



basic education

Department:
Basic Education
REPUBLIC OF SOUTH AFRICA

NATIONAL SENIOR CERTIFICATE

GRADE 12

MATHEMATICAL LITERACY P1

FEBRUARY/MARCH 2014

MEMORANDUM

MARKS: 150

Symbol	Explanation
M	Method
M/A	Method with accuracy
CA	Consistent accuracy
A	Accuracy
C	Conversion
S	Simplification
RT/RG	Reading from a table/Reading from a graph
SF	Correct substitution in a formula
O	Opinion/Example
P	Penalty, e.g. for no units, incorrect rounding off etc.
R	Rounding off

This memorandum consists of 12 pages.

QUESTION 1 [27 MARKS]			
Ques	Solution	Explanation	AS/L
1.1.1	$45\% \text{ of } 26,7 - \sqrt{\frac{24 \times 345}{10\,389}}$ $= 12,015 - 0,8927467... \quad \checkmark A$ $= 11,12225....$ $\approx 11,12 \quad \checkmark CA$	1A calculation 1CA rounding (2)	12.1.1 L1
1.1.2	$1,068 = \frac{1\,068}{1\,000} = \frac{267}{250} = 1\frac{17}{250} \quad \checkmark A$	1A fraction 1A simplest form (2)	12.1.1 L1
1.1.3	$\checkmark A$ September 1970 $\checkmark A$	1A Year 1A month (2)	12.1.1 L2
1.1.4	$R1 = \text{€}0,10717$ $\text{€}32\,527 = \frac{R1 \times \text{€}32\,527}{\text{€}0,10717} \quad \checkmark M/A$ $= \text{R}303\,508,4445$ $= \text{R}303\,508,44 \quad \checkmark CA$	1M/A dividing 1CA simplification (2)	12.1.1 L2
1.1.5	$S(\text{in metre}) = 5(1,5)[1,5 - 1] \quad \checkmark SF$ $= 3,75 \quad \checkmark CA$	1SF substitution 1CA distance (2)	12.2.1 L1
1.1.6	$P(\text{boy}) = \frac{18}{42} \quad \checkmark A$ $= \frac{3}{7} \quad \checkmark CA$	1A number of favourable outcomes 1A number of possible Outcomes 1CA simplification (3)	12.4.5 L2
1.1.7	$20 : 12$ $= 5 : 3$ $\therefore 2 \text{ more trains per hour} \quad \checkmark CA$ <p>OR</p> $\text{Number of trains in peak periods} = \frac{60}{12}$ $= 5 \quad \checkmark A$ $\text{Number of trains more} = 5 - 3$ $= 2 \quad \checkmark CA$	1A writing ratio 1CA more trains OR 1A number of trains in peak periods 1CA more trains (2)	12.1.1 L2

Ques	Solution	Explanation	AS/L
1.2.1	$1\ 000\text{ g} = 2,2\text{ pound}$ $\therefore 200\text{ g} = \frac{2,2}{5}\text{ pounds } \checkmark\text{A}$ $= 0,44\text{ pounds } \checkmark\text{S}$	1A divide by 5 1S simplification (2)	12.3.2 L2
1.2.2	$10\text{ tbsp} = 125\text{ ml}$ OR $10 : 125 = 3 : x$ $1\text{ tbsp} = 12,5\text{ ml } \checkmark\text{A}$ $x = \frac{125 \times 3}{10} \checkmark\text{A}$ $= 37,5\text{ ml } \checkmark\text{S}$ $\therefore 3\text{ tbsp} = 12,5 \times 3\text{ ml}$ $= 37,5\text{ ml } \checkmark\text{S}$	1A times three 1S simplification (2)	12.3.2 L1
1.2.3	For 6 persons use 50 g $\therefore 1\text{ person use } \frac{50}{6} = 8,33\text{ g } \checkmark\text{M/A}$ OR $\therefore 9\text{ persons use } 8,33 \times 9$ $= 75\text{ g } \checkmark\text{CA}$ $6 = 50\text{ g } \checkmark\text{M/A}$ $9 = \frac{50\text{ g} \times 9}{6}$ $= 75\text{ g } \checkmark\text{CA}$	1M/A using ratio 1CA amount of pine nuts (2)	12.1.1 L2
1.3.1	the breadth decreases $\checkmark\checkmark\text{A}$	2A correct answer (1)	12.2.2 L1
1.3.2	4 m $\checkmark\checkmark\text{A}$	2A breadth (1)	12.2.2 L1
1.3.3	6 m $\checkmark\checkmark\text{A}$	2A side length (2)	12.3.2 L1
1.3.4	Number of cabbages = $\frac{400\text{ cm}}{16\text{ cm}} + 1$ at beginning $= 25 + 1$ $= 26 \checkmark\text{CA}$	1A dividing and adding 1CA number (2)	12.3.1 L2
		[27]	

QUESTION 2 [29 MARKS]			
Ques	Solution	Explanation	AS/L
2.1.1	54% ✓✓ RG	2RG percentage (2)	12.4.4 L1
2.1.2	Natural area lost = 70% – 34% ✓ RG = 36% ✓ CA	1RG subtracting correct values 1CA area lost (2)	12.4.4 L1
2.1.3	Ave annual percentage rate = $\frac{127\ 909}{9\ 474\ 740} \times 100\%$ ✓M = 1,35 % per year ✓CA	1M calculating percentage 1CA percentage/annum (2)	12.1.1 L1
2.2.1	Median = $\frac{158+160}{2}$ ✓M = 159 ✓CA	1M finding median 1CA median (2)	12.4.3 L2
2.2.2	6 athletes ✓✓A	2A answer (2)	12.4.3 L2
2.2.3	P(less than 158) = $\frac{5}{12}$ ✓A ≈ 41,67 % ✓CA	1A number less than 160 1A total number of athletes 1CA % (3)	12.4.5 L2
2.3.1	MHR _{female} = 216 – (1,09 × 18) ✓SF = 196,38 ✓CA	1SF substitution 1CA maximum heart rate (2)	12.2.1 L1
2.3.2	Age = $\frac{202-189,9}{0,55}$ ✓SF = 22 ✓CA	1SF substitution 1CA age (2)	12.2.1 L1
2.3.3 (a)	female ✓A	1A answer (1)	12.2.2 L1
2.3.3 (b)	186 beats per minute ✓✓A	2A correct conclusion (2)	12.2.2 L1
2.3.3 (c)	Female ✓✓A	2A correct gender (2)	12.2.2 L1

Ques	Solution	Explanation	AS/L
2.3.3 (d)	26 ✓✓A	2A correct conclusion (2)	12.2.2 L2
2.3.3 (e)	20 ✓✓A	2A correct conclusion (2)	12.2.2 L2
2.3.3 (f)	$\begin{aligned} \text{Difference in age} &= 22 - 18 \checkmark \text{RG} \\ &= 4 \text{ years } \checkmark \text{CA} \end{aligned}$	2RG correct values 1CA correct conclusion (3)	12.2.2 L2
		[29]	

QUESTION 3 [22 MARKS]			
Ques	Solution	Explanation	AS/L
3.1.1	$A = R6,31 \times 9 \times 5 \quad \checkmark M$ $= R283,95 \quad \checkmark CA$	1M concept - multiplying 1A correct values 1CA simplification (3)	12.1.1 L1(2) L2(1)
3.1.2	$\text{Monthly rate} = \frac{\text{Weekly rate} \times 13}{3}$ $= \frac{R303,30 \times 13}{3} \quad \checkmark SF$ $= R1\,314,30 \quad \checkmark CA$	1SF substituting weekly rate 1CA simplification (2)	12.2.1 L1
3.1.3	$\text{Percentage increase} = \frac{\checkmark SF \quad \checkmark SF}{R303,30} \times 100\%$ $\approx 4,45\% \quad \checkmark CA$	1SF new rate 1SF old rate 1CA percentage (3)	12.1.1 L1
3.2.1	Brazil $\checkmark RT$	1RT correct country (1)	12.4.4. L1
3.2.2	$\text{Total} = 10\,017 + 5\,526 + 0 + 91\,916 + 84 + 9\,631 \text{ tonnes} \quad \checkmark M$ $= 117\,174 \text{ tonnes} \quad \checkmark CA$	1M addition 1CA correct total (2)	12.1.1 L1
3.2.3	$\text{Amount of peaches} = \frac{\checkmark RT}{100} \times 1\,200\,000 \text{ tonnes} \quad \checkmark M$ $= 366\,360 \text{ tonnes} \quad \checkmark CA$	1RT correct percentage 1M writing 1,2 million in full 1CA amount of peaches produced (3)	12.1.1 L1
3.3.1	$\text{Gauteng's production area} = \frac{2,5}{100} \quad \checkmark A$ $= \frac{1}{40} \quad \checkmark CA$	1A writing in fraction form 1CA simplification (2)	12.1.1 12.4.4 L1
3.3.2	$\text{Percentage (Piketberg)} = 60\% - (12+20+11)\% \quad \checkmark M$ $= 17\% \quad \checkmark A$	1M subtracting from 60% 1A correct percentage (2)	12.1.1 L1
3.3.3	$\checkmark A$ Klein Karoo and Free State 11% Wolsley/Tulbagh and Limpopo 12% $\checkmark A$	1A Klein Karoo 1A Wolsley/Tulbagh (2)	12.4.4 L1
3.3.4	Ceres $\checkmark \checkmark A$	2A correct area (2)	12.4.4 L1
		[22]	

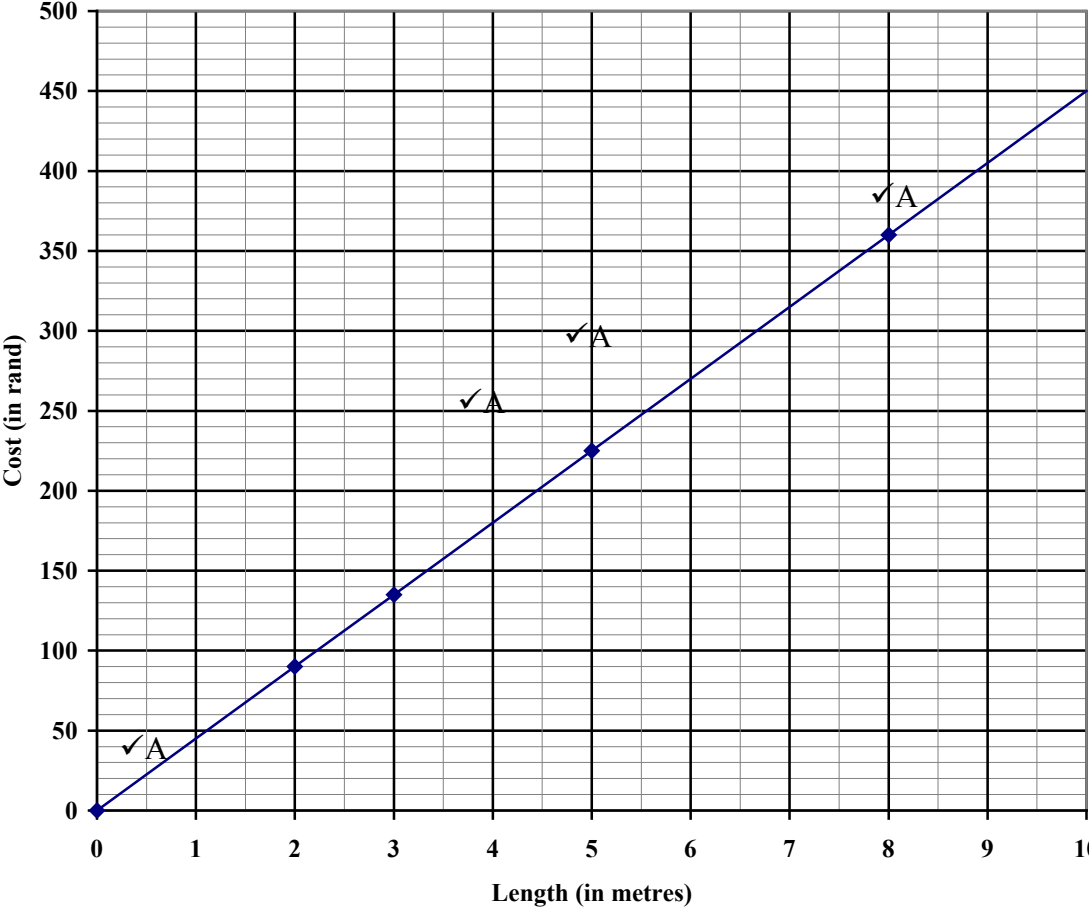
QUESTION 4 [23 MARKS]			
Ques	Solution	Explanation	AS/L
4.1.1	$A = 768 + 1\,080 + 4\,455 + 2\,268$ $= 8\,571 \quad \checkmark CA$	1M adding 1CA correct value of A (2)	12.1.1 L1
4.1.2	$B \times 3 \times 5 \times 9 = 4\,455 \quad \checkmark M$ $B \times 135 = 4\,455$ $B = 33 \quad \checkmark CA$	1M multiplying and equating to 4 455 1CA correct value of B (2)	12.1.1 L1
4.1.3	$36 \times 3 \times 2 \times C = 1\,080$ $216 \times C = 1\,080$ $C = \frac{1080}{216} \quad \checkmark M$ $C = 5 \quad \checkmark CA$	1A correct number of grades 1M dividing 1CA value of C (3)	12.1.1 L2
4.2.1	The Book $\checkmark RT$	1RT correct price (1)	12.1.1 L1
4.2.2	R1,80 $\checkmark RT$	1RT median (1)	12.4.3 L1
4.2.3	1,52; 1,52; 1,50; 1,48; 1,47; 1,32; 1,32; 1,25; 1,10 $\checkmark \checkmark A$	2A correct order (2)	12.4.4 L1
4.2.4	$\checkmark A$ R1,32 and $\checkmark A$ R1,52	1A R1,32 1A R1,52 (2)	12.4.3 L1
4.2.5	Range = R8,99 – R7,68 $\checkmark M/A$ = R1,31 $\checkmark CA$	1M/A subtracting extreme values 1CA correct range (2)	12.4.3 L1(1) L2(1)
4.2.6	$\text{Mean} = \frac{1,70+1,73+1,75+1,75+1,80+1,92+1,99+2,05+2,15}{9} \quad \checkmark M$ $= \frac{16,84}{9} \quad \checkmark A$ $= 1,871111\dots$ $\approx R1,87 \quad \checkmark CA$	1M finding mean 1A simplification 1CA mean (3)	12.4.3 L2
4.3.1	768 exercise books \approx 800 exercise books $\text{Number of packs} = \frac{800}{200} \quad \checkmark R$ $= 4 \quad \checkmark CA$ OR $\text{Number of packs} = \frac{768}{200} \quad \checkmark A$ $= 3,84$ $\approx 4 \quad \checkmark R$	1R rounding to nearest 200 1CA number of packs OR 1A dividing 1R number of packs (2)	12.2.1 L2

Ques	Solution	Explanation	AS/L
4.3.2	$\text{Price per pack} = \frac{\text{R}16\,200 \times 20}{4\,455}$ $= \text{R}72,73$	1A number per pack 1SF substitution 1CA price per pack (3)	12.2.1 L2
		[23]	

QUESTION 5 [26 MARKS]																						
Ques	Solution	Explanation	AS/L																			
5.1.1	C 3 ✓✓A OR 3C	1A C 1A 3 (2)	12.3.4 L1																			
5.1.2	Distance = 8 mm ✓✓A	2A correct measurement (2)	12.3.1 L1																			
5.1.3	North East ✓A	2A correct direction (1)	12.3.4 L2																			
5.1.4	✓A ✓A R75 and R329	2A 1 mark for each road (2)	12.3.4 L1																			
5.2.1	Jackal ✓A	1A correct predator (1)	12.4.3 L1																			
5.2.2	<p style="text-align: center;">LOSS OF LIVESTOCK BY PREDATORS</p> <table border="1"> <caption>Data for Loss of Livestock by Predators</caption> <thead> <tr> <th>Predator</th> <th>% contribution to loss</th> </tr> </thead> <tbody> <tr> <td>Unknown</td> <td>15</td> </tr> <tr> <td>Stray Dogs</td> <td>2</td> </tr> <tr> <td>Leopards</td> <td>5</td> </tr> <tr> <td>Jackals</td> <td>37</td> </tr> <tr> <td>Caracals</td> <td>20</td> </tr> <tr> <td>Bushpigs</td> <td>2</td> </tr> <tr> <td>Birds</td> <td>13</td> </tr> <tr> <td>Baboons</td> <td>6</td> </tr> </tbody> </table>		Predator	% contribution to loss	Unknown	15	Stray Dogs	2	Leopards	5	Jackals	37	Caracals	20	Bushpigs	2	Birds	13	Baboons	6	<p>4A any 4 bars plotted correctly 1A all bars plotted correctly 1M correct type of graph</p> <p style="text-align: right;">(6)</p>	12.4.2 L2
Predator	% contribution to loss																					
Unknown	15																					
Stray Dogs	2																					
Leopards	5																					
Jackals	37																					
Caracals	20																					
Bushpigs	2																					
Birds	13																					
Baboons	6																					

Ques	Solution	Explanation	AS/L
5.3.1 (a)	$\begin{aligned} \text{Total length} &= 6 \times 1,5 \text{ m} + 8 \times 1 \text{ m} + 5 \times 2 \text{ m} \\ &= 9 \text{ m} + 8 \text{ m} + 10 \text{ m} \\ &= 27 \text{ m} \quad \checkmark \text{CA} \end{aligned}$	1A using 1,5 m pieces 1A using 1 m pieces 1A using 2 m pieces 1CA length (4)	12.3.1 L2
5.3.1 (b)	$\begin{aligned} \text{Total area of mesh wire} &= 3 \times \mathbf{B} \times \mathbf{H} + 2 \times \mathbf{L}(\mathbf{H} + \mathbf{B}) \quad \checkmark \text{SF} \\ &= 3 \times 1 \text{ m} \times 1,5 \text{ m} + 2 \times 2 \text{ m}(1,5 \text{ m} + 1 \text{ m}) \\ &= 4,5 \text{ m}^2 + 10 \text{ m}^2 \quad \checkmark \text{S} \\ &= 14,5 \text{ m}^2 \quad \checkmark \text{CA} \end{aligned}$	1SF substitute in formula 1S simplify 1CA surface area (3)	12.3.1 L1
5.3.2	$\begin{aligned} \text{Total cost} &= \text{R}59,95 \text{ per m}^2 \times 699,3 \text{ m}^2 \quad \checkmark \text{M/A} \\ &= \text{R}41\,923,035 \quad \checkmark \text{CA} \\ &\approx \text{R}41\,920 \quad \checkmark \text{R} \end{aligned}$	1M/A multiplying correct amounts 1CA solution 1R rounding (3)	12.1.1 L2
5.3.3	$\begin{aligned} \text{Original 2 m becomes 3 m} \\ \therefore 1 \text{ m becomes } \frac{3}{2} \text{ m} \quad \checkmark \text{A} \quad \text{OR} \quad 2 : 1 : 1,5 = 3 : 1,5 : 2,25 \quad \checkmark \text{A} \quad \checkmark \text{A} \\ \therefore \text{the height} = 2,25 \text{ m} \quad \checkmark \text{CA} \end{aligned}$	1A using ratio 1CA height (2)	12.1.1 L1
		[26]	

QUESTION 6 [23 MARKS]			
Ques	Solution	Explanation	AS/L
6.1.1	$\begin{aligned} \text{Area} &= \text{length} \times \text{breadth} \\ &= 30 \text{ cm} \times 45 \text{ cm} \\ &= 1\,350 \text{ cm}^2 \quad \checkmark A \quad \checkmark A \end{aligned}$	1A solution 1A correct unit (2)	12.3.1 L1
6.1.2	$\begin{aligned} \text{Perimeter} &= 2(\text{length} + \text{breadth}) \quad \checkmark \text{SF} \\ &= 2(30 \text{ cm} + 45 \text{ cm}) \quad \checkmark \text{S} \\ &= 2(75 \text{ cm}) \\ &= 150 \text{ cm} \quad \checkmark \text{CA} \end{aligned}$	1SF correct substitution 1S simplification 1CA simplifying (3)	12.3.1 L1
6.2.1	75 cm $\checkmark \checkmark A$	2A correct length (2)	12.3.1 L1
6.2.2	$180 \text{ cm} = 2 \times 75 \text{ cm} + 30 \text{ cm} \quad \checkmark \text{M}$ $\quad \quad \quad \checkmark A \quad \quad \quad \checkmark A$ $\therefore \text{She can make 8 tea towels and 12 dish cloths}$	1M breaking down 180 cm 1A number of tea towels 1A number of dish cloths (3)	12.3.1 L2
6.2.3	$\begin{aligned} \text{Area (in cm}^2\text{)} &= 900 - (3)^2 (4 - 3,14) \quad \checkmark \text{SF} \\ &= 900 - 7,74 \quad \checkmark \text{S} \\ &= 892,26 \quad \checkmark \text{CA} \end{aligned}$	1SF substitution 1S simplification 1CA simplifying (3)	12.3.1 L1
6.3.1	$\text{Cost of the material} = \text{R}45,00 \times \text{length of material (in metres)} \quad \checkmark \checkmark A$	2A formula (2)	12.1.1 L1
6.3.2	$\begin{aligned} A &= 5 \times \text{R}45 \quad \checkmark \text{M} \\ &= \text{R}225 \quad \checkmark \text{CA} \end{aligned}$ $\begin{aligned} B &= \frac{360}{45} \quad \checkmark \text{M} \\ &= 8 \quad \checkmark \text{CA} \end{aligned}$	1M multiplying by 45 1CA value of A 1M dividing by 45 1CA value of B (4)	12.2.2 L1(2) L2(2)

Ques	Solution	Explanation	AS/L
6.3.3	<p style="text-align: center;">COST OF THE MATERIAL</p>  <p>1A (0;0) 1A (8;360) 1A any other point plotted correctly 1A joining the points with a straight line (CA for values of A and B only)</p>		12.2.2 L2
			(4)
			[23]
		TOTAL	150