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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.

Question 1 [30 Marks]			
Ques	Solution	Explanation	T/L
1.1.1	$R8,70 \times 40 = R348$ <p style="text-align: right;">✓MA ✓A</p>	1MA multiplying with 40 1A box price AO (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;">OR</p> A profit is the amount added to the cost price ✓✓O <p style="text-align: center;">OR</p> Making more money than the cost price. ✓✓O <p style="text-align: center;">OR</p> Positive difference between income and expenditure. ✓✓O <p style="text-align: center;">OR</p> Income is more than cost or expenses. ✓✓O <p style="text-align: center;">OR</p> Gained/extra money from the sale of a product ✓✓O	2O explanation <p style="text-align: center;">OR</p> 2O explanation <p style="text-align: center;">OR</p> 2O explanation <p style="text-align: center;">OR</p> 2O explanation <p style="text-align: center;">OR</p> 2O explanation <p style="text-align: center;">OR</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 AO NPR (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 AO (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 AO (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	$\frac{R542\,096,76}{12}$ ✓MA = R45 174,73 ✓A	1MA dividing correctly 1A monthly salary AO (2)	F L1
1.2.4	Tax bracket 4 ✓✓RT OR 406 401 – 550 100 ✓✓RT OR 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 OR The real one is 200 times bigger ✓✓A OR 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 OR 01/2015 ✓✓A	1A correct month 1A correct year (2)	D L1
1.4.2	The price of cake went down/decreased/ ✓✓A dropped/ declined / less	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	\checkmark RT R8 060,27 + R600 = R8 660,27 \checkmark CA	1RT reading both correct amounts 1CA balance AO (2)	L1
2.1.2	\checkmark M R4 050,98 – R4 034,77 = R16,21 \checkmark CA	1M subtracting 1CA interest AO (2)	L1
2.1.3	Accept any account number from 14326 0000 to $\checkmark\checkmark$ A 14326 9999 OR Writing only the FOUR missing digits	2A possible number (2)	L1
2.1.4	Mdiso Khaile $\checkmark\checkmark$ A	2A correct person (2)	L1
2.1.5	0 OR none $\checkmark\checkmark$ A	2A correct number (2)	L1
2.1.6	0 OR 0% OR impossible $\checkmark\checkmark$ A	2A correct probability (2)	P L2
2.1.7 (a)	\checkmark M \checkmark A $R1,50 \times 4 + R0,40 \times 6 + R1,20 + R5,00 \times 2 = R19,60$	1M adding values 1A correct values (2)	L1
2.1.7 (b)	Amount without VAT = $\frac{R19,60}{114\%} = R17,19$ \checkmark M VAT amount = R19,60 – R17,19 \checkmark M = R2,41 \checkmark A OR VAT amount = $\frac{14\%}{114\%} \times R19,60$ \checkmark M = R2,41 \checkmark A	1M dividing by 114% 1M subtracting 1A VAT amount OR 1M dividing by 114% 1M working with ratio 1A VAT amount AO (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 DEFICIT ✓CA	1MA adding correct values 1A income 1A expenditure 1CA amount 1CA deficit (5)	L3
2.2.6	Percentage increase = $\frac{\text{Difference in remuneration}}{\text{Original budget remuneration}} \times 100\%$ = $\frac{43\,033\,000 - 42\,350\,000}{42\,350\,000} \times 100\%$ ✓RT ✓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>OR</p> <p>$325 \times 325 \times 325$ ✓✓A</p>	<p>2A correct letter</p> <p>OF</p> <p>2A dimensions (2)</p>	L1
3.1.2	<p>Area = $1\,200\text{ mm} \times 325\text{ mm}$ ✓RT ✓SF = $120\text{ cm} \times 32,5\text{ cm}$ ✓C = $3\,900\text{ cm}^2$ ✓CA</p> <p>OR</p> <p>Area = $1\,200\text{ mm} \times 325\text{ mm}$ ✓RT ✓SF = $390\,000\text{ mm}^2$ ✓A = $3\,900\text{ cm}^2$ ✓C</p>	<p>1RT correct dimensions 1SF substitution 1C converting 1CA area</p> <p>OR</p> <p>1RT correct dimensions 1SF substitution 1A area 1C converting AO (4)</p>	L2
3.1.3	<p>Number of boxes on ground = $\frac{24}{2} = 12$ ✓MA</p> <p>Total area needed = $12 \times 1\,056,25\text{ cm}^2$ ✓M = $12\,675\text{ cm}^2$ ✓CA</p> <p>OR</p> <p>Total area = $1\,056,25\text{ cm}^2 \times 24 = 25\,350\text{ cm}^2$ ✓MA</p> <p>Total needed = $\frac{25\,350\text{ cm}^2}{2}$ ✓M = $12\,675\text{ cm}^2$ ✓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>OR</p> <p>1MA multiplying area by 24 1M dividing total area by 2 1CA area AO (3)</p>	L1
3.1.4	<p>$600 : 325$ ✓RT ✓A</p> <p>= $24 : 13$ ✓S</p>	<p>1RT correct two values 1A ratio correct order 1S simplification AO (3)</p>	L1

Ques	Solution	Explanation	T/L
3.1.5 (a)	$\begin{aligned} \text{Volume} &= 1\,500\text{ mm} \times 475\text{ mm} \times 462,5\text{ mm} \quad \checkmark\text{SF} \\ &= 1,5\text{ m} \times 0,475\text{ m} \times 0,4625\text{ m} \quad \checkmark\text{C} \\ &= 0,32953125\text{ m}^3 \quad \checkmark\text{CA} \\ \\ \text{Inside volume} &= 0,32953125\text{ m}^3 - (0,32953125\text{ m}^3 \times 9,36\%) \quad \checkmark\text{CA} \quad \checkmark\text{M} \\ &= 0,298687125\text{ m}^3 \\ &\approx 0,299\text{ m}^3 \end{aligned}$ <p style="text-align: center;">OR</p>	1SF substitution 1C conversion 1CA volume 1CA subtracting 1M multiplying by 9,36%	L3
3.1.5 (a)	$\begin{aligned} \text{Volume} &= 1\,500\text{mm} \times 475\text{mm} \times 462,5\text{mm} \quad \checkmark\text{SF} \\ &= 1,5\text{ m} \times 0,475\text{ m} \times 0,4625\text{ m} \quad \checkmark\text{C} \\ &= 0,32953125\text{ m}^3 \quad \checkmark\text{CA} \\ \\ 100\% - 9,36\% &= 90,64\% \quad \checkmark\text{A} \\ \text{Inside volume} &= 0,32953125\text{ m}^3 \times 90,64\% \approx 0,299\text{ m}^3 \quad \checkmark\text{M} \end{aligned}$	1SF substitution 1C conversion 1CA volume 1A subtraction 1M multiply with 90,64%	L3 (5)
3.1.5 (b)	$\begin{aligned} \text{Number of boxes} &= \frac{6\text{ m}^3}{0,299\text{ m}^3} \quad \checkmark\text{MA} \\ \\ &\approx 20,066 \quad \checkmark\text{A} \\ &\approx 20 \quad \checkmark\text{R} \end{aligned}$	1MA dividing 1A simplification 1R rounding down AO	L1 (3)
3.1.5 (c)	$\begin{aligned} \text{Volume needed} &= 148 \times 0,299 \\ &= 44,252 \quad \checkmark\text{A} \\ \\ \text{Truck loads} &= \frac{44,252\text{ m}^3}{6\text{ m}^3} \quad \checkmark\text{M} \\ &= 7,375333... \\ &\approx 8 \quad \checkmark\text{R} \end{aligned}$ <p style="text-align: center;">OR</p> $\begin{aligned} \text{Truck loads} &= \frac{148}{20} \quad \checkmark\text{M} \\ &= 7,4 \quad \checkmark\text{A} \\ &\approx 8 \quad \checkmark\text{R} \end{aligned}$	1A total volume 1M dividing by 6 m^3 1R rounding up OR 1M working with ratio from Q3.1.5(b) 1A total volume 1R rounding up AO	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	$h = \frac{\text{Volume (in cm}^3\text{)}}{\frac{1}{4} \times \pi \times (\text{diameter in cm})^2}$ $h = \frac{20\,000 \text{ cm}^3}{\frac{1}{4} \times 3,142 \times (10\frac{1}{2} \times 2,54 \text{ cm})^2} \checkmark \text{SF}$ $= \frac{20\,000 \text{ cm}^3}{558,717431 \text{ cm}^2}$ $\approx 35,8 \text{ cm} \quad \checkmark \text{CA}$	<p>1SF correct substitution (20 000 and $10\frac{1}{2}$) 1C convert inch to cm</p> <p>1CA height NPR AO</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 BORDER 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 OR ✓A ✓A ✓A Take the N14, N4, then turn on to the R49 ✓A	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 AO (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 AO (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 OR 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 OR 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	$P_{\text{(not a night drive)}} = \frac{2}{3}$ ✓A or 66,67% or 0,67 ✓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 AO (3)	L1
5.1.3	$\frac{6156}{25\ 720} \times 100\%$ ✓RT ✓MA $\approx 23,93\%$ ✓CA	1RT correct values 1MA % calculation 1CA % schools AO NPR (3)	L2
5.1.4	$\text{LSR} = \frac{\text{Total number of learners}}{\text{Total number of schools}}$ $= \frac{2129\ 526}{2\ 649}$ $\approx 803,898 \approx 804$ ✓RT ✓SF ✓CA	1RT correct values 1SF substitution 1CA ratio AO NPR (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;">Teacher - School Ratio in the public schools and independent schools, by province</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> </tr> </thead> <tbody> <tr> <td>Eastern Cape</td> <td>11,5</td> </tr> <tr> <td>Free State</td> <td>17,5</td> </tr> <tr> <td>Gauteng</td> <td>28,2</td> </tr> <tr> <td>KwaZulu-Natal</td> <td>15,6</td> </tr> <tr> <td>Limpopo</td> <td>14</td> </tr> <tr> <td>Mpumalanga</td> <td>18,5</td> </tr> <tr> <td>Northern Cape</td> <td>15,7</td> </tr> <tr> <td>North West</td> <td>16,3</td> </tr> <tr> <td>Western Cape</td> <td>22</td> </tr> </tbody> </table>	Province	Ratio	Eastern Cape	11,5	Free State	17,5	Gauteng	28,2	KwaZulu-Natal	15,6	Limpopo	14	Mpumalanga	18,5	Northern Cape	15,7	North West	16,3	Western Cape	22		
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North West	16,3																						
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	<p>6 × 1A for each correct bar</p> <p>Note: If the candidate redrew the grid:</p> <ul style="list-style-type: none"> • Correct scale used – maximum 6 marks • Unclear scale used – maximum 3 marks 	(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 OR N R $\checkmark\checkmark^A$ (b) D L OR 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 AO (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 AO (3)	L1
		[34]	