



basic education

Department:
Basic Education
REPUBLIC OF SOUTH AFRICA

SENIOR CERTIFICATE EXAMINATION

MATHEMATICAL LITERACY P1

2015

MEMORANDUM

MARKS: 150

Symbol	Explanation
M	Method
MA	Method with Accuracy
CA	Consistent Accuracy
A	Accuracy
C	Conversion
D	Define
E	Explain
S	Simplification
RT/RG/RD	Reading from a table or a graph or a diagram
F	Choosing the correct formula
SF	Substitution in a formula
O	Opinion
P	Penalty e.g. for no units, incorrect rounding off etc.
R	Rounding off/Reason
J	Justification

This memorandum consists of 15 pages.

KEY TO TOPIC SYMBOL:**F = Finance; M = Measurement; MP = Maps, plans and other representations****DH = Data handling; P = Probability**

QUESTION 1 [36]			
Ques	Solution	Explanation	Topic
1.1.1 (a)	$R\ 360 \div R1,0746 \quad \checkmark M$ $= 335,008\ kWh \quad \checkmark A$ $\text{New reading} = 10,3\ kWh + 335,0\ kWh$ $= 345,3\ kWh \quad \checkmark MA$ <p style="text-align: center;">OR</p> $\text{Number of units purchased} = 345,3\ kWh - 10,3\ kWh$ $= 335\ kWh \quad \checkmark MA$ $\text{Cost} = 335\ kWh \times R1,0746 \quad \checkmark M$ $= R359,99$ $\approx R360 \quad \checkmark A$	1M identify R1,0746 1A number of units 1MA adding <p style="text-align: center;">OR</p> 1MA difference in units 1M identify tariff 1A amount purchased (3)	F L2
1.1.1 (b)	$\text{VAT amount} = R\ 360 \times \frac{14}{114} \quad \checkmark MA$ $= R44,210526 \quad \checkmark A$ $= R44,21 \quad \checkmark R$ <p style="text-align: center;">OR</p> $R360 = 114\% x \quad x \text{ is amount without VAT}$ $x = R360 \times 100 \div 114 \quad \checkmark M$ $= R315,79 \text{ (excl. VAT)} \quad \checkmark A$ $\text{VAT amount} = R360 - R315,79$ $= R44,21 \quad \checkmark A$	1MA multiply 1A VAT 1R rounding <p style="text-align: center;">OR</p> 1M proportion method 1A amount excl. VAT 1A amount of VAT <div style="border: 1px solid black; padding: 5px; width: fit-content; margin: 5px auto;"> Answer only Full marks </div> (3)	F L2
1.1.2	$\text{Units used} = 345,3\ kWh - 250,7\ kWh \quad \checkmark MA$ $= 94,6\ kWh \quad \checkmark CA$	1MA subtracting 1CA simplification <div style="border: 1px solid black; padding: 5px; width: fit-content; margin: 5px auto;"> Answer only Full marks </div> (2)	F L1

Ques	Solution	Explanation	Topic
1.1.3	$\begin{aligned} \text{Cost for first 500 units} &= 500 \times R1,0746 \quad \checkmark\text{MA} \\ &= R537,30 \quad \checkmark\text{CA} \\ \\ \text{Next 60 units} &= 60 \times R1,2208 = R73,25 \quad \checkmark\text{CA} \\ \\ \text{Total cost} &= R537,30 + R73,25 \quad \checkmark\text{M} \\ &= R610,55 \quad \checkmark\text{CA} \end{aligned}$	<p>1MA units \times correct amount per unit 1CA cost 1MA multiply with unit cost of 60 units 1CA cost for 60 units 1M adding 1CA amount</p> <div style="border: 1px solid black; padding: 5px; width: fit-content; margin: 10px auto;">No penalty for rounding final answer</div> <p style="text-align: right;">(6)</p>	F L3
1.1.4	$\begin{aligned} \text{Increase} &= R1,4809 \times 13,5\% \quad \checkmark\text{M} \\ &= R 0,1999215 \quad \checkmark\text{M} \\ \text{New tariff} &= R1,4809 + R 0,1999215 \\ &= R1,6808215 \quad \checkmark\text{CA} \\ &\approx R1,6808 \text{ per unit} \\ \\ \text{OR} \\ \\ \text{New tariff} &= R1,4809 + 13,5\% \times R1,4809 \quad \checkmark\text{M} \quad \checkmark\text{M} \\ &= R1,6808215 \quad \checkmark\text{CA} \\ &\approx R1,6808 \\ \\ \text{OR} \\ \\ \text{New percentage} &= 100\% + 13,5\% = 113,5\% \quad \checkmark\text{M} \\ \\ \text{New tariff} &= R1,4809 \times 113,5\% \quad \checkmark\text{M} \\ &= R1,6808215 \quad \checkmark\text{CA} \\ &\approx R1,6808 \end{aligned}$	<p>1M multiply by % 1M Adding increase 1CA new cost</p> <p style="text-align: center;">OR</p> <p>1M 13,5% of R1,4809 1M adding 1CA new cost</p> <p style="text-align: center;">OR</p> <p>1M 113,5% 1M multiply by % 1CA answer with no rounding of values</p> <div style="border: 1px solid black; padding: 5px; width: fit-content; margin: 10px auto;">Answer only Full marks</div> <p style="text-align: right;">(3)</p>	F L1
1.2.1 (a)	8 $\checkmark\checkmark\text{A}$	<p>2A number of instalments</p> <div style="border: 1px solid black; padding: 5px; width: fit-content; margin: 10px auto;">Accept 9 for full marks</div> <p style="text-align: right;">(2)</p>	F L1
1.2.1 (b)	R0,00 OR No amount OR None OR Nil $\checkmark\checkmark\text{A}$	<p>2A arrear amount</p> <p style="text-align: right;">(2)</p>	F L1
1.2.1 (c)	$\begin{aligned} \text{Monthly interest} &= \frac{R1321,21}{R4249,78} \times 100\% \quad \checkmark\text{RD} \quad \checkmark\text{M} \\ &= 31,09\% \quad \checkmark\text{A} \end{aligned}$	<p>1RD identify the correct values 1M calculate % 1A monthly interest</p> <p style="text-align: right;">(3)</p>	F L1

Ques	Solution	Explanation	Topic
1.2.1 (d)	$\begin{aligned} \text{Total amount} &= R4\,249,78 \times 60 + R115\,491,44 \\ &= R254\,986,80 + R115\,491,44 \\ &= R370\,478,24 \end{aligned}$	1MA multiply by 60 1A adding balloon payment 1CA simplification 1CA total amount (4)	F L1 (2) L2 (2)
1.2.2 (a)	$\begin{aligned} R140\,446,50 + R4\,249,78 \\ = R144\,696,28 \end{aligned}$	1RT reading values 1MA adding correct values 1A opening balance <div style="border: 1px solid black; padding: 5px; width: fit-content; margin: 0 auto;"> Answer only Full marks </div> (3)	F L1
1.2.2 (b)	Service Fee	2RT reading table <div style="border: 1px solid black; padding: 5px; width: fit-content; margin: 0 auto;"> Accept R57,00 full marks </div> (2)	F L1
1.2.2 (c)	After the debit order was subtracted from the opening balance, add the interest and add the service fee <p style="text-align: center;">OR</p> Add the service fee and interest to the opening balance and then subtract the debit order. <p style="text-align: center;">OR</p> Add all the debits, subtract the credits from the opening balance	1E subtracting debit order 1E adding interest 1E service fee <p style="text-align: center;">OR</p> 1E add service fee 1E add interest 1E subtract debit order <p style="text-align: center;">OR</p> 1E add all debits 1E subtract credits 1E opening balance (3)	F L1
			[36]

QUESTION 2 [29]			
Ques	Solution	Explanation	Topic
2.1.1	Capacity is the quantity that an empty container can hold. ✓✓E	2E explanation (2)	M L1
2.1.2	W = 97 mm – 29 mm = 68 mm ✓MA ✓CA	1MA subtracting 1CA value of W 1 Mark for answer 6,8 cm (2)	M L1
2.1.3	Volume = 75 mm × 68 mm × 210 mm = 1 071 000 mm ³ ✓A ✓SF ✓CA	1SF substituting from Q2.1.2 1A for values 75 and 210 1CA volume 1 Penalty for wrong unit or mixing units (3)	M L2

Ques	Solution	Explanation	Topic
2.1.4	<p>Area (one face) = $75 \text{ mm} \times 210 \text{ mm}$ $= 15\,750 \text{ mm}^2$ ✓A</p> <p>Area (one side) = $68 \text{ mm} \times 210 \text{ mm}$ $= 14\,280 \text{ mm}^2$ ✓CA</p> <p>Area (top) = $75 \text{ mm} \times 68 \text{ mm}$ $= 5100 \text{ mm}^2$ ✓CA</p> <p>Total surface area ✓M $= 2 \times (15\,750 \text{ mm}^2 + 14\,280 \text{ mm}^2) + 5\,100 \text{ mm}^2$ $= 65\,160 \text{ mm}^2$ $= 651,6 \text{ cm}^2$ ✓CA</p> <p style="text-align: center;">OR</p> <p>Area = $7,5 \text{ cm} \times 21 \text{ cm}$ $= 157,5 \text{ cm}^2$ ✓A</p> <p>Area = $6,8 \text{ cm} \times 21 \text{ cm}$ $= 142,8 \text{ cm}^2$ ✓CA</p> <p>Area (top) = $7,5 \times 6,8$ $= 51 \text{ cm}^2$ ✓CA</p> <p>Total surface area ✓M $= 2 \times 157,5 \text{ cm}^2 + 2 \times 142,8 \text{ cm}^2 + 51 \text{ cm}^2$ $= 651,6 \text{ cm}^2$ ✓CA</p> <p style="text-align: center;">OR</p> <p>Lateral surface area = $2 \times (7,5 \text{ cm} + 6,8 \text{ cm}) \times 21 \text{ cm}$ ✓M $= 2 \times 14,3 \text{ cm} \times 21 \text{ cm}$ $= 600,6 \text{ cm}^2$ ✓CA</p> <p>Top area = $7,5 \text{ cm} \times 6,8 \text{ cm}$ $= 51 \text{ cm}^2$ ✓CA</p> <p>Total surface area = $600,6 \text{ cm}^2 + 51 \text{ cm}^2$ ✓M $= 651,6 \text{ cm}^2$ ✓CA</p>	<p>1A area of 1 side</p> <p>1CA area of side</p> <p>1CA area of top</p> <p>1M adding all areas</p> <p>1CA area with unit</p> <p style="text-align: center;">OR</p> <p>1A area of 1 side</p> <p>1CA area of side</p> <p>1CA area of top</p> <p>1M adding all areas</p> <p>1CA area with unit</p> <p style="text-align: center;">OR</p> <p>1M adding all areas</p> <p>1CA area</p> <p>1CA area of top</p> <p>1M total area</p> <p>1CA area with unit</p> <p style="text-align: right;">(5)</p>	<p>M</p> <p>L2 (3)</p> <p>L3 (2)</p>

Ques	Solution	Explanation	Topic
2.2.1	$\text{Number of cups} = \frac{1000 \text{ ml}}{4 \times 2 \times 125 \text{ ml}} \checkmark \text{M}$ $= 1 \text{ cup } \checkmark \text{A}$ <p style="text-align: center;">OR</p> $\text{Volume} = 125 \text{ ml} \times 2 = 250 \text{ ml } \checkmark \text{A}$ $1000 \text{ ml} = 4 \text{ cups}$ $\therefore 250 \text{ ml} = \frac{250 \text{ ml}}{1000 \text{ ml}} \times 4$ $= 1 \text{ cup } \checkmark \text{A}$	<p>1M divide</p> <p>1A number of cups</p> <p style="text-align: center;">OR</p> <p>1A total volume</p> <p>1A number of cups</p> <div style="border: 1px solid black; padding: 5px; width: fit-content; margin: 10px auto;"> Answer only Full marks </div> <p style="text-align: right;">(2)</p>	M L1
2.2.2	$\text{Total volume} = 2 \times (125 \text{ ml} + 720 \text{ ml})$ $= 1\,690 \text{ ml } \checkmark \text{CA}$	<p>1MA adding correct values and multiply by 2</p> <p>1CA total volume</p> <div style="border: 1px solid black; padding: 5px; width: fit-content; margin: 10px auto;"> Answer only Full marks </div> <p style="text-align: right;">(2)</p>	M L1
2.2.3	$2 \times 150 \div 1\,000 \text{ kg}$ $= 0,3 \text{ kg } \checkmark \text{A}$	<p>1M multiply by 2</p> <p>1A mass in kg</p> <div style="border: 1px solid black; padding: 5px; width: fit-content; margin: 10px auto;"> Answer only Full marks </div> <p style="text-align: right;">(2)</p>	M L1
2.2.4	$\text{Elapsed time} = 12:30 - 11:20$ $= 1 \text{ hour } 10 \text{ min } \checkmark \text{A}$ <p>Time indicated on the recipe</p> $= 30 \text{ min} + 15 \text{ min} + 10 \text{ min}$ $= 55 \text{ min } \checkmark \text{MA}$ <p>Extra time taken = 1 hour 10 min – 55 min</p> $= 15 \text{ min } \checkmark \text{CA}$	<p>1A elapsed time</p> <p>1MA adding time indicated on recipe</p> <p>1CA difference</p> <p style="text-align: right;">(3)</p>	M L2

Ques	Solution	Explanation	Topic
2.2.5	$\begin{aligned} \text{Temperature (in } ^\circ\text{F)} &= 180 \times 1,8 + 32 \\ &= 356 \end{aligned}$	\checkmark SF substitute 1A temp in $^\circ\text{F}$ (2)	M L1
2.3.1	$5 \text{ whole blocks} + 5 \text{ half blocks} + 6 \text{ quarter blocks}$ $= 9 \text{ m}^2$ Also accept any answer from 8 m^2 to 10 m^2	\checkmark M 1M counting blocks 2A area <div style="border: 1px solid black; padding: 5px; display: inline-block;"> Answer only 2 marks </div> (3)	M L2
2.3.2	$76 \text{ cm} \div 100 = 0,76 \text{ m}$ Volume = $8 \text{ m}^2 \times 0,76 \text{ m}$ $= 6,08 \text{ m}^3$	1C convert to m 1SF substituting 1CA volume (3)	M L2
			[29]

QUESTION 3 [22]			
Ques	Solution	Explanation	Topic
3.1	Top view OR aerial view OR from above ✓✓A OR satellite view OR 2D top view OR topographical view	2A specific view (2)	MP L1
3.2	G8, G9, G10 ✓✓✓A	3A correct gates (3)	MP L1
3.3	Milner road ✓✓A	2A road name (2)	MP L1
3.4	Left hand side OR south side ✓✓A	2A correct side (2)	MP L1
3.5	✓A Zones 1, 3 and 4 or 5 ✓A	1A for one of the zones 1A for any correct second zone (2)	MP L1
3.6	AD OR DA ✓✓A	2A name of assembly point (2)	MP L2
3.7.1	4 OR G4, G5, G6 & G7 OR 4-7 ✓✓A	2A no. of entrances (2)	MP L1
3.7.2	South East ✓✓A	2A direction Accept East of South (2)	MP L1
3.8	$4 \frac{\checkmark A}{7} = 0,57142\dots$ $\approx 57,1\%$ ✓R	1A numerator 1A denominator 1R rounded percentage (3)	P L1(1) L2(2)
3.9	To treat injured players or spectators ✓✓E OR Any other suitable explanation relating injury or medical related ✓✓E	2E explanation OR 2E explanation (2)	MP L1
			[22]

QUESTION 4 [32]			
Ques	Solution	Explanation	Topic
4.1	\checkmark A \checkmark A Newlands, Cape Town	1A stadium 1A city (2)	DH L1
4.2	New Zealand $\checkmark\checkmark$ A	2A country (2)	DH L1
4.3	5 $\checkmark\checkmark$ A	2A number (2)	DH L1
4.4	$\frac{3}{12}$ \checkmark A \checkmark A = $\frac{1}{4}$ OR 0,25 \checkmark CA	1A numerator 1A denominator 1CA simplified fraction Answer only Full marks (3)	P L2
4.5	Argentina $\checkmark\checkmark$ RT	2RT reading table (2)	DH L1
4.6.1	\checkmark RT 33; 28; 27; 23; 13; 10 \checkmark A	1RT reading table 1A descending order (2)	DH L1
4.6.2 (a)	Mean = $\frac{33 + 28 + 27 + 23 + 13 + 10}{6}$ \checkmark M = $\frac{134}{6}$ \checkmark S = 22,333... \checkmark CA \approx 22 points	1M adding points and divide by 6 1S simplify 1CA mean from Q4.6.1 (3)	DH L2
4.6.2 (b)	Median = $\frac{27 + 23}{2}$ \checkmark M = 25 \checkmark CA	1M median concept 1CA median from Q4.6.1 Answer only Full marks (2)	DH L2

Ques	Solution	Explanation	Topic
4.6.2 (c)	Range = $33 - 10$ ✓M = 23 ✓CA	1M concept of range 1CA range from Q4.6.1 <div style="border: 1px solid black; padding: 5px; width: fit-content; margin: 10px auto;">Answer only Full marks</div> (2)	DH L2
4.6.2 (d)	No mode ✓✓CA	2CA mode from Q4.6.1 (2)	DH L2

Ques	Solution	Explanation	Topic																					
4.7	<p style="text-align: center;">Points scored by and against the South African team during the 2014 Rugby Championship</p> <table border="1" style="margin: 10px auto; border-collapse: collapse;"> <caption>Data from the Line Graph</caption> <thead> <tr> <th>Date of game</th> <th>Points scored by SA</th> <th>Points scored against SA</th> </tr> </thead> <tbody> <tr> <td>16-Aug</td> <td>6</td> <td>13</td> </tr> <tr> <td>23-Aug</td> <td>31</td> <td>33</td> </tr> <tr> <td>6-Sept</td> <td>24</td> <td>23</td> </tr> <tr> <td>13-Sept</td> <td>14</td> <td>10</td> </tr> <tr> <td>27-Sept</td> <td>10</td> <td>28</td> </tr> <tr> <td>4-Oct</td> <td>25</td> <td>27</td> </tr> </tbody> </table> <p>6A for each of the points plotted correctly and accurately</p> <div style="border: 1px solid black; padding: 5px; width: fit-content; margin: 10px auto;">1 Penalty for not joining points.</div> <p style="text-align: right;">(6)</p> <p>(Accept 1 mark for every 2 bars in case of bar graph – max 3/6)</p>	Date of game	Points scored by SA	Points scored against SA	16-Aug	6	13	23-Aug	31	33	6-Sept	24	23	13-Sept	14	10	27-Sept	10	28	4-Oct	25	27		DH L2
Date of game	Points scored by SA	Points scored against SA																						
16-Aug	6	13																						
23-Aug	31	33																						
6-Sept	24	23																						
13-Sept	14	10																						
27-Sept	10	28																						
4-Oct	25	27																						
4.8.1	27 September ✓✓A	2A date (2)	DH L1																					
4.8.2	13 days ✓✓A	2A days <div style="border: 1px solid black; padding: 5px; width: fit-content; margin: 10px auto;">Accept 14 days</div> (2)	DH L1																					
			[32]																					

QUESTION 5 [31]			
Ques	Solution	Explanation	Topic
5.1.1	1 January 2014 ✓✓RT	2RT (2)	DH L1
5.1.2	April ✓✓RT	2RT (2)	DH L1
5.1.3	Difference = $(1\ 411 - 1\ 391)$ cent per litre = 20 cent per litre OR R0,20 c/l	1MA subtract 1RT reading from table 1CA difference No penalty for unit omitted (3)	F L1
5.1.4	August ✓✓A	2A August Accept January (2)	DH L1
5.1.5	August and September ✓A ✓A	1A August 1A September (2)	DH L1
5.1.6	Percentage change = $\frac{1383 - 1361}{1383} \times 100\%$ = 1,5907 % ≈ 1,59 % OR Percentage change = $\frac{1377 - 1355}{1377} \times 100\%$ = 1,5977 % ≈ 1,60 % OR Percentage change = $\frac{1401 - 1379}{1401} \times 100\%$ = 1,5703 % ≈ 1,57 %	1RT reading from table 1SF substitution 1CA simplify 1R rounding OR 1RT reading from table 1SF substitution 1CA simplify 1R rounding OR 1RT reading from table 1SF substitution 1CA simplify 1R rounding (4)	F L2

Ques	Solution	Explanation	Topic
5.2.1	Monday OR 28/09/2015 ✓✓RD	2RD reading diagram (2)	P L1
5.2.2	✓RD Barberton on 27/09/2015✓RD	1RD name of town 1RD date (2)	P L1
5.2.3	13°C ✓✓RD	2RD reading diagram <div style="border: 1px solid black; padding: 2px; display: inline-block;">Accept 18°C/13°C</div> (2)	DH L1
5.3.1	Cost price = R153,60 ÷ 24✓MA = R6,40 ✓A	1MA dividing correct values 1A cost price <div style="border: 1px solid black; padding: 2px; display: inline-block;">Answer only Full marks</div> (2)	F L1

Ques	Solution	Explanation	Topic
5.3.2	<p>Profit per can = R9,00 – R6,40 = R2,60 ✓CA</p> <p>Profit for 96 cans = R2,60 × 96 = R249,60 ✓CA</p> <p style="text-align: center;">OR</p> <p>Profit for 96 cans = (96 × R9,00) – (96 × R6,40) = R864 – R614,40 = R249,60 ✓CA</p> <p style="text-align: center;">OR</p> <p>Profit for 96 cans = 96 (R9,00 – R6,40) = 96 (R2,60) ✓CA = R249,60 ✓CA</p> <p style="text-align: center;">OR</p> <p>Income for 1 case = R9,00 × 24 = R216</p> <p>Profit on 1 case = R216 – R153,60 ✓CA = R62,40</p> <p>Profit for 96 cans = R62,40 × 4 = R249,60 ✓CA</p>	<p>1CA profit per can 1M multiply by 96</p> <p>1CA total profit</p> <p style="text-align: center;">OR</p> <p>1M multiply by 96 1CA cost price of 96 cans 1CA total profit</p> <p style="text-align: center;">OR</p> <p>1M multiply by 96 1CA profit per can</p> <p>1CA total profit</p> <p style="text-align: center;">OR</p> <p>1M multiply by 24</p> <p>1CA profit on 1 case</p> <p>1CA total profit</p> <p style="text-align: right;">(3)</p>	<p>F L1</p>
5.3.3 (a)	<p>Selling price = R400 ÷ 40 ✓RG = R10 per can ✓A</p> <p style="text-align: center;">OR</p> <p>Selling price = R200 ÷ 20 ✓RG = R10 per can ✓A</p> <p style="text-align: center;">OR</p> <p>Selling price = R600 ÷ 60 ✓RG = R10 per can ✓A</p>	<p>1RG reading graph 1M division 1A selling price</p> <p style="text-align: center;">OR</p> <p>1RG reading graph 1M division 1A selling price</p> <p style="text-align: center;">OR</p> <p>1RG reading graph 1M division 1A selling price</p> <div style="border: 1px solid black; padding: 5px; width: fit-content; margin: 10px auto;"> <p>Answer only Full marks</p> </div> <p style="text-align: right;">(3)</p>	<p>F L1</p>
5.3.3 (b)	<p>60 cans ✓✓RG</p>	<p>2RG reading graph</p> <p style="text-align: right;">(2)</p>	<p>F L1</p>
			[31]