



education

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NATIONAL SENIOR CERTIFICATE/ NASIONALE SENIOR SERTIKAAT

GRADE/GRAAD 12

**MATHEMATICAL LITERACY P2/
WISKUNDIGE GELETTERDHEID V2**

SEPTEMBER 2021

MARKING GUIDELINES/NASIENRIGLYNE

MARKS/PUNTE: 150

Symbol/Kode	Explanation/Verduideliking
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/RD	Read from table/graph/diagram/ <i>Lees vanaf tabel/grafiek/diagram</i>
AO	Answer only/ <i>Slegs antwoord</i>
SF	Substitution in a formula/ <i>Korrekte vervanging in formule</i>
O	Opinion/Explain/Reason/ <i>Opinie/Verduidelik/Rede</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 OR omitting units/ <i>Geen penalisasie vir afronding nie</i>
MCA	Method with consistent accuracy/ <i>Metode met volgehoue akkuraatheid</i>

**This marking guidelines consists of 9 pages and a page with the cognitive grid/
Hierdie nasienriglyne bestaan uit 9 bladsye en 'n bladsy met die kognitewe tabel**

QUESTION/VRAAG 1 [30 MARKS/PUNTE]			
Q/V	Solution/Oplossing	Explanation/Verduideliking	T&L
1.1.1	Top view of the offices. ✓✓A <i>Bo-aansig van kantore</i> OR/OF Top view of the offices without the roof. ✓✓A <i>Bo-aansig van kantore sonder die dak</i>	2A Explanation <div style="border: 1px solid black; padding: 5px; width: fit-content;">Accept: Aerial view without the roof.</div> OR Layout of the office from above (2)	MP L1
1.1.2	Switch ✓✓A <i>Skakelaar</i>	2A answer (2)	MP L1
1.1.3	\checkmark RT Difference/ <i>Verskil</i> = $11,7 - 10,4$ ✓MA = 1,3 cm ✓A	1RT correct values 1MA subtracting 1A difference AO (3)	MP L1
1.1.4	Smoke detector ✓✓A <i>Rookverklikker</i>	2A answer (2)	MP L1
1.1.5	Number scale ✓✓A <i>Getalskaal</i>	2A answer (2)	MP L1
1.2.1	Distance/A fstand = $\frac{800}{2}$ ✓MA = 400 m ✓A	1MA dividing by 2 1A distance AO (2)	M L1
1.2.2	✓A ✓A 01 : 43 OR/OF ✓A ✓A 00 : 01 : 43	1A minutes/ <i>minute</i> 1A seconds/ <i>sekondes</i> (2)	M L1
1.2.3	Total time = 2 minutes ✓✓A <i>Totale tyd</i> OR/OF 00 : 02 : 00 ✓✓A	2A time in minutes (2)	M L1
1.3.1	8 items ✓✓A	2A correct number (2)	M L1
1.3.2	Rectangle ✓✓A <i>Reghoek</i>	2A correct shape (2)	M L1
1.3.3	$A = l \times w$ ✓✓A	2A correct formula Accept (a) (2)	M L1
1.3.4	Length = $\frac{340}{10}$ ✓C ✓RT = 34 cm ✓A OR/OF Length/ <i>Lengte</i> = 340 mm ✓A = 34 cm ✓A	1RT correct value 1C conversion 1A length in cm OR 1RT correct value 1A length in mm 1A length in cm AO (3)	M L1
1.4.1	300 ml ✓✓A	2A correct volume (2)	M L1
1.4.2	$3 \ell = 3 \times 1\,000$ ✓C = 3 000 ml ✓A	1C conversion 1A answer AO (2)	M L1
			[30]

QUESTION/VRAAG 2 [43 MARKS/PUNTE]			
Q/V	Solution/Oplissing	Explanation/Verduideliking	T&L
2.1.1	6000 ✓✓RT	2RT answer (2)	MP L1
2.1.2	$\text{Density} = \frac{\text{number of spectators}}{\text{ground size (in acres)}}$ $/ \text{Digtheid} = \frac{\text{aantal toeskouers}}{\text{grootte van grond(in akker)}}$ $= \frac{39\,000}{13,7} \text{ SF}$ $= 2\,888,88\dots \text{ A}$ $\approx 2889 \text{ R}$	1SF numerator 1SF denominator 1A answer 1R rounding (4)	MP L2
2.1.3	$40 \text{ m}^2 = 42 \text{ acres/akker} \text{ ✓RT}$ $42 \text{ acres} = 4\,046,86 \times 42 \text{ ✓C}$ $= 169\,968,12 \text{ m}^2 \text{ ✓A}$ $\therefore 40 \text{ m}^2 = 169\,968,12 \text{ m}^2$ $1 : 4\,249,203 \text{ ✓CA}$ <p>OR/OF</p> $40 \text{ m}^2 = 42 \text{ acres/akker} \text{ ✓RT}$ $40 \text{ m}^2 = \frac{40}{4046,86} \text{ ✓M}$ $= 0,000988420\dots\dots\dots \text{ m}^2 \text{ ✓A}$ $\therefore 0,000988420\dots\dots\dots : 42$ $1 : 4\,249,203 \text{ ✓A}$	1RT correct values 1C conversion 1A simplification 1CA answer as unit ratio (4)	MP L3
2.1.4	Somerset Road ✓A Marryat Road ✓A Church Road ✓A	1A answer 1A answer 1A answer [Accept Newstead way] (3)	MP L1
2.1.5	3 parking areas/3 parkeerareas ✓✓A	2A answer (2)	MP L1
2.1.6	Players warm up on practice courts before a match. ✓✓O <i>Spelers om op te warm voor 'n wedstryd.</i> <p>OR/OF</p> Practice purpose/ <i>Om te oefen</i> <p>OR/OF</p> Any relevant reason/ <i>Enige verwante rede.</i>	2O opinion (2)	MP L4

2.1.7	$\frac{11\ 393}{39\ 000} \times 100\% = 29,21\% \checkmark A$ <p>29,21% is less than 30%, The claim is NOT valid/<i>Die stelling is NIE waar NIE</i> ✓ O</p> <p>OR/OF $\frac{30}{100} \times 39\ 000 = 11\ 700$ 11 700 is more than 11 393 The claim is NOT valid/<i>Die stelling is NIE waar NIE</i>. ✓ O</p>	1RT correct values 1MA multiply by percentage 1A answer 1O conclusion 1MA multiply by percentage 1RT correct values 1A answer 1O conclusion	MP L4
2.1.8	Gate/hek 5 ✓ ✓ RD Ensure people do not get lost/ <i>Mense nie verdwaal nie</i> ✓ ✓ O <p>OR/OF For people to reach their destination on time/<i>Dat mense hulle bestemming betyds kan bereik.</i></p> <p>OR/OF Ask for directions/<i>Mense vir aanwysings kan vra</i></p> <p>OR/OF Any relevant explanation/<i>Enige sinvolle verduideliking</i></p>	2RD answer 2O opinion	MP L4
2.1.9	North/Noord ✓ ✓ A North East/Noord Oos ✓ A	2A North 1A North East (3)	MP L2
2.2.1	10 aisles/rye ✓ ✓ RD	2RD answer (2)	MP L1
2.2.2	7 ✓ ✓ RD and 8 ✓ ✓ RD	2RD answer 2RD answer (4)	MP L1
2.2.3	Walk easterly. Turn left through aisle 7 and turn right. ✓ ✓ A Walk easterly and turn left after passing aisle 6. ✓ ✓ A Destination will be on the right. <i>Loop oos. Draai links deur paadjie 7 en draai dan regs. Loop dan oos en draai links net nadat jy paadjie 6 bereik het. Jou bestemming sal aan jou regterkant wees.</i>	1A turn left 1A turn right 1A easterly 1A turn left 1A draai links 1A draai regs 1A oos 1A draai links (4)	MP L2
2.2.4	F ✓ ✓ A	2A answer (2)	MP L1
2.2.5	$P_{(\text{odd})} = \frac{5}{10} \checkmark \checkmark A$ $= 50\% \checkmark CA$	1A numerator 1A denominator 1CA answer (3)	P L3
			[43]

QUESTION/VRAAG 4 [42 MARKS/PUNTE]			
Q/V	Solution/Oplissing	Explanation/Verduideliking	T&L
4.1 4.1.1	$65 \text{ mm} \div 10 = 6,5 \text{ cm} \checkmark \text{C}$ $r = \frac{6,5}{2} = 3,25 \text{ cm} \checkmark \text{A}$ $A = \pi r^2$ $= (3,142)(3,25^2) \checkmark \text{SF}$ $= 33,187 \text{ cm}^2 \checkmark \text{A}$ $\approx 33 \text{ cm}^2 \checkmark \text{R}$	1C conversion 1A radius 1SF substitution 1A answer 1R rounding off (5)	M L3
4.1.2	Length/lengte: $\checkmark \text{MA} \quad \checkmark \text{C}$ $65 \text{ mm} \times 6 = 390 \text{ mm} = 39 \text{ cm} \checkmark \text{A}$ Width/breedte: $\checkmark \text{MA}$ $65 \text{ mm} \times 3 = 195 \text{ mm} = 19,5 \text{ cm} \checkmark \text{A}$ OR/OF Length/lengte: $\checkmark \text{C} \quad \checkmark \text{MA}$ $(65 \text{ mm} \div 10) \times 6 = 39 \text{ cm} \checkmark \text{A}$ Width/breedte: $\checkmark \text{C} \quad \checkmark \text{MA}$ $(65 \text{ mm} \div 10) \times 3 = 19,5 \text{ cm} \checkmark \text{A}$	1MA multiply by 6 1C conversion 1A length 1MA multiply by 3 1A width (5)	M L2
4.1.3	$\text{Volume} = 39 \times 19,5 \times 11,76 \checkmark \text{SF}$ $= 8943,48 \text{ cm}^3 \checkmark \text{CA}$ $= \frac{8\,943,48}{1000} \checkmark \text{M}$ $= 8,9 \text{ l} \checkmark \text{CA}$	CA from Q 4.1.2 1SF substitution 1CA simplification 1M dividing by 1000 1CA answer (4)	M L3
4.1.4	Number of cans $= 6 \times 3 \checkmark \text{MA}$ $= 18 \text{ cans/blikkies} \checkmark \text{A}$	1MA multiplying 1A answer (2)	MP L2
4.1.5	Volume of used space/ <i>Volume van gebruikte spasie in kartonhouer</i> : $\checkmark \text{SF} \quad \checkmark \text{M}$ $V = [3,142 \times (3,25)^2 \times 11,2] \times 18$ $= 371,6986 \times 18$ $= 6\,690,5748 \checkmark \text{CA}$ $= 6,7 \text{ l} \checkmark \text{C}$ Volume of unused space/ <i>Volume van ongebruikte spasie</i> : $= 8,9 \text{ l} - 6,7 \text{ l} \checkmark \text{M}$ $= 2,2 \text{ l} \checkmark \text{CA}$ \therefore The claim is correct/ <i>Die stelling is waar.</i> $\checkmark \text{O}$	CA from Q 4.1.3 1SF substitution 1M multiplying by 18 1CA simplification 1C conversion 1M subtracting 1CA answer 1O conclusion (7)	M L4

4.2.1	<p>Surface area (cylinder)/<i>Buite-oppervlakte silinder</i>:</p> $= 2\pi r(r + h)$ $= 2 \times 3,142 \times 3,25(3,25 + 11,2) \checkmark \checkmark \text{SF}$ $= 20,423 \times 14,45 \checkmark \text{S}$ $= 295,11235 \text{ cm}^2 \checkmark \text{A}$ <p>OR/OF</p> <p>Surface area (cylinder)</p> $= 2\pi r(r + h)$ $= 2 \times 3,142 \times 32,5(32,5 + 112) \checkmark \checkmark \text{SF}$ $= 204,23 \times 144,5 \checkmark \text{S}$ $= 29\,511,235 \text{ mm}^2 \checkmark \text{A}$	<p>2SF substitution</p> <p>1S simplification</p> <p>1A answer</p> <p>NPR</p> <p>(4)</p>	M L3
4.2.2	<p>Cost excluding VAT/<i>Koste voor BTW</i>:</p> <p>115% of cost (include VAT) = R22,50/m²</p> <p>Therefore, cost (exclude VAT)/<i>Koste voor BTW is dus</i>:</p> $= \frac{22,50}{1,15} \checkmark \text{MA}$ $= \text{R}19,565$ $\approx \text{R}19,57 \checkmark \text{A}$	<p>1MA dividing by 115%</p> <p>1A answer</p> <p>(2)</p>	F L2
4.3.1	<p>Speed = $\frac{\text{Distance}}{\text{Time}}$</p> $= \frac{27 \text{ km}}{0,4 \text{ h}} \checkmark \text{SF}$ $= 67,5 \text{ km/h} \checkmark \text{A}$	<p>1SF substitution</p> <p>1A answer</p> <p>(2)</p>	MP L2
4.3.2	<p>Most people are not working/<i>Baie mense werk nie</i> $\checkmark \checkmark \text{O}$</p> <p>OR/OF</p> <p>The bus company is saving on petrol costs/<i>Die busmaatskappy probeer geld bespaar</i>.</p> <p>OR/OF</p> <p>People want to do shopping for the week/<i>Mense wil inkopies doen vir die week</i></p> <p>OR/OF</p> <p>Any relevant answer/<i>Enige sinvolle antwoord</i>.</p>	<p>2O opinion</p> <p>(2)</p>	M L4

4.3.3	<p>Knock off time/<i>Huistoe gaan tyd</i>:</p> $5 \text{ pm/nm} + 45 \text{ minutes/minute} = 17:45 \checkmark \text{A}$ <p>Knock off time + walking time/<i>Huistoe gaan tyd + stap na busstop</i>:</p> $= 17:45 + 10 \text{ minutes/minute} = 17:55 \checkmark \text{A}$ <p>Next available bus/<i>Volgende beskikbare bus</i>:</p> $18:10 \checkmark \text{A}$	<p>1A knock off time</p> <p>1A arrive at bus stop</p> <p>1A next bus</p> <p>(3)</p>	<p>MP</p> <p>L2</p>
4.3.4	$P_{(701)} = \frac{7}{10} \checkmark \checkmark \text{A}$	<p>1A numerator</p> <p>1A denominator</p> <p>(2)</p>	<p>P</p> <p>L2</p>
4.3.5	$\begin{aligned} ^\circ\text{F} &= (1,8 \times ^\circ\text{C}) + 32^\circ \checkmark \text{SF} \\ &= (1,8 \times 26^\circ) + 32^\circ \checkmark \text{S} \\ &= 46,8^\circ + 32^\circ \\ &= 78,8^\circ \checkmark \text{A} \\ &= 80^\circ \checkmark \text{R} \end{aligned}$	<p>1 SF substitution</p> <p>1S simplification</p> <p>1A answer</p> <p>1R rounding</p> <p>(4)</p>	<p>M</p> <p>L2</p>
			[42]
		TOTAL/TOTAAL:150	

MATHEMATICAL LITERACY PAPER 2 ANALYSIS

QUESTION	MEASUREMENT	FINANCE	PROBABILITY	MAPS & PLANS	TOTAL	LEVEL 1	LEVEL 2	LEVEL3	LEVEL 4
1	19	0	0	11	30	30	0	0	0
2	0	0	3	40	43	15	11	7	10
3	29	4	2	0	35	0	14	12	9
4	31	2	2	7	42	0	20	13	9
ACTUAL TOTAL	79	6	7	58	150	45	45	32	28
EXPECTED TOTAL	75	8	7	60	150	45	45	30	30
ACTUAL %	52,7%	4%	4,6%	38,7%	100%	30%	30%	20%	20%
EXPECTED %	50% (±5%)	5% (±5%)	5%	40% (±5%)	100%	30% (±5%)	30% (±5%)	20% (±5%)	20% (±5%)