



basic education

Department:
Basic Education
REPUBLIC OF SOUTH AFRICA

NATIONAL SENIOR CERTIFICATE

GRADE 12

MATHEMATICAL LITERACY P1

EXEMPLAR 2014

MEMORANDUM

MARKS: 150

Symbol	Explanation
M	Method
MA	Method with Accuracy
CA	Consistent Accuracy
A	Accuracy
C	Conversion
S	Simplification
RT /RG	Reading from a table/Reading from a graph
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

This memorandum consists of 11 pages.

KEY TO TOPIC SYMBOL:

F = Finance; M = Measurement; P = Scale, Maps, Plans and other representations
DH = Data Handling; L = Likelihood and Probability

QUESTION 1 [36]			
Ques	Solution	Explanation	Topic
1.1.1	R28 955,47 ✓A	1A answer (1)	F L1
1.1.2	Amount (in rand) = 2 39,10 + 3 100,00 + 110,00 ^{✓M} + 500,00 = 5 949,10 ✓A	1M adding correct amounts 1A answer (2)	F L1
1.1.3	A = R31 194,57 – R850,00 ✓M = R30 344,57 ✓A B = R33 798,11 – R33 540,64 ✓M = R257,47 ✓A	1M subtracting correct amounts 1A value of A 1M subtracting correct amounts 1A value of B (4)	F L1
1.1.4	Percentage = $\frac{R31,74}{R2\,239,10} \times 100\%$ ✓M = 1,42% ✓A	1M using correct values 1M calculating percentage 1A answer (3)	F L1
1.1.5	2 weeks ✓✓A	2A answer (2)	M L1

Ques	Solution	Explanation	Topic
1.2.1	$\text{Cost} = 80c + \frac{30}{60} \times 80c \quad \text{OR} \quad \text{Cost} = 1,5 \times 80c$ $= 80c + 40c \quad \quad \quad = 120c$ $= 120c \quad \quad \quad = R1,20$ $= R1,20$	1M writing 90 seconds in minutes 1S simplification 1CA converting (3)	F M L1 (2) L2 (1)
1.2.2(a)	$P = 50 \times 80c \quad \text{OR} \quad P = 50 \times R0,8$ $= 4\,000c \quad \quad \quad = R40,00$ $= R40,00$ $Q = 90 \times 80c \quad \text{OR} \quad Q = 90 \times R0,8$ $= 7\,200c \quad \quad \quad = R72,00$ $= R72,00$ $R = 150 + \frac{120}{0,8} \quad \text{OR} \quad R = 100 + \frac{160}{0,8}$ $= 150 + 150 \quad \quad \quad = 100 + 200$ $= 300 \quad \quad \quad = 300$	1M/A multiplying chargeable minutes by 80c/R0,8 1CA value of P 1M/A multiplying chargeable minutes by 80c/R0,8 1CA value of Q 1M/A adding free minutes and minutes charged 1S simplifying 1CA value of R (7)	F L1 (4) L2 (3)
1.2.2(b)	<p style="text-align: center;">PANTSULA'S VARIABLE COSTS</p>	1A horizontal line from 100 to 150 1A point (150; 0) 1A point (200; 40) 1CA point (300; 120) (4)	F L1 (2) L2 (2)

Ques	Solution	Explanation	Topic
1.2.2(c)	$\begin{aligned} \text{Total monthly cost} &= \overset{\checkmark\text{SF}}{R299,00} + \overset{\checkmark\text{A}}{(50 + 40)} \times \overset{\checkmark\text{A}}{R0,80} \\ &= R299,00 + R72,00 \checkmark\text{S} \\ &= R371,00 \checkmark\text{CA} \end{aligned}$	1SF fixed monthly cost 1A landline to landline minutes 1A landline to cellphone 1S simplification 1CA total cost (5)	F L1 (1) L2 (2) L3 (1)
1.3.1	$\begin{aligned} \text{Amount} &= R25\,000,00 + R1\,140,00 \checkmark\text{M} \\ &= R26\,140,00 \checkmark\text{A} \end{aligned}$	1M adding 1A answer (2)	F L1 (2)
1.3.2	$\begin{aligned} I &= \overset{\checkmark\text{SF}}{R26\,140,00} \times \overset{\checkmark\text{A}}{0,246} \times 4 \\ &= R25\,721,76 \checkmark\text{CA} \end{aligned}$	1SF substitution 1A value of r 1CA answer (3)	F L1 (2) L2 (1)

QUESTION 2 [26]			
Ques	Solution	Explanation	Topic
2.1.1	$\begin{aligned} \text{°C} &= (356^{\circ} - 32^{\circ}) \div 1,8 \\ &= 180^{\circ} \end{aligned}$	1SF substitution 1A answer (2)	M L1 (2)
2.1.2	$\begin{aligned} 250 \text{ g} &= 2 \times 125 \text{ g} \\ \text{Cost} &= 2 \times \text{R}8,99 \\ &= \text{R}17,98 \end{aligned}$	1A multiplying by 2 1CA answer (2)	F L1 (2)
2.1.3	$\begin{aligned} \text{Ratio} &= 25 \text{ g} : 75 \text{ g} \\ &= 1 : 3 \end{aligned}$	1M using correct values 1A answer (2)	M L1 (2)
2.1.4	$\begin{aligned} \text{Reading} &= 116 \text{ g} + 140 \text{ g} \\ &= 256 \text{ g} \end{aligned}$	1M adding 1A answer (2)	M L1 (2)
2.1.5	$\begin{aligned} \text{Time} &= 14:40 + 0:35 \\ &= 14:75 \\ &= 15:15 \\ \text{Time} &= 15:15 \end{aligned}$	1M adding 1A correct time (2)	M L1 (2)
2.1.6	$\begin{aligned} 140 \text{ g} &= \frac{140}{1000} \times 2,2 \text{ lb.} \\ &= 0,308 \text{ lb.} \end{aligned}$	1M multiplying 1A answer (2)	M L1 (1) L2 (1)
2.1.7	$\begin{aligned} 15 \text{ espresso cups} &= 75 \text{ g mixed frozen berries} \\ 20 \text{ espresso cups} &= \frac{20 \times 75}{15} \text{ g mixed frozen berries} \\ &= 100 \text{ g mixed frozen berries} \end{aligned}$ <p style="text-align: center;">OR</p> $\begin{aligned} 20 \text{ espresso cups} &= 15 \times 1\frac{1}{3} \\ &= 75 \text{ g} \times 1\frac{1}{3} \\ &= 100 \text{ g} \end{aligned}$	1M using ratio 1A answer <p style="text-align: center;">OR</p> 1M multiplying 1A answer (2)	M L1 (1) L2 (1)

Ques	Solution	Explanation	Topic
2.2.1	$P = 3,142 \times 2,2 \text{ m} \quad \checkmark\text{SF}$ $= 6,9124 \text{ m} \quad \checkmark\text{S}$ $\approx 6,91 \text{ m} \quad \checkmark\text{CA}$	1SF substitution 1S simplification 1R rounding (3)	M L1 (3)
2.2.2	$\text{Surface Area} = 3,142 \times (2,2 \text{ m})^2 + 6,91 \text{ m} \times 6,5 \text{ m}$ $= 15,20728 \text{ m}^2 + 44,915 \text{ m}^2 \quad \checkmark\text{S}$ $= 60,12 \text{ m}^2 \quad \checkmark\text{CA}$	2SF substitution 1S simplification 1CA answer (4)	M L1 (2) L2 (2)
2.2.3	$\text{Perimeter} = 2 \times (6,5 \text{ m} + 4,4 \text{ m}) \quad \checkmark\text{SF}$ $= 21,8 \text{ m} \quad \checkmark\text{A}$	1SF substitution 1A answer (2)	M L1 (2)
2.2.4	$\text{Volume} = 6,5 \text{ m} \times 4,4 \text{ m} \times 0,05 \text{ m} \quad \checkmark\text{SF}$ $= 1,43 \text{ m}^3 \quad \checkmark\text{S} \quad \checkmark\text{A}$	1SF substitution 1S simplification 1A correct unit (3)	M L1 (3)

QUESTION 3 [29]																											
Ques	Solution	Explanation	Topic																								
3.1.1	Other Christian churches ✓✓A	2A answer (2)	DH L1 (2)																								
3.1.2	Total = 11,1 + 8,2 + 6,8 + 6,7 + 3,8 + 7,1 + 36 ✓M = 79,7 ✓A	1M adding correct values 1A answer (2)	DH L1 (2)																								
3.1.3	Range = 36 – 1,4 ✓M = 34,6 ✓A	1M subtracting correct values 1A answer (2)	DH L2 (2)																								
3.1.4	U; M; O; A; UD; MC; C; CP; Z; N; OC ✓✓A	2A answer (2)	DH L1 (2)																								
3.1.5	<p style="text-align: center;">PERCENTAGE OF PEOPLE BELONGING TO RELIGIOUS DENOMINATIONS</p> <table border="1"> <caption>Data for Percentage of People Belonging to Religious Denominations</caption> <thead> <tr> <th>Religious Denomination</th> <th>Percentage of People</th> </tr> </thead> <tbody> <tr><td>Z</td><td>11,1</td></tr> <tr><td>CP</td><td>8,2</td></tr> <tr><td>MC</td><td>6,8</td></tr> <tr><td>UD</td><td>6,7</td></tr> <tr><td>A</td><td>3,8</td></tr> <tr><td>C</td><td>7,1</td></tr> <tr><td>OC</td><td>36</td></tr> <tr><td>M</td><td>1,4</td></tr> <tr><td>U</td><td>1,4</td></tr> <tr><td>O</td><td>7,1</td></tr> <tr><td>N</td><td>15,1</td></tr> </tbody> </table>	Religious Denomination	Percentage of People	Z	11,1	CP	8,2	MC	6,8	UD	6,7	A	3,8	C	7,1	OC	36	M	1,4	U	1,4	O	7,1	N	15,1	<p>1A point Z 1A point MC 1A point A 1A point OC 1A point N</p> <p style="text-align: right;">(5)</p>	DH L1 (5)
Religious Denomination	Percentage of People																										
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M	1,4																										
U	1,4																										
O	7,1																										
N	15,1																										
3.1.6	N = 15,1% of 48 810 427 ✓M = $\frac{15,1}{100} \times 48\,810\,427$ = 7 370 374,477 ✓A ≈ 7 370 374	1M using correct percentage 1A answer (2)	DH L1 (2)																								
3.1.7	P(Catholic) = 7,1% ✓✓A = 0,071	2A correct probability (2)	L L2 (2)																								

Ques	Solution	Explanation	Topic
3.2.1	55 years and older ✓✓A	2A answer (2)	DH L2 (2)
3.2.2	Percentage = $100 - 21 - 28,4 - 5,9 - 6,8$ ✓ ^M = 37,9 ✓A	1M subtracting from 100% 1A answer (2)	DH L2 (2)
3.2.3	25 – 54 years ✓✓A	2A answer (2)	DH L1 (2)
3.2.4	Median = 50% Median falls in the 25–54 years age group ✓✓A	2A answer (2)	DH L2 (2)
3.2.5	$\frac{48810427 - \text{Pop 2011}}{\text{Pop 2011}} \times 100\% = -0,412\%$ ✓ ^{SF} $48\ 810\ 427 - \text{Pop 2011} = -0,00412 \times \text{Pop 2011}$ $48\ 810\ 427 = 0,99588 \times \text{Pop 2011}$ ✓ ^S $\frac{48810427}{0,99588} = \text{Pop 2011}$ $49\ 012\ 357,91 = \text{Pop 2011}$ $\therefore \text{Population in 2011} \approx 49\ 012\ 358$ ✓ ^{CA}	2SF substitution 1S simplification 1CA answer (4)	DH L3 (4)

QUESTION 4 [21]			
Ques	Solution	Explanation	Topic
4.1.1	9 ✓✓A	2A answer (2)	P L1 (2)
4.1.2	✓A ✓A ✓A Lounge and Bedroom 3	1A understanding direction 1A Lounge 1A Bedroom 3 (3)	P L1 (2) L2 (1)
4.1.3	✓A 1 unit of measure on the plan represents 110 units on the ground ✓A	1A unit of measure 1A representation on the ground (2)	P L1 (1) L2 (1)
4.1.4	7,6 cm ✓✓A	2A answer (2)	P L1 (1) L2 (1)
4.1.5	Actual length = 8,6 cm × 110 cm ✓M = 946 cm ✓S = 9,46 cm ✓C	1M using the scale 1S simplification 1C conversion (3)	P L1 (1) L2 (2)
4.2.1	De Beers ✓✓A	2A answer (2)	P L1 (2)
4.2.2	From Chapel Street: <ul style="list-style-type: none"> • Turn left into York ✓A • Turn right into Jones ✓A • After passing Old Main, Jones becomes Transvaal • Turn right into Cemetery ✓A • Turn left into Evans ✓A • Enter the cemetery on the right ✓A <p style="text-align: center;">OR</p> From Chapel Street: <ul style="list-style-type: none"> • Proceed with Chapel until Chapel becomes Crossman ✓A • Turn left into Carr and proceed until the junction with Goodwin ✓A • At the junction turn left into Cemetery ✓A • Turn right into Evans ✓A • Enter the cemetery on the right ✓A Any other feasible set of directions	5A as per directions 5A as per directions (5)	P L2 (3) L3 (2)
4.2.3	South Circular/New Main ✓✓A	2A answer (2)	P L2 (2)

QUESTION 5 [38]			
Ques	Solution	Explanation	Topic
5.1.1	$\begin{aligned} \text{Pension} &= 7,5\% \text{ of R28 754,50 } \checkmark\text{M} \\ &= \frac{7,5}{100} \times \text{R28 754,50} \\ &= \text{R2 156,5875 } \checkmark\text{S} \\ &\approx \text{R2 156,59 } \checkmark\text{A} \end{aligned}$	1M finding percentage 1S simplification 1A answer correct to the nearest cent (3)	F L1 (3)
5.1.2	$\begin{aligned} \text{Annual medical aid} &= 12 \times \text{R1 434,70} \checkmark\text{M} \\ &= \text{R17 216,40} \checkmark\text{A} \end{aligned}$	1M multiplying by 12 1A answer (2)	F L1 (2)
5.1.3	Calculate annual salary $\checkmark\text{A}$ Add 13 th cheque to the annual salary $\checkmark\text{A}$ Subtract annual medical aid contribution and $\checkmark\text{A}$ Subtract pension contribution $\checkmark\text{A}$ Balance gives taxable income $\checkmark\text{A}$	1A annual salary 1A 13 th cheque 1A medical aid 1A pension 1A balance (5)	F L2 (5)
5.1.4(a)	R21 200 $\checkmark\checkmark\text{A}$	2A answer (2)	F L1 (2)
5.1.4(b)	After 2 years (Accept: After 3 years) $\checkmark\checkmark\checkmark\text{A}$	3A answer (3)	F L2 (3)
5.1.5(a)	C $\checkmark\checkmark\text{A}$	2A answer (2)	F L1 (2)
5.1.5(b)	R11 440 $\checkmark\checkmark\text{A}$	2A answer (2)	F L2 (2)
5.2.1(a)	Length = 5 cm $\checkmark\checkmark\text{A}$	2A answer (2)	M L1 (2)
5.2.1(b)	Scale = 1 : 7,75 $\checkmark\checkmark\text{A}$	2A answer (2)	M L2 (2)
5.2.2(a)	31 $\checkmark\text{A}$	1A answer (1)	DH L1 (1)
5.2.2(b)	R12,00 $\checkmark\text{A}$	1A answer (1)	DH L1 (1)

Ques	Solution	Explanation	Topic
5.2.2(c)	$\text{Mean} = \frac{0+6+6+9+9+10+10+10+11+11+11+11+12+20+25+30}{16}$ $= R \frac{191}{16}$ $= R11,9375$ $\approx R11,94$	1M adding values 1A number of girls 1S simplifying 1CA answer (4)	DH L1 (2) L2 (2)
5.2.2(d)	$\text{Median} = \frac{10+11}{2}$ $= R \frac{21}{2}$ $= R10,5$	1A identifying central values 1M finding mean 1CA answer (3)	DH L1 (1) L1 (2)
5.2.2(e)	$\text{Difference} = R30 - R25$ $= R5$	1M subtracting 1A answer (2)	DH L1 (2)
5.2.2(f)	$P(R10, \text{boy}) = \frac{2}{15}$	1A numerator 1A denominator (2)	L L2 (2)
5.2.2(g)	$P(R30) = \frac{1}{31}$	1A numerator 1A denominator (2)	L L2 (2)

TOTAL: 150