



basic education

Department:
Basic Education
REPUBLIC OF SOUTH AFRICA

NATIONAL SENIOR CERTIFICATE

GRADE 12

MATHEMATICAL LITERACY P1

FEBRUARY/MARCH 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 table/Reading from graph/Reading from 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	Reason
RO	Rounding off
J	Justification

KEY TO TOPIC SYMBOLS:

**F = Finance; M = Measurement; MP = Maps, Plans and other representations
DH = Data Handling; P = Probability**

This memorandum consists of 11 pages.

QUESTION 1 [35]			
Ques	Solution	Explanation	Topic
1.1.1	This is the 8 th month of the new financial year for which she receives a salary advice ✓✓E	2E explanation (2)	F L1
1.1.2	Gross Income is the Income Earned ^{✓✓D} before any deductions are made.	2D definition (2)	F L1
1.1.3	Percentage = $\frac{R500}{R7952} \times 100\%$ ✓M $\approx 6,2877\dots\%$ ✓A Also accept 6,29% OR 6,3%	1M multiply with 100% 1A % UIF contribution (2)	F L1
1.1.4	$\frac{7,5}{100} \times R7\ 952 = R596,40$ ✓M/✓A OR $\frac{596,40}{7952} \times 100\% = 7,5\%$ ✓M	1M calculating 75% 1M/A calculating accurate value OR 1M correct fraction 1M multiply with 100% (2)	F L1
1.1.5	R5 981,67 ✓✓RD	1RD total pension (2)	F L1
1.1.6	Hourly rate = $R7\ 452 \div 172,5$ ✓M $= R43,20$ ✓A	1M Division by 172,5 1A Hourly rate (2)	F L1
1.1.7	Difference in rate : $R120,45 - R75,80$ ✓M $= R44,65$ ✓A	1M subtraction 1A difference in rate (2)	F L1

Ques	Solution	Explanation	Topic
1.2.1	Total income (in rand) $\checkmark A$ $\checkmark A$ $= 2,50 \times \text{number of blocks of fudge}$ OR $\checkmark A$ $\checkmark A$ Total income (in rand) = $2,50 \times x$ (x = number of blocks of fudge)	1A R2,50 1A No of blocks of fudge 1A \times R2,50 1A variable with explanation (2)	F L2
1.2.2	$\checkmark M$ $B = R30 \div R2,50$ $= 12 \checkmark A$	1M multiplying by R2,50 1A simplify AO (2)	F L2
1.2.3 (a)	$\checkmark M$ $R24,99 \div 2,5 = R9,996$ $\approx R10,00 \checkmark M$ OR $\checkmark M$ Shanté took the cost price of the 2,5 kg sugar and $\checkmark M$ divided it by the quantity to determine the price of 1 kg of sugar.	1M dividing by 2,5 1A cost OR 1M Cost Price 1M dividing by 2,5 (2)	F L1
1.2.3 (b)	$\checkmark M$ Number of batches = $1\ 000 \div 250$ $= 4 \checkmark A$	1M division by 250 1A no of batches AO (2)	M L1
1.2.3 (c)	$100\ \text{ml} \div 5 = 20\ \text{ml} \checkmark M$ $C = R0,95 \times 20$ $= R11,80 \checkmark CA$ OR $\checkmark M$ $C = \frac{100}{5} \times R0,59 = R11,80 \checkmark CA$ OR $100 : 5$ $C : 0,59 \checkmark M$ $C = R100 \times 0,59 \div 5$ $= R11,80 \checkmark CA$	1M dividing by 5 1CA cost of item OR 1M correct fraction 1CA cost of item OR 1M ratio 1CA simplify AO (2)	F L1

Ques	Solution	Explanation	Topic
1.2.3 (d)	Cost of one block of fudge = $R40,50 \div 54$ ✓M = $R0,75$ ✓A	1M division 1A cost price AO (2)	F L1
1.2.4 (a)	R30 ✓✓RG	2RG Reading from graph (2)	F L1
1.2.4 (b)	<p style="text-align: center;">Income and expenses for making one batch of fudge</p> <p style="text-align: center;">Amount in rand</p> <p style="text-align: center;">Number of blocks of fudge</p> <p>1A point (0;0) 3A plotting of any other 3 correct points 1A joining the points</p> <p style="text-align: right;">(5)</p>		F L2
1.2.5	Break-even point – it is the point where the income and and expenses are exactly the same. ✓✓E OR No profit or loss is made ✓✓E <div style="border: 1px solid black; padding: 5px; margin-top: 10px;"> Explanation only (without using the word break-even point) Full marks </div>	2E explanation of point on intersection (2)	F L1
			[35]

QUESTION 2 [26]			
Ques	Solution	Explanation	Topic
2.1.1	$\text{Radius} = 8,5 \text{ cm} \div 2 = 4,25 \text{ cm} \quad \checkmark \text{M}$ $\text{Volume of a cylinder} = 3,142 \times 4,25^2 \times 10,5 \text{ cm}^3 \quad \checkmark \text{SF}$ $= 595,899 \text{ cm}^3$ $\checkmark \text{CA}$ $\approx 595,9 \text{ cm}^3 \quad \checkmark \text{A}$	1M radius 1SF substitution 1CA volume 1A unit in cm^3 (4)	M L2
2.1.2	$\checkmark \text{M}$ $\text{Volume of empty space} = 595,9 - 500 \text{ cm}^3$ $= 95,9 \text{ cm}^3 \quad \checkmark \text{CA}$	1M subtracting 500 1CA volume (2)	M L3
2.1.3	$\text{Height of motor oil in can} = \frac{500 \text{ cm}^3}{3,142 \times 4,25(\text{cm})^2} \quad \checkmark \text{SF}$ $= \frac{500 \text{ cm}^3}{56,752375} \quad \checkmark \text{A}$ $\approx 8,8 \text{ cm} \quad \checkmark \text{CA}$	1SF substitution 1A simplification 1CA height (3)	M L2

Ques	Solution	Explanation	Topic
2.2.1	$\text{Area of a triangle} = \frac{1}{2} \times 980 \times 1\,200 \text{ mm}^2$ $= 588\,000 \text{ mm}^2 \quad \checkmark \text{ CA}$	1SF substitution 1CA area of triangle (2)	M L2
2.2.2	Area of trapezium side $= (2 \times 588\,000) + 2\,088\,000 \text{ mm}^2 \quad \checkmark \text{ SF}$ $= 1\,176\,000 + 2\,088\,000 \text{ mm}^2$ $= 3\,264\,000 \text{ mm}^2 \quad \checkmark \text{ A}$ $\text{Total area in m}^2 = 3\,264\,000 \div 1\,000\,000 \quad \checkmark \text{ C}$ $= 3,264 \quad \checkmark \text{ CA}$	1SF substitution 1S simplification 1A area 1C conversion 1CA total area (5)	M L2
2.2.3	$\text{Area of slanted side} = \frac{11,676 - 2 \times 3,264}{2} \text{ m}^2$ $= 2,574 \text{ m}^2 \quad \checkmark \text{ CA}$	1M subtraction 1M division by 2 1CA area (3)	M L3
2.3.1	$\text{Total area} = 11,676 \times 25 \text{ m}^2$ $= 291,9 \text{ m}^2 \quad \checkmark \text{ CA}$	1M multiply by 25 1CA total area (2)	M L1
2.3.2	$\text{Total number of coats} = 25 \times 2$ $= 50$	1M multiply 1A coats of paint (2)	M L1
2.3.3	$\text{Minimum number of tins} = 585 \div 25 \text{ tins}$ $= 23,352 \text{ tins} \quad \checkmark \text{ CA}$ $\approx 24 \text{ tins} \quad \checkmark \text{ R}$	1M division by 25 1CA simplification 1R rounding up (3)	M L1
			[26]

QUESTION 3 [21]			
Ques	Solution	Explanation	Topic
3.1	✓A ✓A Perdeberg and Petrusburg	1A Perdeberg 1A Petrusburg (2)	MP L1
3.2	South East ✓✓A	2A Directions (2)	MP L1
3.3	Time = $\frac{165 \text{ km}}{97,3 \text{ km/h}}$ ✓SF = 1,695 hours ✓A But 0,695 hours × 60 minutes ✓C = 41,7 minutes ✓A Time ≈ 1 hour 42 minutes ✓CA	1SF substitution 1A simplification 1C multiply × 60 1A minutes 1CA time (5)	MP L2
3.4	✓RD ✓RD Provincial road number 31 and 64	1RD Road 31 1RD Road 64 (2)	MP L1
3.5	Phillippolis ✓✓✓A	3A finding the correct town (3)	MP L2
3.6	✓RD ✓M ✓M Distance = 145 – (39 + 19 + 33 + 12) km = 42 km ✓A	1M Identify 145 km 1M subtracting 1M adding distances 1A distance AO (4)	MP L2
3.7	5,4 cm on map = 2,7 km in reality 2,7 km × 100 000 = 270 000 cm ✓C 5,4 : 270 000 ✓M 1 : 50 000 ✓S	1C convert km to cm 1M write as a ratio 1S simplify (3)	MP L3
			[21]

QUESTION 4 [36]			
Ques	Solution	Explanation	Topic
4.1.1	$300 ; 256; 249; 182; 173; 169; 163; 155; 145; 144; 141$ <p style="text-align: center;">✓M ✓ A</p>	1 M descending order 1A arrange all (2)	DH L1
4.1.2	Jacques Kallis ✓✓ A	2A name of player (2)	DH L1
4.1.3	Mean = $\frac{300 + 256 + 249 + 182 + 173 + 169 + 163 + 155 + 145 + 144 + 141}{11}$ <p style="text-align: center;">✓M ✓ M</p> $= \frac{2077}{11}$ <p style="text-align: center;">✓ CA</p> $\approx 188,8181$ <p><i>Also accept 189 runs</i></p>	1M adding of values 1M division by 11 1CA mean (3)	DH L2
4.1.4	Strike rate = $\frac{145}{121} \times 100$ ✓SF $= 119,83$ ✓ A	1SF substitution 1A strike rate rounded in context (2)	DH L2
4.1.5	$\frac{5}{11}$ ✓ A $\frac{5}{11}$ ✓ A	1A numerator 1A denominator (2)	P L2
4.2.1	C ✓✓ A	2A (2)	DH L1
4.2.2	E ✓✓ A	2A (2)	DH L1
4.2.3	A ✓✓ A	2A (2)	DH L1

Ques	Solution	Explanation	Topic
4.3.1	\checkmark M $1\ 100\ 000 - 1\ 098\ 959 = 1\ 041\ \checkmark$ A \checkmark CA Therefore 2007 is the closest	1M number format 1A difference 1CA identify year AO (3)	DH L1
4.3.2	2005 $\checkmark\checkmark$ RT	2RT reading from table (2)	DH L1
4.3.3 (a)	$P = \frac{33,5}{100} \times 572\ 600 \checkmark$ M $\approx 191\ 821 \checkmark$ A	1M % of 572 600 1A value P AO (2)	DH L1
4.3.3 (b)	$Q = \frac{178373 \checkmark}{559631 \checkmark} \times 100$ $\approx 31,9 \checkmark$ A \checkmark RT \checkmark M	1A numerator 1A denominator 1A percentage AO (3)	DH L1
4.3.4	$559\ 631 - 178\ 373 = 381\ 258 \checkmark$ CA	1RT correct values 1M subtracting 1CA no of deaths (3)	DH L1
4.3.5	2004 \checkmark RT and 2006 \checkmark RT	1RT 2004 1RT 2006 (2)	DH L1
4.3.6	2003 \checkmark RT and 2010 \checkmark RT	1RT 2003 1RT 2010 (2)	DH L1
4.3.7	\checkmark RT $579\ 371 : 1\ 109\ 926 \checkmark$ M	1RT reading correct values 1A correct ratio (2)	DH L1
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QUESTION 5 [32]			
Ques	Solution	Explanation	Topic
5.1.1	$\begin{aligned} \text{Amount} &= \text{R}9\,247,95 - \text{R}4\,000 \\ &= \text{R}5\,247,95 \end{aligned}$	\checkmark M 1M subtracting 1A amount (2)	F L1
5.1.2 (a)	$\frac{\text{R}350}{\text{R}10\,000} \times 100\% = 3,5\%$	\checkmark A \checkmark M 1A correct fraction 1M multiply by 100% 1A percentage (3)	F L1
5.1.2 (b)	$\begin{aligned} \text{Total monthly amount} &= \text{R}764,84 + \text{R}75,00 + \text{R}20,50 \\ &= \text{R}860,34 \end{aligned}$	\checkmark M 1M adding 1A simplify (2)	F L1
5.1.2 (c)	$\begin{aligned} \text{Total amount of loan} &= \text{R}764,84 \times 36 \text{ months} \\ &= \text{R}27\,534,24 \\ \text{Interest} &= \text{R}27\,534,24 - \text{R}10\,000 \\ &= \text{R}17\,534,24 \end{aligned}$	\checkmark RT \checkmark M 1RT reading values 1M multiply 1CA simplify 1M subtract 1CA interest (4)	F L2
5.2.1	$\begin{aligned} \text{Amount} &= \text{R}149\,995,00 - \text{R}25\,000 \\ &= \text{R}124\,995,00 \end{aligned}$	\checkmark RD \checkmark M 1RT reading values 1M subtract 1CA amount (3)	F L1
5.2.2	$\begin{aligned} \text{Total monthly repayments} &= \text{R}4\,068,06 \times 36 \\ &= \text{R}146\,450,16 \end{aligned}$	\checkmark M \checkmark CA 1M multiplying 1CA correct amounts (2)	F L1
5.2.3	$\begin{aligned} \text{Difference} &= \text{R}5\,819,44 - \text{R}4\,068,06 \\ &= \text{R}1\,751,38 \end{aligned}$	\checkmark RD \checkmark M 1RD reading values 1M subtracting 1A difference (3)	F L1

Ques	Solution	Explanation	Topic
5.3.1	$\begin{aligned} \text{Width} &= 5 \text{ inch} \div 0,394 \text{ cm} \\ &= 12,69 \text{ cm} \quad \checkmark \text{M} \quad \checkmark \text{A} \\ \\ \text{Length} &= 7 \text{ inch} \div 0,394 \text{ cm} \\ &= 17,77 \text{ cm} \quad \checkmark \text{A} \end{aligned}$	1M dividing by 0,394 1A simplification 1 A simplification (3)	M L2
5.3.2	$\begin{aligned} \text{Length} &= 17,77 - 15 \text{ cm} \\ &= 2,77 \text{ cm} \quad \checkmark \text{CA} \\ \\ \text{Width} &= 12,69 - 10 \text{ cm} \\ &= 2,69 \text{ cm} \quad \checkmark \text{CA} \end{aligned}$	1M subtracting 1CA length 1 CA width (3)	M L1
5.4.1	30 – 39 years $\checkmark \checkmark \text{A}$	2Adetermining the modal age group (2)	D L2
5.4.2 (a)	$\begin{aligned} &\checkmark \text{RT} \quad \checkmark \text{A} \\ \text{Age group} &80+ \end{aligned}$	1RT reading table 1A age group (2)	P L2
5.4.2 (b)	$\begin{aligned} \text{Probability} &= \frac{2953490}{25362194} \quad \checkmark \text{RT} \\ &\quad \checkmark \text{RT} \\ &\approx 0,12 \quad \checkmark \text{CA} \\ \\ &\text{(Also accept 0,1 or 0,116)} \end{aligned}$	1RT reading numerator 1RT reading denominator 1CA decimal fraction (3)	P L2
			[32]