



# 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.**

<b>QUESTION 1   27 MARKS]</b>		<b>Explanation</b>	<b>AS/L</b>
<b>Ques</b>	<b>Solution</b>		
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	$1,068 = \frac{\checkmark A}{1 000} = \frac{267}{250} = 1 \frac{17}{250} \quad \checkmark A$	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	$R1 = €0,10717$ $€32\ 527 = \frac{R1 \times €32\ 527}{€0,10717} \quad \checkmark M/A$ $= R303\ 508,4445$ $= R303\ 508,44 \quad \checkmark CA$	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	$20 : 12$ $= 5 : 3$ $\therefore 2 \text{ more trains per hour } \checkmark CA$ <p><b>OR</b></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 <b>OR</b> 1A number of trains in peak periods 1CA more trains (2)	12.1.1 L2

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

<b>QUESTION 2 [29 MARKS]</b>			
<b>Ques</b>	<b>Solution</b>	<b>Explanation</b>	<b>AS/L</b>
2.1.1	54% ✓✓ RG	2RG percentage (2)	12.4.4 L1
2.1.2	Natural area lost = $70\% - 34\% \checkmark \text{RG}$ $= 36\% \checkmark \text{CA}$	1RG subtracting correct values 1CA area lost (2)	12.4.4 L1
2.1.3	Ave annual percentage rate = $\frac{127\ 909}{9\ 474\ 740} \times 100\% \checkmark \text{M}$ $= 1,35\% \text{ per year } \checkmark \text{CA}$	1M calculating percentage 1CA percentage/annum (2)	12.1.1 L1
2.2.1	Median = $\frac{158+160}{2} \checkmark \text{M}$ $= 159 \checkmark \text{CA}$	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	$P(\text{less than } 158) = \frac{5}{12} \checkmark \text{A}$ $\approx 41,67\% \checkmark \text{CA}$	 1A number less than 160 1A total number of athletes 1CA % (3)	12.4.5 L2
2.3.1	$\text{MHR}_{\text{female}} = 216 - (1,09 \times 18) \checkmark \text{SF}$ $= 196,38 \checkmark \text{CA}$	1SF substitution 1CA maximum heart rate (2)	12.2.1 L1
2.3.2	$\text{Age} = \frac{202-189,9}{0,55} \checkmark \text{SF}$ $= 22 \checkmark \text{CA}$	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

<b>Ques</b>	<b>Solution</b>	<b>Explanation</b>	<b>AS/L</b>
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)	Difference in age = $22 - 18 \checkmark RG$ = 4 years ✓CA	2RG correct values 1CA correct conclusion (3)	12.2.2 L2
			<b>[29]</b>



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

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

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

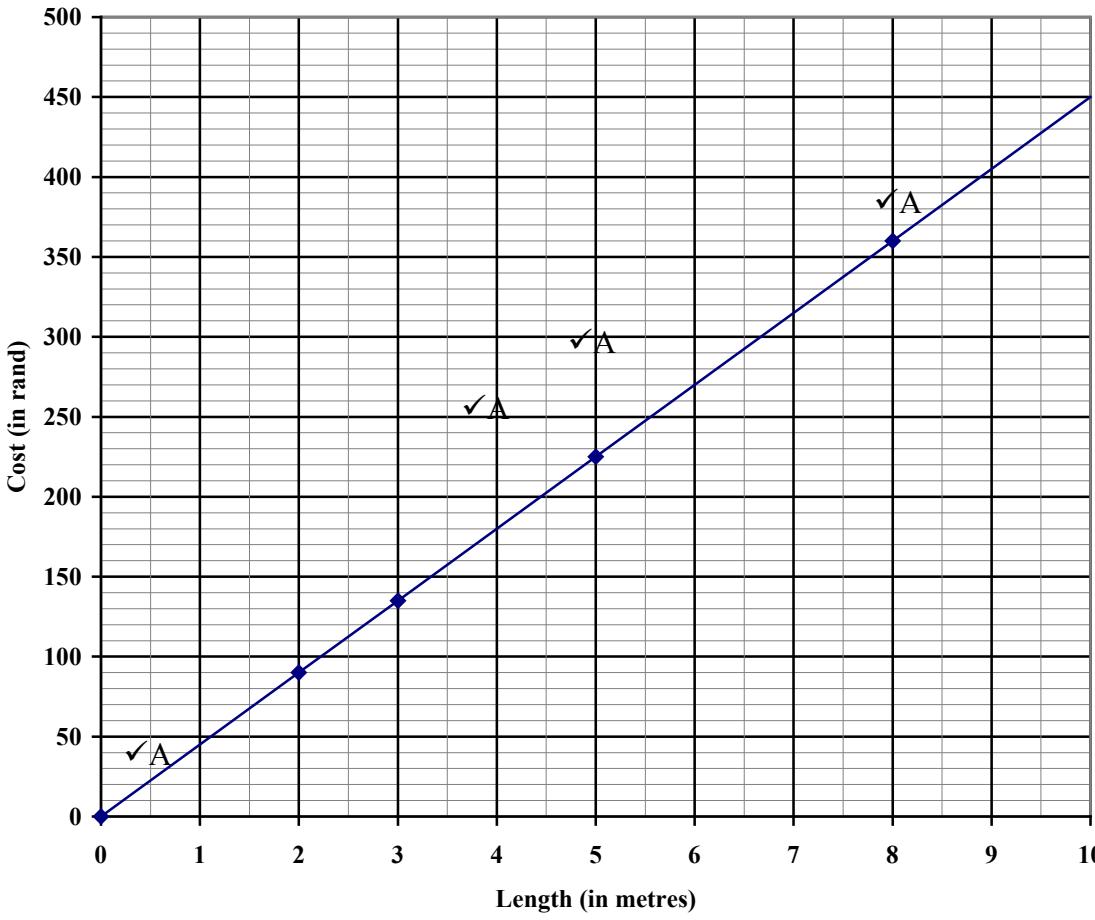


**QUESTION 5 [26 MARKS]**

<b>Ques</b>	<b>Solution</b>	<b>Explanation</b>	<b>AS/L</b>																		
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;"><b>LOSS OF LIVESTOCK BY PREDATORS</b></p> <table border="1"> <caption>Data from Loss of Livestock by Predators Chart</caption> <thead> <tr> <th>Predator</th> <th>% Contribution to Loss</th> </tr> </thead> <tbody> <tr> <td>Unknown</td> <td>~15% ✓A</td> </tr> <tr> <td>Stray Dogs</td> <td>~2% ✓A</td> </tr> <tr> <td>Leopards</td> <td>~5% ✓A ✓M ✓A</td> </tr> <tr> <td>Jackals</td> <td>~35% ✓A</td> </tr> <tr> <td>Caracals</td> <td>~20% ✓A</td> </tr> <tr> <td>Bushpigs</td> <td>~2% ✓A</td> </tr> <tr> <td>Birds</td> <td>~13% ✓A</td> </tr> <tr> <td>Baboons</td> <td>~7% ✓A</td> </tr> </tbody> </table>	Predator	% Contribution to Loss	Unknown	~15% ✓A	Stray Dogs	~2% ✓A	Leopards	~5% ✓A ✓M ✓A	Jackals	~35% ✓A	Caracals	~20% ✓A	Bushpigs	~2% ✓A	Birds	~13% ✓A	Baboons	~7% ✓A	4A any 4 bars plotted correctly 1A all bars plotted correctly 1M correct type of graph	12.4.2 L2  (6)
Predator	% Contribution to Loss																				
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Ques	Solution	Explanation	AS/L
5.3.1 (a)	Total length = $6 \times 1,5 \text{ m} + 8 \times 1 \text{ m} + 5 \times 2 \text{ m}$ = $9 \text{ m} + 8 \text{ m} + 10 \text{ m}$ = $27 \text{ m}$ ✓CA	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)	Total area of mesh wire = $3 \times B \times H + 2 \times L(H + B)$ ✓SF = $3 \times 1 \text{ m} \times 1,5 \text{ m} + 2 \times 2 \text{ m}(1,5 \text{ m} + 1 \text{ m})$ = $4,5 \text{ m}^2 + 10 \text{ m}^2$ ✓S = $14,5 \text{ m}^2$ ✓CA	1SF substitute in formula 1S simplify 1CA surface area (3)	12.3.1 L1
5.3.2	Total cost = R59,95 per $\text{m}^2 \times 699,3 \text{ m}^2$ ✓M/A = R41 923,035 ✓CA ≈ R41 920 ✓R	1M/A multiplying correct amounts 1CA solution 1R rounding (3)	12.1.1 L2
5.3.3	Original 2 m becomes 3 m $\therefore 1 \text{ m becomes } \frac{3}{2} \text{ m}$ ✓A OR $2 : 1 : 1,5 = 3 : 1,5 : 2,25$ ✓A ✓A $\therefore$ the height = 2,25 m ✓CA	EcoleBooks 1A using ratio 1CA height (2)	12.1.1 L1
		[26]	

<b>QUESTION 6 [23 MARKS]</b>			
<b>Ques</b>	<b>Solution</b>	<b>Explanation</b>	<b>AS/L</b>
6.1.1	$\begin{aligned} \text{Area} &= \text{length} \times \text{breadth} \\ &= 30 \text{ cm} \times 45 \text{ cm} \\ &= 1 350 \text{ cm}^2 \checkmark A \checkmark A \end{aligned}$	1A solution 1A correct unit (2)	12.3.1 L1
6.1.2	$\begin{aligned} \text{Perimeter} &= 2(\text{length} + \text{breadth}) \checkmark SF \\ &= 2(30 \text{ cm} + 45 \text{ cm}) \checkmark S \\ &= 2(75 \text{ cm}) \\ &= 150 \text{ cm } \checkmark CA \end{aligned}$	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	$\begin{aligned} 180 \text{ cm} &= 2 \times 75 \text{ cm} + 30 \text{ cm } \checkmark M \\ &\quad \checkmark A \quad \checkmark A \\ \therefore \text{She can make} & 8 \text{ tea towels and } 12 \text{ dish cloths} \end{aligned}$	1M breaking down 180 cm 1A number of tea towels 1A number of dish cloths (3)	12.3.1 L2
6.2.3	$\begin{aligned} \text{Area (in cm}^2\text{)} &= 900 - (3)^2 (4 - 3,14) \checkmark SF \\ &= 900 - 7,74 \checkmark S \checkmark A \\ &= 892,26 \checkmark CA \end{aligned}$ 	1SF substitution 1S simplification 1CA simplifying (3)	12.3.1 L1
6.3.1	Cost of the material = R45,00 $\times$ length of material (in metres) $\checkmark \checkmark A$	2A formula (2)	12.1.1 L1
6.3.2	$\begin{aligned} A &= 5 \times R45 \checkmark M \\ &= R225 \checkmark CA \end{aligned}$ $\begin{aligned} B &= \frac{360}{45} \checkmark M \\ &= 8 \checkmark CA \end{aligned}$	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;"><b>COST OF THE MATERIAL</b></p>  <table border="1"> <caption>Data points from the graph</caption> <thead> <tr> <th>Length (in metres)</th> <th>Cost (in rand)</th> </tr> </thead> <tbody> <tr><td>0</td><td>0</td></tr> <tr><td>2</td><td>90</td></tr> <tr><td>3</td><td>135</td></tr> <tr><td>4</td><td>255</td></tr> <tr><td>5</td><td>225</td></tr> <tr><td>8</td><td>360</td></tr> <tr><td>10</td><td>450</td></tr> </tbody> </table>	Length (in metres)	Cost (in rand)	0	0	2	90	3	135	4	255	5	225	8	360	10	450	✓A ✓A ✓A ✓A	12.2.2 L2
Length (in metres)	Cost (in rand)																		
0	0																		
2	90																		
3	135																		
4	255																		
5	225																		
8	360																		
10	450																		
	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)	(4)																	
		[23]																	
		TOTAL	150																