct cost/*korrekte koste* (3)	F L2
2.1.3	Coastal/*Kus* - 2021 % Difference/*Verskil* = $\frac{New - Old}{Old} \times 100\%$ ✓RT = $\frac{1667 - 1416}{1416} \times 100\%$ = 17,726% ✓A Coastal/*Kus* - 2022 % Difference/*Verskil* = $\frac{\mathbf{New - Old}}{\mathbf{Old}} \times 100\%$ ✓RT = $\frac{2609 - 1889}{1889} \times 100\%$ ✓A = 38,115% ∴ 38,115% − 17,726% ✓MCA = 20,389% ✓CA Yes, her statement is correct ✓O *Ja, haar stelling is korrek*	1RT substituting correct values/*vervanging van korrekte waardes* 1A simplification/*vereenvoudig* 1RT substituting correct values 1A simplification/*vereenvoudig* MCA subtracting correct percentages 1CA percentage difference 1O correct conclusion (7)	F L4

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Q/*V*	Solution/*Oplossing*	Explanation/*Verduideliking*	T&L
2.2.1	Hire purchase ✓✓O A system by which someone pays for a thing/goods in regular instalments while having the use of it. *Huurkoop* *'n Sisteem waar iemand betaal vir iets/goedere in gereelde paaiemente terwyl hulle die gebruik het daarvan.* **OR/OF** You have the goods and then you pay an agreed amount by installments until it is paid off. *Jy het die gebruik van goedere en betaal 'n vasgestelde bedrag in paaiemente totdat dit afbetaal is.* ✓✓O	2A Explanation of hire purchase/*verduidelik huurkoop* (2)	F L1
2.2.2	✓RT R326 395 ÷ 1,15 ✓MA = R283 821,74 ✓A **OR/*OF*** ✓RT R326 395 × $\frac{100}{115}$ ✓MA = R283 821,74 ✓A	1RT correct value 1MA dividing with 1,15 1A amount VAT excluded 1RT correct value 1MA multiplying with $\frac{100}{115}$ 1A amount VAT excluded (3)	F L2
2.2.3	Cash amount/*Kontant bedrag* 100% – 13,5% = 86,5% ✓MA R326 395 × 85,6% ✓MA = R282 331,675 ✓A R282 331,675 + R35 000,00 ✓MCA = R317 331,68 ✓CA **OR/OF** Cash amount/*Kontant bedrag* R326 395 × 13,5% ✓MA = R44 063,325 ✓CA R326 395 – R44 063,325 ✓MCA R282 331,675 + R35 000,00 ✓MA = R317 331,68 ✓CA	1MA subtracting 13,5 % from 100% 1MCA multiplying correct amount by 86,5% 1CA answer 1MA adding R35 000 1CA correct cash amount/*korrekte kontant bedrag* 1MA multiplying correct value by 13,5 % 1A answer 1MCA answer 1MA adding R35 000 1CA correct cash amount/ *korrekte kontant bedrag* (5)	F L2

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Q/*V*	Solution/*Oplossing*	Explanation/*Verduideliking*	T&L
2.2.4	Amount saved/*Bedrag gespaar* R326 395 × 10% ✓MA = R32 639,50 ✓A ✓MA R17 031,70 × 24 = R408 760,80 ✓S R408 760,80 + R32 639,50 ✓MCA = R441 400,30 ✓CA R441 400,30 – R317 331,68 ✓MCA = R124 068,62 ✓CA	**CA** from Q2.2.3 1MA multiply cash price by 10% 1A correct amount 1MA multiply by 24 months 1S simplification 1MCA adding the deposit to monthly instalments 1 CA simplification 1MCA subtracting cash amount 1CA amount saved (8)	F L3
		[30]	

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QUESTION/*VRAAG* 3 [29 MARKS/*PUNTE*]			
Q/*V*	**Solution/*Oplossing***	**Explanation/*Verduidelikin g***	**T&L**
3.1	Discreet/*Diskreet* ✓✓A	2A discreet (2)	D L1
3.2	✓✓A The value that appears the most/*Die waarde wat die meeste voorkom.*	2A explanation/ *verduideliking* (2)	D L1
3.3	Up/*Opdraende* ✓MA 11 189 + 19 591 + 19 907 + 22 402 + 41 494 + 24 594 = 119 177 entries/*inskrywings* ✓A Down/*Afdraende* 12 952 + 23 567 + 19 545 + 20 104 + 21 569 + 21 272 = 119 009 entries/*inskrywings* ✓A 119 177 – 119 009 = 168 entries/*inskrywings* ✓CA The UP race had 168 more entries *Die opdraende resies het 168 meer inskrywings*	1MA adding correct values 1A total entries up 1A total entries down 1CA difference in entries (4)	D L3
3.4	✓RT 1 412; 1 749; 1 763; 1 961; 2 184; 2 334; 2 440; 2 504; 2 700; 2 959; 3 055; 3 128; 3 372 ✓A Median/*Mediaan* - 2 440 ✓CA	1RT correct values 1A ascending order/ *stygende orde* 1CA correct median (3)	D L2
3.5	Range = Highest value – Lowest value 7 856 = A – 8 626 ✓MA 7 856 + 8 626 = A ✓MA A = 16 482 ✓A **OR/*OF*** ✓MA A = 13 110 + 3 372 ✓RT = 16 482 ✓A	1MA substitution into formula 1MA simplifying 1A correct highest value 1RT correct values 1MA adding correct values 1A correct highest value (3)	D L2

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Q/*V*	Solution/*Oplossing*	Explanation/*Verduideliking*	T&L
3.6	Mean $= \frac{\text{sum of all the values}}{\text{number of values}}$ ✓MA $= \frac{11\,147+10\,330+11\,345+16\,482+12\,648+16\,613+18\,578+14\,693+16\,517+16\,807+17\,031+19\,047+19\,078}{13}$ $= \frac{200\,316}{13}$ ✓MA = 15 408,92308 ✓CA ∴ = 15 409 athletes/*atlete* ✓A	1MA adding correct values/ *tel korrekte waarde op* 1MA concept of mean dividing by 13 1CA correct answer 1CA correct rounded answer (4)	D L2
3.7	Percentage athletes that did not finish/*Persentasie atlete wat nie klaar gemaak het nie.* ✓MA $= \frac{19\,078}{24\,594} \times 100$ ✓MA = 77,57% ✓A 100 % − 77,57% ✓MA = 22,428% ≈ 22,43% ✓CA **OR/OF** ✓MA 24 594 – 19 078 = 5 516 ✓A ✓MA $= \frac{5\,516}{24\,594} \times 100$ ✓MA = 22,43% ✓A	1MA dividing correct values 1MA percentage calculation 1A simplification/ *vereenvoudiging* 1MA subtracting % from 100% 1A correct rounded answer/ *korrek afgerond* 1MA subtracting correct values 1A correct answer 1MA dividing correct values 1MA percentage calculation 1A correct rounded answer (5)	D L3
3.8	Some of the athletes did not finish the race due to injuries. Athletes did not finish before the cut off time. *Seker atlete het nie klaar gemaak as gevolg van beserings.* *Atlete het nie voor die afsnytyd klaar gemaak nie.*	2O correct opinion (2)	D L4
3.9	Probability/*Waarskynlikheid* ✓A Probability $= \frac{2\,184}{11\,054} \times 100$ ✓MA ✓A = 19,757% ≈ 19,8% ✓CA	1A correct numerator 1A correct denominator 1M percentage calculation 1CA simplification (4)	D L2
		[29]	

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QUESTION/*VRAAG* 4 [34 MARKS/*PUNTE*]			
Q/*V*	**Solution/*Oplossing***	**Explanation/*Verduideliking***	**T&L**
4.1.1	Tariff/*Tarief* ✓✓A It is a service charge that the city charges for the use of service it renders such as water or electricity. *Dit is 'n diensfooi wat deur die stad gehef word vir dienste gelewer, bv water en elektrisiteit.*	2A explanation/ *verduideliking* (2)	F L1
4.1.2	41,01R/kl ✓✓A	2A correct tariff (2)	F L1
4.1.3	Total amount/*Totale bedrag* 150*kℓ* × 95%✓MA = 142,50*kℓ* ✓A 0,00 × 6 ✓MA = 0,00 20,28 × 4 = 81,12 ✓CA 21,17 × 5 = 105,85 29,68 × 5 = 148,40 41,01 × 10 = 410,10 44,86 × 10 = 448,60 ✓CA 56,59 × 10 = 565,90 60,65 × 92,5 = 5 610,13 **7 310,10** ✓MCA R7 310.10 + R28,32 (fixed cost) ✓MCA = R7 398,42 R7 398,42 × 115% = R8 508.18 ✓CA	1MA multiplying correct *kℓ* with 95% 1A number of *kl* 1MA Multiplying correct values 1CA simplification 1CA simplification 1MCA answer all values added 1MCA adding fixed cost 1CA answer with VAT included (8)	F L3
4.2.1	Medical credit/*Mediese krediet* (R310 + R310) +R209 ✓MA R620 + R209 ✓A R829 × 12 ✓MA = R9 948 ✓A	1MA correct credits 1A simplification 1MA multiplying by 12 1A correct credit (4)	F L2
4.2.2	R29 470 × 12 R353 640 ✓MA ✓ MA R70 352 + 31% (R353 640 – R337 800)✓MA R70 352 + 31% (R15 840) R70 352 + R4 910,40 ✓A R75 262,40 – R15 714 (rebate) ✓MA R59 548,40 – R9 948 (medical aid) R49 600,40 ✓A His statement is incorrect/ *Hy is nie korrek nie* ✓O	1MA annual taxable amount 1MA substitution annual amount 1MA correct tax bracket 1A simplification 1MA subtracting rebate and medical aid credit 1A answer 1O conclusion (7)	F L4

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Q/*V*	Solution/*Oplossing*	Explanation/*Verduideliking*	T&L
4.3.1	5 + 7 = 12 ✓MA ✓MA $\frac{5}{12}$ × R106 265 = R44 227,08 ~ Kally ✓A $\frac{7}{12}$ × R106 265 = R61 987,92 ~ Kristen ✓A	1MA adding ratios 1MA multiplying amount by ratio 1A correct amount Kally 1A correct amount Kristen (4)	F L2
4.3.2	Q2 = $\frac{210614 + 26\,095}{2}$ = 23 856 ✓A Q1 = $\frac{9\,846 + 13\,506}{2}$ ✓MA = 11 676 ✓A Q3 = $\frac{36\,037 + 41\,524}{2}$ = 38 780,50 ✓A IQR = Q3 – Q1 = 38 780,50 – 11 676 ✓MA = 27 104,50 ✓A Yes, his statement is correct. ✓O *Ja, sy stelling is waar.*	1MA quartile 2 answer 1MA concept of quartile correct values divided by 2 1A correct quartile 1 1A correct quartile 3 1CA subtracting quartile 1 from 3 1A correct IQR 1O conclusion (7)	D L4
		[34]	

QUESTION/*VRAAG* 5 [26 MARKS/*PUNTE*]			
Q/*V*	**Solution/*Oplossing***	**Explanation/*Verduideliking***	**T&L**
5.1	Michaelhouse ✓✓A	2A correct school/ *korrekte skool* (2)	F L2
5.2	Day school fees/*Dag skoolfonds* ✓MA R287 558 – R124 632 =R162 926 ✓A	1MA subtracting correct values 1A correct school fees (2)	F L1
5.3	Boarding fees/*Koshuisgelde* ✓RT $\frac{116\ 531}{284\ 189}$ ✓RT × 100% = 41% ✓A	1RT correct numerator 1RT correct denominator 1A correct percentage (3)	F L2
5.4	$\frac{7}{10}$ ✓RT ✓RT = 70% ✓A	1RT correct numerator 1RT correct denominator 1A correct percentage (3)	F L2
5.5	Total school fees per month/*Totale skoolgelde per maand* R291 000 × 2 = R582 000 ✓MA R582 000 + R303 600 = R885 600 ✓MA R885 600 × 60% ✓MCA = R531 360 ✓CA R885 600 – R531 360 R354 240 ✓CA R354 240 ÷ 10 ✓MCA ✓CA R35 424 per month/*per maand* **OR/*OF***	1MA multiplying correct value with 2 1MA adding correct value 1MCA multiplying with 60% 1CA correct value 1CA subtracting correct values 1MCA dividing answer by 10 1CA correct school fees per month	F L3

Stanmorephysics

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Q/*V*	Solution/*Oplossing*	Explanation/*Verduideliking*	T&L
5.5	Total school fees per month/*Totale skoolgelde per maand* R291 000 × 2 = R582 000 ✓MA R582 000 + 303 600 = R885 600 ✓MA 100% − 60% = 40% ✓MCA 40% × R885 600 ✓MCA = R354 240 ✓CA R354 240 ÷ 10 ✓MCA ✓CA = R35 424 per month/*per maand*	 1MA multiplying correct value with 2 1MA adding correct value 1MCA subtracting 60% from 100% 1MCA multiplying with 40% 1CA correct value 1MCA dividing answer by 10 1CA correct school fees per month (7)	
5.6	R885 600 × 60% = R531 360 ✓MA £27 500 × 19,4020 R533 555 ✓MA R533 555 – 531 360 ✓MCA = R2 195 ✓CA Yes, R2 195 more than needed *Ja, R2 195 is meer as voldoende*	**CA from 5.1.5** 1MA multiply total amount with 60% 1MA multiply £27 500 with exchange rate 1MCA subtract two values from one another 1CA correct difference. (4)	F L2
5.7	Interest received after 2 years/ *Rente ontvang na 2 jaar* ✓MA ✓MA R250 000 × 106,25% = R265 625 ✓A R265 625 × 107,25% = R284 882,8125 ✓MCA R284 882,8125 – R250 000 ✓MCA ✓CA = R34 882,81 No, his estimation is not correct. ✓O **OR/OF**	1MA adding 6,25% to 100% 1MA multiplying correct value with 106,25% 1A correct answer 1MCA multiplying answer with new % 1MCA subtracting original amount 1CA correct answer/*korrekte antwoord* 1O conclusion/ *samevatting*	F L4

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	R250 000 × 6,25% = R15 625 ✓MA R250 000 + R15 625 ✓MA = R265 625 ✓A R265 625 × 7,25% = R19 257,8125 R265 625 + R19 257,8125 = R284 882,8125 ✓MCA R284 882,8125 – R250 000 ✓MCA = R34 882,81 ✓CA No, his estimation is not correct. ✓O *Nee, sy bewering is nie korrek nie.*	1MA multiplying with 6,25% 1MA adding answer to original amount 1A correct answer/*korrekte antwoord* 1MCA multiplying answer with new % and adding 1MCA subtracting original amount 1CA correct answer/*korrekte antwoord* 1O conclusion/*samevatting* (7)	
		[28]	
		TOTAL:	**150**

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