



basic education

Department:
Basic Education
REPUBLIC OF SOUTH AFRICA

**SENIOR CERTIFICATE EXAMINATION/
NATIONAL SENIOR CERTIFICATE EXAMINATION
SENIORSERTIFIKAAT-EKSAMEN/NASIONALE
SENIORSERTIFIKAAT-EKSAMEN**

MATHEMATICAL LITERACY P1/WISKUNDIGE GELETTERDHEID VI

MAY-JUNE 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	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
MCA	Method with consistent accuracy/Metode met volgehoue akkuraatheid

**This marking guideline consists of 15 pages
Hierdie nasienriglyne bestaan uit 15 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 item presented.
- General principle of marking, if the candidate makes one mistake he 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 '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 op by die tweede berekeningsfout.
- 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 as 'n leerder een fout maak verloor hy een punt.

QUESTION/VRAAG 1 [32 MARKS/PUNTE] ANSWER ONLY FULL MARKS			
Q/V	Solution/Oplissing	Explanation/Verduideliking	T&L
1.1.1	$\text{Radius/Radius} = 300 \text{ mm} \div 2 \quad \checkmark \text{MA}$ $= 150 \text{ mm} \text{ OR/OF } 15 \text{ cm} \quad \checkmark \text{A}$	1MA dividing by 2 1A simplify (2)	M L1
1.1.2	$\checkmark \text{RT}$ $\text{R}330,00; \text{R}275,00; \text{R}220,00; \text{R}110,00 \quad \checkmark \text{CA}$	1RT reading all the values 1CA correct order (2)	F L1
1.1.3	$\text{VAT/BTW} = \text{R}275,00 \times 15\% \quad \checkmark \text{MA}$ $= \text{R}41,25 \quad \checkmark \text{A}$ OR/OF Price including VAT/Prys BTW ingesluit $= \text{R}275 \times 1,15$ $= \text{R}316,25 \quad \checkmark \text{MA}$ $\text{VAT} = \text{R}316,25 - \text{R}275$ $= \text{R}41,25 \quad \checkmark \text{A}$	1MA multiplying by 15% 1A simplify OR/OF 1MA calculating VAT 1A simplify (2)	F L1
1.1.4	$150 \div 60 \quad \checkmark \text{A}$ $= 2,5 \text{ OR/OF } 2 \frac{1}{2} \text{ hours/uur} \quad \checkmark \text{A}$	1A divide by 60 1A 2,5 hours (2)	M L1

Q/V	Solution/Oplossing	Explanation/Verduideliking	T&L
1.1.5	<p>Total cost/<i>Totale Koste</i></p> <p style="text-align: right;">✓MA</p> $= R330,00 + R275,00 + R220,00 + R220,00 + R165,00 + R110,00$ $= R1\ 320 \quad \checkmark \text{MCA}$	<p>1MA adding all correct values</p> <p>1MCA simplify (at least 5 correct values)</p> <p style="text-align: right;">(2)</p>	F L1
1.1.6	<p>Discount/<i>Afslag</i> = $R330,00 \times 7,5\%$ ✓MA</p> $= R24,75 \quad \checkmark \text{A}$	<p>1MA multiplying by 7,5%</p> <p>1A simplification</p> <p style="text-align: right;">(2)</p>	F L1
1.2.1	$\frac{1\ 250\ \text{g}}{1\ 000} \quad \checkmark \text{MA}$ $= 1,25\ \text{kg} \quad \checkmark \text{A}$	<p>1MA dividing by 1 000</p> <p>1A simplification</p> <p style="text-align: right;">(2)</p>	M L1
1.2.2	<p>Cost Price/<i>Kosprys</i></p> $= R55,00 - R30,30 \quad \checkmark \text{MA}$ $= R24,70 \quad \checkmark \text{A}$	<p>1MA subtracting correct values in the correct order</p> <p>1A simplification</p> <p style="text-align: right;">(2)</p>	F L1
1.2.3	$1\ 250 : 500 \quad \checkmark \text{MA}$ $5 : 2 \quad \text{OR/OF} \quad 2,5 : 1 \quad \text{OR/OF} \quad 1 : 0,4 \quad \checkmark \text{CA}$	<p>1MA values in correct order</p> <p>1CA simplified form</p> <p style="text-align: right;">(2)</p>	M L1
1.2.4	<p>Number of packets/<i>Aantal pakkies</i></p> $\frac{4\ 000\ \text{g}}{500\ \text{g}} = 8 \quad \checkmark \text{A}$ <p>Mass/<i>Massa</i></p> $\frac{100\ \text{g}}{8} \quad \checkmark \text{MA}$ $= 12,5\ \text{g} \quad \checkmark \text{CA}$ <p style="text-align: center;">OR/OF</p> <p>Mass/<i>Massa</i></p> <p style="text-align: center;">✓MA</p> $\frac{500\ \text{g} \times 100\ \text{g}}{4\ 000\ \text{g}} = 12,5\ \text{g} \quad \checkmark \text{CA}$	<p>1A number of 500g packs</p> <p>1MA dividing 100 g by 8</p> <p>1CA simplification</p> <p style="text-align: center;">OR/OF</p> <p>1MA number of 500g packs</p> <p>1A dividing 4 000 g</p> <p>1CA simplification</p>	M L1

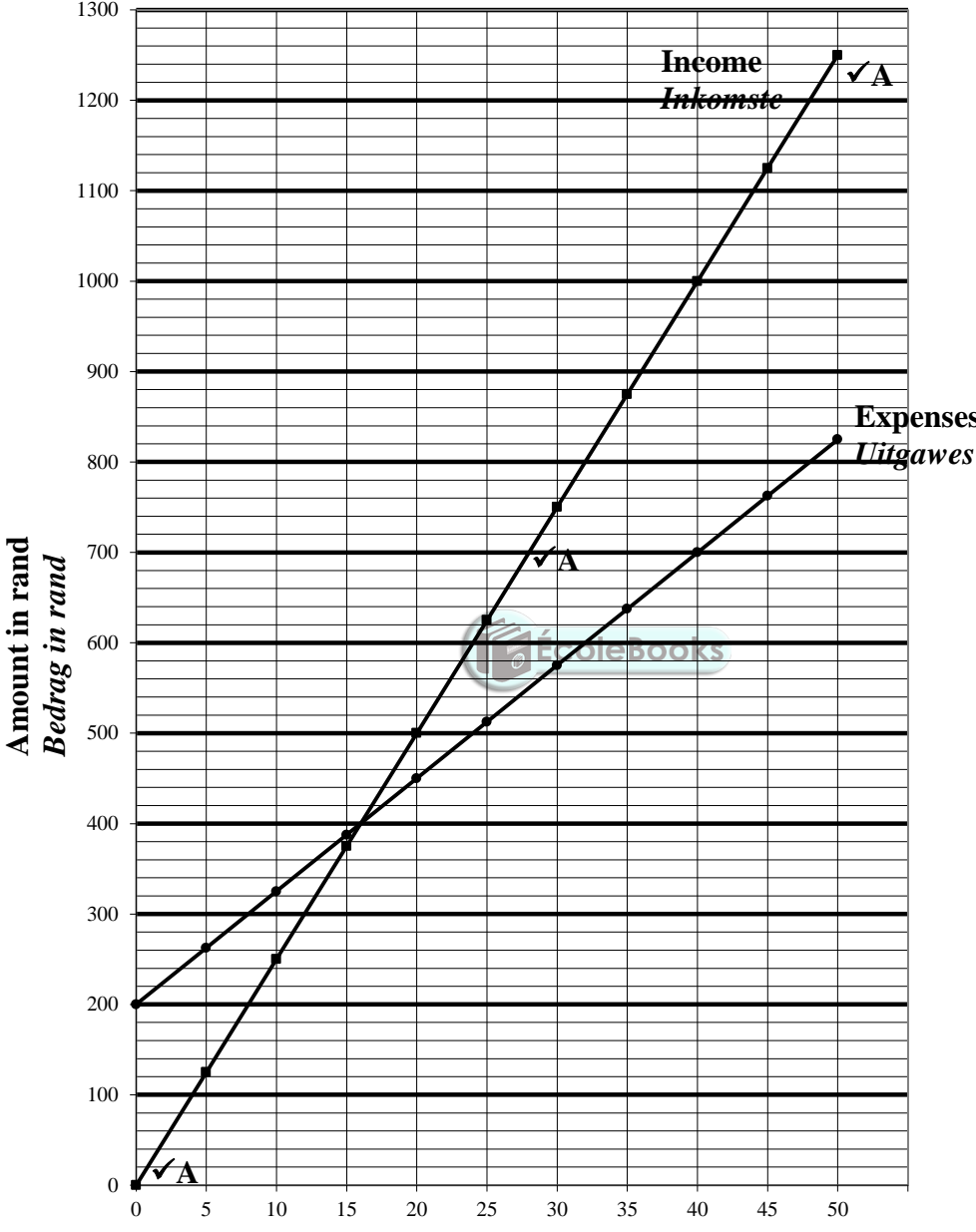
Q/V	Solution/Oplissing	Explanation/Verduideliking	T&L
	<p style="text-align: center;">OR/OF</p> <p>4000 g : 100 g ✓MA 500 g : mass of raisins/massa van rosyntjies</p> <p>Mass of raisins = $\frac{50\,000\text{g}}{4\,000}$ ✓A</p> <p>Mass of raisins/Massa van rosyntjies = 12,5 g ✓CA</p>	<p style="text-align: center;">OR/OF</p> <p>1MA correct ratio concept</p> <p>1A dividing 4 000 g</p> <p>1CA simplification (3)</p>	
1.2.5	<p>Number of cups/aantal koppies ✓MA = 2×5 = 10 ✓A</p> <p style="text-align: center;">OR/OF</p> <p>4 000 : 5 ✓MA 8 000 : 10 ∴ The number of cups = 10 ✓A</p>	<p>1MA multiply by 2 and 5 1A simplification</p> <p style="text-align: center;">OR/OF</p> <p>1MA correct ratio 1A simplification (2)</p>	M L1
1.3.1	<p>Money earned on an investment/ <i>Geld verdien op 'n belegging.</i> ✓✓A</p>	<p>2A definition (2)</p>	F L1
1.3.2	<p>25 months/maande ✓✓A</p>	<p>2A correct number of months (2)</p>	M L1
1.3.3	<p>Bank A ✓✓A</p>	<p>2A correct bank (2)</p>	F L1
1.3.4	<p>Difference/Verskil ✓RT ✓RT 7,50% – 6,7% = 0,8% ✓CA</p>	<p>1RT correct value from tables 1RT correct value from tables 1CA simplification (one value must be correct) (3)</p>	F L1
		[32]	

QUESTION/VRAAG 2 [37 MARKS/PUNTE]			
Q/V	Solution/Oplissing	Explanation/Verduideliking	T&L
2.1.1	Dr. JJ Ndlovu ✓✓A	2A correct name (2)	F L1
2.1.2	Year of birth/Geboortejaar 1982 / '82 ✓✓RT	2RT reading from table (2)	F L1
2.1.3	R0,00/nothing/niks ✓✓A	2A correct amount (2)	F L1
2.1.4	Amount excluding VAT/Bedrag BTW uitgesluit $R1\ 744,75 \div \frac{115}{100}$ OR/OF $\times \frac{100}{115}$ ✓A $R1\ 744,75 \div 1,15$ ✓M = R1 517,17 ✓CA OR/OF VAT amount/BTW bedrag $R1\ 744,75 \times \frac{15}{115}$ = R227,58 ✓A Amount excluding VAT/Bedrag BTW uitgesluit = R1 744,75 – R227,58 ✓M = R 1 517,17 ✓CA	$1A \frac{115}{100}$ OR $\frac{100}{115}$ $1M \div \frac{115}{100}$ OR $\times \frac{100}{115}$ 1CA simplification OR/OF 1A amount VAT 1M subtracting VAT 1CA simplification (3)	F L2
2.1.5	One infection control /Een infeksiebeheer =R40,55 ÷ 2 ✓MA = R20,28 ✓A	1MA divide by 2 1A simplification NPR AO (2)	F L1
2.2.1	Total fixed cost/Totale vaste koste = R140,00 + R60,00 ✓RT = R200,00 ✓CA	1RT correct values 1CA simplification (one value must be correct) (2)	F L1



Q/V	Solution/Oplossing	Explanation/Verduideliking	T&L
2.2.2	<p>Expenses/Uitgawes</p> <p>Expenses (A) = R200,00 + R12,50 × number of packets</p> <p>A = R200,00 + R12,50 × 10 ✓SF</p> <p>A = R200,00 + R125,00</p> <p>= R325,00 ✓A</p> <p>B = 400 ÷ 25^{✓SF} OR/OF B = (400 - 200) ÷ 12,5^{✓SF}</p> <p>= 16 ✓A = 16 ✓A</p>	<p>1SF correct substitution</p> <p>1A simplification</p> <p>1SF correct substitution</p> <p>1A simplification</p> <p>AO</p> <p>(4)</p>	<p>F</p> <p>L2</p>



Q/V	Solution/Oplissing	Explanation/Verduideliking	T&L
2.2.3 (a)	<p style="text-align: center;">INCOME AND EXPENDITURE OF 1 kg OF MIXED VEGETABLE PACKS INKOMSTE EN UITGAWES VAN 1 kg GEMENGDEGROENTE-PAKKE</p>  <p style="text-align: center;">Amount in rand <i>Bedrag in rand</i></p> <p style="text-align: center;">Income <i>Inkomste</i></p> <p style="text-align: center;">Expenses <i>Uitgawes</i></p> <p style="text-align: center;">Number of 1 kg vegetable packs <i>Aantal 1 kg groentepakke</i></p>		F L2
<p>1A starting point (0; 0) 1A endpoint (50; 1 250) 1A straight line (must be joining at least 3 points stated in the table; CA for using B)</p>			(3)

Q/V	Solution/Oplissing	Explanation/Verduideliking	T&L
2.2.3 (b)	Where the cost price of mixed vegetable packs equals the selling price of the packs/Waar die kosprys van 'n pak groente gelyk is aan die verkoopprys van die pak groente.	2A explanation (2)	F L1
2.2.3 (c)	16 packs/pakke ✓✓A	CA from Q2.2.2 / 2.2.3 (a) 2A correct number of packs (2)	F L1
2.3.1 (a)	Deposit/Depositito $R1\ 799,00 \times \frac{20}{100}$ ✓MA = R359,80 ✓A	1MA calculating 20% 1A simplification (2)	F L1
2.3.1 (b)	Total amount/Totale bedrag ✓MA = R359,80 + (24 × R95,00) = R359,80 + R2 280,00 ✓MCA = R2 639,80 ✓CA = R2 640,00 ✓R	CA from Question 2.3.1(a) 1MA multiplying by 24 1MCA adding the deposit 1CA simplification 1R to the nearest rand (4)	F L2
2.3.2 (a)	✓A The value of one currency relative to the value of another currency/Die waarde van een geldeenheid relatief tot die waarde van 'n ander geldeenheid.	1A value of one currency 1A relative to the value of another currency (2)	F L1
2.3.2 (b)	✓✓A ✓✓A yen / jen / ¥ OR/OF Japanese yen / Japanese jen	2A correct currency (2)	F L1
2.3.2 (c)	1 ZAR = 0,067251 dollar (\$) ✓RT $\frac{\$130}{\$0,067251} \times R1$ ✓C = R1 933,056758 = R1 933,00 ✓R OR/OF Dollar (\$) = ZAR14,86966737 ✓RT $\frac{\$130}{\$1} \times R14,86966737$ ✓C = R1 933,056758 = R1 933,00 ✓R	1RT exchange rate 1C conversion 1R correct rounding OR/OF 1RT exchange rate 1C conversion 1R correct rounding (3)	F L2
			[37]


QUESTION/VRAAG 3 [22 MARKS/PUNTE]			
Q/V	Solution/Oplissing	Explanation/Verduideliking	T&L
3.1.1	<p>Width/breedte = $3 \times 10,4 \text{ cm}$ ✓MA = $31,2 \text{ cm}$ ✓A</p> <p>Length/Lengte = $4 \times 10,4 \text{ cm}$ ✓MA = $41,6 \text{ cm}$ ✓A</p>	<p>1MA for multiplying diameter by 3 1A simplification</p> <p>1MA for multiplying diameter by 4 1A simplification</p> <p>(4)</p>	M L1
3.1.2	<p>Ribbon needed for one candle (cm) <i>Lint benodig vir een kers (cm)</i></p> <p>= $2 \times 3,142 \times \text{radius} + 3 \text{ cm}$ = $2 \times 3,142 \times 5,2 \text{ cm} + 3 \text{ cm}$ ✓SF = $35,6768 \text{ cm}$ ✓A</p> <p>20×100 = $2\,000 \text{ cm}$ ✓C</p> <p>Number of candles/Aantal kerse $2\,000 \text{ cm} \div 35,6768 \text{ cm}$ ✓MCA = $56,05883936$ = 56 candles/kerse ✓R</p>	<p>1SF correct substitution (radius) 1A length for 1 candle</p> <p>1C conversion</p> <p>1MCA dividing by length of ribbon 1R correct number of candles</p> <div style="border: 1px solid black; padding: 5px; width: fit-content; margin: 10px auto;"> <p>Accept 55 candles if rounded earlier</p> </div> <p>(5)</p>	M L3
3.1.3	<p>Volume = $3,142 \times (5,2\text{cm})^2 \times 11,4\text{cm}$ ✓SF = $968,54 \text{ cm}^3$ ✓CA</p> <p>Volume of horsehead/<i>Volume van kers met perd</i></p> <p>= $\frac{2}{3} \times \frac{968,54}{1} \text{ cm}^3$ ✓MCA = $645,69 \text{ cm}^3$ ✓CA</p> <p style="text-align: center;">OR/OF</p> <p>✓✓CA $\frac{968,54}{3} = 322,84666 \times 2$ ✓MCA = $645,69 \text{ cm}^3$ ✓CA</p>	<p>CA from Question 3.1.2 1SF substituting correct values 1CA answer in cm^3</p> <p>1MCA multiply by 2 and dividing by 3 1CA simplification</p> <p style="text-align: center;">OR/OF</p> <p>2CA answer in cm^3 1MCA multiply by 2 and dividing by 3 1CA simplification</p>	M L2


Q/V	Solution/Oplissing	Explanation/Verduideliking	T&L
3.1.3	<p style="text-align: center;">OR/OF</p> <p>Volume = $3,142 \times (5,2)^2 \times 11,4 \text{ cm}$ ✓SF $= 968,54 \text{ cm}^3$ ✓CA Volume of horsehead = $968,54 \text{ cm}^3 - \frac{1}{3} (968,54 \text{ cm}^3)$ $= 968,54 - 322,85$ ✓MCA $= 645,69 \text{ cm}^3$ ✓CA</p>	<p style="text-align: center;">OR/OF</p> <p>1SF substituting correct values 1CA answer in cm^3 1MCA subtracting 1CA simplification (4)</p>	
3.2.1 (a)	Ribbon/Lint OR/OF R/L ✓✓A	2A ribbon (2)	P L1
3.2.1 (b)	HBN /PSG ✓✓A	2A HBN/PSG (2)	P L1
3.2.2 (a)	<p style="text-align: center;">OR/OF</p> $P_{[\text{candle with ribbon/ kers met lint}]} = \frac{1}{2} \times \frac{100}{1} \% \quad \checkmark A \quad \checkmark M \quad \text{OR/OF} \quad \frac{4}{8} \times \frac{100}{1} \% \quad \checkmark A \quad \checkmark M$ $= 50\% \quad \checkmark CA \quad \text{OR/OF} \quad = 50\% \quad \checkmark CA$	<p>1A fraction 1M concept of percentage 1CA for percentage AO (3)</p>	P L2
3.2.2 (b)	<p>P/W $P_{[\text{Gold horsehead candle / Goue perdekop kers}]} = 0$ ✓✓A</p> <p style="text-align: center;">OR/OF</p> <p>Impossible/ Onmoontlik / $\frac{0}{8}$ / 0% / 0,0 ✓✓A</p>	<p>2A correct probability (2)</p>	P L2
		[22]	

QUESTION/VRAAG 4 [21 MARKS/PUNTE]			
Q/V	Solution/Oplissing	Explanation/Verduideliking	T&L
4.1.1	North West / NW Noord-wes/ NW ✓✓RT	2RT reading from map (2)	MP L1
4.1.2	N8 ✓✓RT	2RT N8 (2)	MP L1
4.1.3	Campbell ✓✓RT	2RT town (2)	MP L1
4.1.4	04:00 – 09:30 = 5 hours 30 min / 5,5 hours/ure ✓ A Average Speed /Gemiddelde spoed $= \frac{496,9}{5,5}$ ✓MCA = 90,3454545 km/h ✓CA = 90 km/h ✓R	1A calculating 5,5 hours 1MCA dividing correct values in correct order 1CA simplification 1R rounding (4)	MP L2

Q/V	Solution/Oplissing	Explanation/Verduideliking	T&L
4.2.1	1 unit on the plan represents 380 units in real life./ <i>1 eenheid op die plan verteenwoordig 380 eenhede in werklikheid.</i> ✓✓A	2A explanation (2)	MP L1
4.2.2	Lifts/Hysbakke ✓✓A OR/OF Ground Floor/Grondvloer ✓✓A OR/OF Stairs/Trappe ✓✓A	2A lifts (2)	MP L1
4.2.3	4 ✓✓A	2A correct value <div style="border: 1px solid black; padding: 2px; display: inline-block;">Accept 2</div> (2)	MP L1
4.2.4	Bloed street entrance/ <i>Bloedstraat-ingang</i> ✓✓RT OR/OF South entrance/ <i>Suidelike ingang</i> ✓✓RT	2RT correct entrance (2)	MP L1
4.2.5	27 mm ✓✓✓A	2A for correct measurement 1A correct wall (Accept 26 – 28 mm) (3)	MP L1
		[21]	

QUESTION/VRAAG 5 [38 MARKS/PUNTE]			
Q/V	Solution/Oplissing	Explanation/Verduideliking	T&L
5.1.1	Range is the difference between the highest/maximum value and the lowest/minimum value in a data set. ✓✓A <i>Omvang is die verskil tussen die hoogste/maksimum waarde en die kleinste/minimum waarde in 'n dataversameling.</i>	2A correct definition (2)	D L1
5.1.2	Line graph/Lyngrafiek OR/OF ✓✓A Broken line graph/Gebrokelyn grafiek	2A correct graph (2)	D L1
5.1.3	Discrete data/Diskrete data ✓✓A	2A discrete (2)	D L1
5.1.4	✓M 1 749 + 2 239 + 1 618 + 903 + 429 + 150 + 16 ✓RT = 7 104 ✓CA	1RT correct values 1M adding ALL values 1CA simplification (at least 6 values correct) <div style="border: 1px solid black; padding: 2px; display: inline-block;">Accept 7 136 = full marks</div> AO (3)	D L1
5.1.5	L2 ✓✓✓RT	3RT correct level (3)	D L1
5.1.6	Median level descriptor/Mediaanvlakbeskrywer ✓CA = 62; 223; 551; 935 1 231; 1 357; 1 990 ✓MCA L4 ✓CA OR/OF ✓MCA L2 : L3 ; L1 ; L4 ; L5 ; L6 , L7 ✓CA Median level/Mediaanvlak = L4 ✓CA	CA from Question 5.1.4 1MCA arranging in order 1CA correct median 1CA level descriptor OR/OF 1MCA arranging 1CA correct order 1CA level descriptor AO (3)	D L3

Q/V	Solution/Oplissing	Explanation/Verduideliking	T&L
5.2.1	### ✓✓A	2A correct tally (2)	D L1
5.2.2	6 ✓✓CA	CA from Question 5.2.1 2CA correct frequency (2)	D L1
5.2.3	✓RT 43 + 17 = 60 ✓MA OR/OF ✓RT ✓MA 0 + 3 + 6 + 12 + 7 + 15 + 17 = 60	1RT correct values 1MA simplification OR/OF 1RT correct values 1MA simplification (2)	D L1
5.3.1	✓A ✓A Stacked bar graph/ <i>Stapel staafgrafiek</i>	1A stacked 1A bar graph (2)	D L1
5.3.2	Two hundred and ninety four thousand two hundred and two/ <i>Twee honderd vier en negentig duisend twee honderd en twee.</i>	1A first part of wording 1A second part of wording (2)	D L1
5.3.3	✓RT 298 607 – 222 034 – 9 670 ✓M = 66 903 ✓CA	 1RT correct values 1M subtracting 1CA simplification (two values must be correct) AO (3)	D L2
5.3.4	Mean/ <i>Gemiddelde</i> $\frac{225458 + 263903 + 265810 + 245103 + 233858 + 222034}{6}$ = 242 694,33 ✓CA	1RT correct values 1M concept of mean 1CA simplification NPR (3)	D L2
5.3.5	Range/ <i>Omvang</i> 388 845 – 294 202 ✓MA = 94 643 ✓CA	1MA concept of range 1CA simplification (one value must be correct) (2)	D L2

<p>5.3.6</p>	<p>% for Mathematics/% vir Wiskunde</p> <p>✓RT $= \frac{222034}{530311} \times \frac{100}{1} \quad \checkmark\text{MA}$</p> <p>41,8686% ✓CA</p> <p>% for Mathematical Literacy/% vir Wiskundige Geletterdheid</p> <p>$\frac{298607}{530311} \times \frac{100}{1}$</p> <p>56,3079% ✓CA</p> <p>56,3079% – 41,8686% = 14,4 % ✓CA</p> <p style="text-align: center;">OR/OF</p> <p>✓RT ✓M $\frac{298\ 607 - 222\ 034}{530\ 311} \times 100 \quad \checkmark\text{MA}$</p> <p> ✓CA</p> <p>= 14,4% ✓CA</p> <p style="text-align: center;"></p>	<p>1RT correct values 1MA percentage calculation</p> <p>1CA simplification</p> <p>1CA simplification</p> <p>1CA simplification with correct rounding</p> <p style="text-align: center;">OR/OF</p> <p>1RT correct values 1M subtracting values 1CA correct denominator 1MA percentage calculation 1CA simplification with correct rounding</p> <p style="text-align: right;">(5)</p>	<p>D L2</p>
		[38]	
		TOTAL/TOTAAL: 150	