



# basic education

Department:  
Basic Education  
**REPUBLIC OF SOUTH AFRICA**

## SENIOR CERTIFICATE EXAMINATIONS

### MATHEMATICAL LITERACY P1

2017

### MARKING GUIDELINES

**MARKS: 150**

Symbol	Explanation
M	Method
MA	Method with accuracy
CA	Consistent accuracy
A	Accuracy
C	Conversion
S	Simplification
RT/RG/RD	Reading from a table/graph/diagram
SF	Correct substitution in a formula
O	Opinion/Example/Definition/Explanation
R	Rounding off
NPR	No penalty rounding or omitting units
AO	Answer only, full marks

**These marking guidelines consist of 12 pages.**

APPROVED ON 13 June 2017	<b>External Moderator</b>	
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<b>Question 1 [30 Marks]</b>			
<b>Ques</b>	<b>Solution</b>	<b>Explanation</b>	<b>T/L</b>
1.1.1	$R8,70 \times 40 = R348$ <p style="text-align: right;">✓MA ✓A</p>	1MA multiplying with 40 1A box price <b>AO</b>  (2)	F L1
1.1.2	A profit is made when the selling price is more than the cost price. ✓✓O  <p style="text-align: center;"><b>OR</b></p> A profit is the amount added to the cost price ✓✓O  <p style="text-align: center;"><b>OR</b></p> Making more money than the cost price. ✓✓O  <p style="text-align: center;"><b>OR</b></p> Positive difference between income and expenditure. ✓✓O  <p style="text-align: center;"><b>OR</b></p> Income is more than cost or expenses. ✓✓O  <p style="text-align: center;"><b>OR</b></p> Gained/extra money from the sale of a product ✓✓O	2O explanation  <p style="text-align: center;"><b>OR</b></p> 2O explanation  <p style="text-align: center;"><b>OR</b></p> 2O explanation  <p style="text-align: center;"><b>OR</b></p> 2O explanation  <p style="text-align: center;"><b>OR</b></p> 2O explanation  <p style="text-align: center;"><b>OR</b></p> 2O explanation  (2) (Except a correct example as an explanation)	F L1
1.1.3	$\begin{aligned} \text{Amount} &= 40\% \times R435,04 \\ &= R174,016 \\ &\approx R174,02 \end{aligned}$ <p style="text-align: right;">✓MA ✓A</p>	1MA calculate 40% of R435,04 1A VAT amount <b>AO</b> <b>NPR</b>  (2)	F L1
1.1.4 (a)	$\begin{aligned} \text{Total cost} &= R10,04 + R8,70 + R20,66 + R6,73 + R29,99 \\ &= R76,12 \end{aligned}$ <p style="text-align: right;">✓RT ✓M ✓CA</p>	1RT all correct values 1M adding at least 3 correct amounts 1CA total <b>AO</b>  (3)	F L1
1.1.4 (b)	$\begin{aligned} \text{Selling price} &= \frac{R22\ 770}{230} \\ &= R99,00 \end{aligned}$ <p style="text-align: right;">✓MA ✓A</p>	1MA dividing correctly 1A selling price <b>AO</b>  (2)	F L1

Ques	Solution	Explanation	T/L
1.2.1	South African Revenue Services ✓✓A	2A full name (2)	F L1
1.2.2	R61 296 ✓✓RT	2RT correct amount (2)	F L1
1.2.3	$\frac{R542\,096,76}{12} \quad \checkmark\text{MA}$ $= R45\,174,73 \quad \checkmark\text{A}$	1MA dividing correctly 1A monthly salary AO (2)	F L1
1.2.4	Tax bracket 4 ✓✓RT <b>OR</b> 406 401 – 550 100 ✓✓RT <b>OR</b> 96 264 + 36% of taxable income above 406 400 ✓✓RT	2RT correct tax bracket (2)	F L1
1.3.1	1 unit on the map is 200 units in reality ✓✓A <b>OR</b> The real one is 200 times bigger ✓✓A <b>OR</b> The drawing is 200 times smaller ✓✓A	2A explanation (2)	Maps L1
1.3.2	Perimeter = 4 cm + 2 cm + 4,25 cm + 2,55 cm ✓M = 12,8 cm ✓CA	1C converting 1M adding 4 sides 1CA perimeter AO (3)	Meas L1
1.4.1	✓A ✓A January 2015 <b>OR</b> 01/2015 ✓✓A	1A correct month 1A correct year (2)	D L1
1.4.2	The price of cake went down/decreased/ dropped/ declined / less ✓✓A	2A description (2)	D L1
1.4.3	100% ✓✓A	2A correct index No penalty if % omitted Penalise if the index is given as R100 (2)	D L1
		[30]	

QUESTION 2 [35 MARKS]		Topic Finance	
Ques	Solution	Explanation	T/L
2.1.1	$\begin{array}{l} \checkmark\text{RT} \\ \text{R8 060,27} + \text{R600} = \text{R8 660,27} \quad \checkmark\text{CA} \end{array}$	1RT reading both correct amounts 1CA balance <b>AO</b> (2)	L1
2.1.2	$\begin{array}{l} \checkmark\text{M} \\ \text{R4 050,98} - \text{R4 034,77} = \text{R16,21} \quad \checkmark\text{CA} \end{array}$	1M subtracting 1CA interest <b>AO</b> (2)	L1
2.1.3	$\begin{array}{l} \checkmark\checkmark\text{A} \\ \text{Accept any account number from 143260000 to} \\ \text{143269999} \\ \\ \text{OR} \\ \text{Writing only the FOUR missing digits} \end{array}$	2A possible number (2)	L1
2.1.4	$\begin{array}{l} \checkmark\checkmark\text{A} \\ \text{Mdiso Khaile} \end{array}$	2A correct person (2)	L1
2.1.5	$\begin{array}{l} \checkmark\checkmark\text{A} \\ \text{0 OR none} \end{array}$	2A correct number (2)	L1
2.1.6	$\begin{array}{l} \checkmark\checkmark\text{A} \\ \text{0 OR 0% OR impossible} \end{array}$	2A correct probability (2)	P L2
2.1.7 (a)	$\begin{array}{l} \checkmark\text{M} \quad \checkmark\text{A} \\ \text{R1,50} \times 4 + \text{R0,40} \times 6 + \text{R1,20} + \text{R5,00} \times 2 = \text{R19,60} \end{array}$	1M adding values 1A correct values (2)	L1
2.1.7 (b)	$\begin{array}{l} \checkmark\text{M} \\ \text{Amount without VAT} = \frac{\text{R19,60}}{114\%} = \text{R17,19} \\ \\ \checkmark\text{M} \\ \text{VAT amount} = \text{R19,60} - \text{R17,19} \\ \quad = \text{R2,41} \quad \checkmark\text{A} \\ \\ \text{OR} \\ \\ \checkmark\text{M} \\ \text{VAT amount} = \frac{14\%}{114\%} \times \text{R19,60} \\ \quad = \text{R2,41} \quad \checkmark\text{A} \end{array}$	1M dividing by 114% 1M subtracting 1A VAT amount OR 1M dividing by 114% 1M working with ratio 1A VAT amount <b>AO</b> (3)	L2

Ques	Solution	Explanation	T/L
2.2.1	Service charges ✓✓A	2A correct item (2)	L1
2.2.2	R4 253 219 thousand – R4 165 225 thousand = R87 994 thousand ✓A	1M subtracting correct values from table 1A difference in thousands (2)	L1
2.2.3	R2 878 830 thousand = R2 878 830 000 ≈ R2,9 billion ✓CA	1RT correct expected income 1A expanding the amount 1CA income in billions AO (3)	L1
2.2.4	B = 4 253 219 – (794 866 + 2 694 542 + 34 044 + 211 526) = 518 241 ✓CA	1M subtracting 1MA adding correct values 1CA value AO (3)	L2
2.2.5	Total income ✓MA = 716 603 + 2 227 636 + 51 027 + 519 604 + 312 290 = 3 827 160 ✓A  Total expenditure = 886 355 + 34 657 + 481 980 + 71 180 + 1 780 120 + 238 + 875 072 = 4 129 602 ✓A  A = R3 827 160 – R4 129 602 = – R302 442 ✓CA or (R302 442) It is a <b>DEFICIT</b> ✓CA	1MA adding correct values 1A income  1A expenditure  1CA amount 1CA deficit (5)	L3
2.2.6	Percentage increase = $\frac{\text{Difference in remuneration}}{\text{Original budget remuneration}} \times 100\%$  ✓RT = $\frac{43\,033\,000 - 42\,350\,000}{42\,350\,000} \times 100\%$ ✓SF  ≈ 1,613 % ✓CA	1RT reading correct values 1SF substitution 1CA % increase AO (3)	L2
		[35]	

QUESTION 3 [28 MARKS]		Topic Measurement	
Ques	Solution	Explanation	T/L
3.1.1	<p>B      ✓✓A</p> <p><b>OR</b></p> <p><math>325 \times 325 \times 325</math>      ✓✓A</p>	<p>2A correct letter</p> <p><b>OF</b></p> <p>2A dimensions (2)</p>	L1
3.1.2	<p>Area = <math>1\,200 \text{ mm} \times 325 \text{ mm}</math>      ✓RT      ✓SF  = <math>120 \text{ cm} \times 32,5 \text{ cm}</math>      ✓C  = <math>3\,900 \text{ cm}^2</math>      ✓CA</p> <p><b>OR</b></p> <p>Area = <math>1\,200 \text{ mm} \times 325 \text{ mm}</math>      ✓RT      ✓SF  = <math>390\,000 \text{ mm}^2</math>      ✓A  = <math>3\,900 \text{ cm}^2</math>      ✓C</p>	<p>1RT correct dimensions  1SF substitution  1C converting  1CA area</p> <p><b>OR</b></p> <p>1RT correct dimensions  1SF substitution  1A area  1C converting  <b>AO</b>  (4)</p>	L2
3.1.3	<p>Number of boxes on ground = <math>\frac{24}{2} = 12</math>      ✓MA</p> <p>Total area needed = <math>12 \times 1\,056,25 \text{ cm}^2</math>      ✓M  = <math>12\,675 \text{ cm}^2</math>      ✓CA</p> <p><b>OR</b></p> <p>Total area = <math>1\,056,25 \text{ cm}^2 \times 24 = 25\,350 \text{ cm}^2</math>      ✓MA</p> <p>Total needed = <math>\frac{25\,350 \text{ cm}^2}{2}</math>      ✓M  = <math>12\,675 \text{ cm}^2</math>      ✓CA</p>	<p>1MA dividing number of boxes by 2  1M multiplying area of 1 box by number of boxes in one layer  1CA area</p> <p><b>OR</b></p> <p>1MA multiplying area by 24  1M dividing total area by 2  1CA area  <b>AO</b>  (3)</p>	L1
3.1.4	<p><math>600 : 325</math>      ✓RT      ✓A  = <math>24 : 13</math>      ✓S</p>	<p>1RT correct two values  1A ratio correct order  1S simplification  <b>AO</b>  (3)</p>	L1

Ques	Solution	Explanation	T/L
3.1.5 (a)	$\text{Volume} = 1\,500\text{ mm} \times 475\text{ mm} \times 462,5\text{ mm} \quad \checkmark\text{SF}$ $= 1,5\text{ m} \times 0,475\text{ m} \times 0,4625\text{ m} \quad \checkmark\text{C}$ $= 0,32953125\text{ m}^3 \quad \checkmark\text{CA}$ $\text{Inside volume} = 0,32953125\text{ m}^3 - (0,32953125\text{ m}^3 \times 9,36\%) \quad \checkmark\text{CA} \quad \checkmark\text{M}$ $= 0,298687125\text{ m}^3$ $\approx 0,299\text{ m}^3$ <p style="text-align: center;"><b>OR</b></p>	1SF substitution 1C conversion 1CA volume 1CA subtracting 1M multiplying by 9,36%	L3
3.1.5 (a)	$\text{Volume} = 1\,500\text{mm} \times 475\text{mm} \times 462,5\text{mm} \quad \checkmark\text{SF}$ $= 1,5\text{ m} \times 0,475\text{ m} \times 0,4625\text{ m} \quad \checkmark\text{C}$ $= 0,32953125\text{ m}^3 \quad \checkmark\text{CA}$ $100\% - 9,36\% = 90,64\% \quad \checkmark\text{A}$ $\text{Inside volume} = 0,32953125\text{ m}^3 \times 90,64\% \approx 0,299\text{ m}^3 \quad \checkmark\text{M}$	1SF substitution 1C conversion 1CA volume  1A subtraction 1M multiply with 90,64%	L3           (5)
3.1.5 (b)	$\text{Number of boxes} = \frac{6\text{ m}^3}{0,299\text{ m}^3} \quad \checkmark\text{MA}$ $\approx 20,066 \quad \checkmark\text{A}$ $\approx 20 \quad \checkmark\text{R}$	1MA dividing  1A simplification 1R rounding down <b>AO</b>	L1           (3)
3.1.5 (c)	$\text{Volume needed} = 148 \times 0,299$ $= 44,252 \quad \checkmark\text{A}$ $\text{Truck loads} = \frac{44,252\text{ m}^3}{6\text{ m}^3} \quad \checkmark\text{M}$ $= 7,375333\dots$ $\approx 8 \quad \checkmark\text{R}$ <p style="text-align: center;"><b>OR</b></p> $\text{Truck loads} = \frac{148}{20} \quad \checkmark\text{M}$ $= 7,4 \quad \checkmark\text{A}$ $\approx 8 \quad \checkmark\text{R}$	1A total volume  1M dividing by 6 m <sup>3</sup>  1R rounding up  <p style="text-align: center;"><b>OR</b></p> 1M working with ratio from Q3.1.5(b) 1A total volume 1R rounding up <b>AO</b>	L2           (3)
3.2.1	$5\frac{1}{4}\text{ inches OR } 5,25\text{ inches} \quad \checkmark\text{A} \quad \checkmark\text{A}$	1A radius 1A inches	L1           (2)

Ques	Solution	Explanation	T/L
3.2.2	$h = \frac{\text{Volume (in cm}^3\text{)}}{\frac{1}{4} \times \pi \times (\text{diameter in cm})^2}$ $h = \frac{20\,000 \text{ cm}^3}{\frac{1}{4} \times 3,142 \times (10\frac{1}{2} \times 2,54 \text{ cm})^2} \checkmark \text{C}$ $= \frac{20\,000 \text{ cm}^3}{558,717431 \text{ cm}^2}$ $\approx 35,8 \text{ cm} \quad \checkmark \text{CA}$	<p>1SF correct substitution (20 000 and <math>10\frac{1}{2}</math>) 1C convert inch to cm</p> <p>1CA height <b>NPR</b> <b>AO</b></p> <p>(3)</p>	L2
		[28]	



QUESTION 4 [23 MARKS]		Topic Maps, Plans and other	
Ques	Solution	Explanation	T/L
4.1.1	North West or NW ✓✓A	2A direction (2)	L2
4.1.2	It indicates the <b>BORDER</b> between South Africa and Botswana ✓✓O	2O explanation Accept: border /fence/ boundary (2)	L1
4.1.3	Travel from Johannesburg to Zeerust via Koster, then then from Zeerust to Abjaterskop Gate ✓A ✓A ✓A <b>OR</b> ✓A ✓A ✓A Take the N14, N4, then turn on to the R49	1A Koster or N14 1A Zeerust or N4 and 1A Abjaterskop Gate or R49 (3)	L1
4.1.4	Distance = 221,2 km – (62,4 km + 88,1 km) ✓M ✓RT = 70,7 km ✓CA	1M subtracting 1RT correct distances 1CA distance <b>AO</b> (3)	L1
4.1.5	Via Koster: 70 km + 71,9 km + 35,2 km = 177,1 km ✓A ✓M ✓CA	1A correct distances 1M adding 1CA shortest route distance CA from 4.1.3 (3)	L2
4.2.1	Left-hand side ✓✓A	2A correct side (2)	L1
4.2.2	✓MA ✓RT $3 \times 31 = 93$ ✓CA	1RT 31 cottages 1MA multiply 3 1CA number of guests <b>AO</b> (3)	L2
4.2.3	Walk towards reception and pass between reception and cottage number 17. ✓A Continue pass the ablusion block ✓A Cross the road to the swimming pool ✓A <b>OR</b> Turn right into the road passing the petrol station, reception and shop ✓A Turn left into the road ✓A Continue straight, the swimming pool is on your right-hand side ✓A	1A passing reception 1A passing ablusion 1A crossing road <b>OR</b> 1A passing petrol station, reception and shop 1A turn left into road 1A swimming pool on your right hand side (3)	L2
4.2.4	$P_{\text{(not a night drive)}} = \frac{2}{3}$ or 66,67% or 0,67 ✓A ✓A	1A numerator 1A denominator (2)	P L2
		[23]	

QUESTION 5 [34 MARKS]		Topic Data	
Ques	Solution	Explanation	T/L
5.1.1	Free State ✓✓A	2A correct province (2)	L1
5.1.2	$66\ 007 + 24\ 475 + 74\ 823 + 96\ 057 + 57\ 108 + 34\ 936 + 8\ 972 + 26\ 194 + 36\ 451 = 425\ 023$ ✓RT ✓M ✓CA	1RT all correct values 1M adding (min 8 prov.) 1CA total teachers <b>AO</b> (3)	L1
5.1.3	$\frac{6156}{25\ 720} \times 100\% \approx 23,93\%$ ✓RT ✓MA ✓CA	1RT correct values 1MA % calculation 1CA % schools <b>AO</b> <b>NPR</b> (3)	L2
5.1.4	$\text{LSR} = \frac{\text{Total number of learners}}{\text{Total number of schools}}$ $= \frac{2\ 129\ 526}{2\ 649} \approx 803,898 \approx 804$ ✓RT ✓SF ✓CA	1RT correct values 1SF substitution 1CA ratio <b>AO</b> <b>NPR</b> (3)	L2
5.1.5 (a)	30,1 ✓✓A	2A mode (2)	L1
5.1.5 (b)	$31,5 \quad 30,1 \quad 30,1 \quad 30,0 \quad 29,8 \quad 29,4 \quad 28,9 \quad 28,5 \quad 27,2$ ✓A ✓A	1A all the values 1A correct order (2)	L1
5.1.5 (c)	29,8 ✓✓A	2A median CA from Q5.1.5 (b) (2)	L2

Ques	Solution	Explanation	T/L																														
5.1.6	<p style="text-align: center;"><b>Teacher - School Ratio in the public schools and independent schools, by province</b></p> <table border="1" style="margin-left: auto; margin-right: auto;"> <caption>Teacher-School Ratio by Province</caption> <thead> <tr> <th>Province</th> <th>Ratio</th> <th>Grade</th> </tr> </thead> <tbody> <tr> <td>Eastern Cape</td> <td>11,5</td> <td></td> </tr> <tr> <td>Free State</td> <td>17,5</td> <td></td> </tr> <tr> <td>Gauteng</td> <td>28,2</td> <td>✓A</td> </tr> <tr> <td>KwaZulu-Natal</td> <td>15,6</td> <td></td> </tr> <tr> <td>Limpopo</td> <td>14</td> <td>✓A</td> </tr> <tr> <td>Mpumalanga</td> <td>18,5</td> <td>✓A</td> </tr> <tr> <td>Northern Cape</td> <td>15,7</td> <td>✓A</td> </tr> <tr> <td>North West</td> <td>16,3</td> <td>✓A</td> </tr> <tr> <td>Western Cape</td> <td>22</td> <td>✓A</td> </tr> </tbody> </table>	Province	Ratio	Grade	Eastern Cape	11,5		Free State	17,5		Gauteng	28,2	✓A	KwaZulu-Natal	15,6		Limpopo	14	✓A	Mpumalanga	18,5	✓A	Northern Cape	15,7	✓A	North West	16,3	✓A	Western Cape	22	✓A		
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Western Cape	22	✓A																															
	<p>6 × 1A for each correct bar</p> <p>Note: If the candidate redrew the grid:</p> <ul style="list-style-type: none"> <li>• Correct scale used – maximum 6 marks</li> <li>• Unclear scale used – maximum 3 marks</li> </ul>		(6) L2																														

Ques	Solution	Explanation	T/L
5.2.1	$\checkmark^A$ $0,1 = 10\%$ $\checkmark^{CA}$	1A identifying the correct value 1CA writing it as a percentage (2)	L1
5.2.2	(a) R N <b>OR</b> N R $\checkmark\checkmark^A$ (b) D L <b>OR</b> L D $\checkmark\checkmark^A$	2A outcome at (a) 2A outcome at (b) (4)	L1
5.2.3	$\checkmark^{RT}$ $0,05 = \frac{5}{100} = \frac{1}{20}$ $\checkmark^{CA}$	1RT correct probability 1CA simplified fraction <b>AO</b> (2)	P L2
5.2.4	$\checkmark^{RT}$ $1\ 562 \times 0,8 = 1\ 249,6$ $\checkmark^{CA}$ $\approx 1\ 249$ or 1250 $\checkmark^R$	1RT correct values 1CA simplification 1R rounding <b>AO</b> (3)	L1
		<b>[34]</b>	