



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 $\approx 6,2877\ldots\%$ ✓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)	Income and expenses for making one batch of fudge 1A point (0;0) 3A plotting of any other 3 correct points 1A joining the points (5)		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 Explanation only (without using the word break-even point) Full marks	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	$\text{Area of a triangle} = \frac{1}{2} \times 980 \times 1\,200 \text{ mm}^2$ $= 588\,000 \text{ mm}^2$	1SF substitution 1CA area of triangle (2)	M L2
2.2.2	$\text{Area of trapezium side}$ $= (2 \times 588\,000) + 2\,088\,000 \text{ mm}^2$ $= 1\,176\,000 + 2\,088\,000 \text{ mm}^2$ $= 3\,264\,000 \text{ mm}^2$ $\text{Total area in m}^2 = 3\,264\,000 \div 1\,000\,000$ $= 3,264$	1SF substitution 1S simplification 1A area 1C conversion 1CA total area (5)	M L2
2.2.3	$\text{Area of slanted side} = \frac{11,676 - 2 \times 3,264}{2} \text{ m}^2$ $= 2,574 \text{ m}^2$	1M subtraction 1M division by 2 1CA area (3)	M L3
2.3.1	$\text{Total area} = 11,676 \times 25 \text{ m}^2$ $= 291,9 \text{ m}^2$	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	$\text{Minimum number of tins} = 585 \div 25$ $= 23,352$ $\approx 24 \text{ tins}$	1M division by 25 1CA simplification 1R rounding up (3)	M L1
			[26]

QUESTION 3 [21]			
Ques	Solution	Explanation	Topic
3.1	✓A Perdeberg and Petrusburg	1A Perdeberg 1A Petrusburg (2)	MP L1
3.2	South East ✓✓A	2A Directions (2)	MP L1
3.3	$\text{Time} = \frac{165 \text{ km}}{97,3 \text{ km/h}} \checkmark \text{SF}$ $= 1,695 \text{ hours } \checkmark \text{A}$ But 0,695 hours $\times 60$ minutes $\checkmark \text{C}$ $= 41,7 \text{ minutes } \checkmark \text{A}$ Time ≈ 1 hour 42 minutes $\checkmark \text{CA}$	1SF substitution 1A simplification 1C multiply $\times 60$ 1A minutes 1CA time (5)	MP L2
3.4	Provincial road number $\checkmark \text{RD}$ 31 and $\checkmark \text{RD}$ 64	1RD Road 31 1RD Road 64 (2)	MP L1
3.5	Phillippolis ✓✓✓A	3A finding the correct town (3)	MP L2
3.6	$\text{Distance} = 145 - (39 + 19 + 33 + 12) \text{ km}$ $= 42 \text{ km } \checkmark \text{A}$	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 $2,7 \text{ km} \times 100\,000 = 270\,000 \text{ cm } \checkmark \text{C}$ $5,4 : 270\,000 \checkmark \text{M}$ $1 : 50\,000 \checkmark \text{S}$	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	$300 ; 256; 249; 182; 173; 169; 163; 155; 145; 144; 141$ ✓M ✓ A	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 = $\frac{300 + 256 + 249 + 182 + 173 + 169 + 163 + 155 + 145 + 144 + 141}{11}$ ✓M $= \frac{2077}{11}$ ✓ CA $\approx 188,8181$ Also accept 189 runs	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 ✓ 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)	
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)	$Q = \frac{178373}{559631} \times 100$ $\checkmark$ A $\approx 31,9$ $\checkmark$ A $\checkmark$ RT $\checkmark$ M	1A numerator 1A denominator 1A percentage AO (3)	
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
			[36]

QUESTION 5 [32]			
Ques	Solution	Explanation	Topic
5.1.1	$\begin{aligned} \text{Amount} &= \text{R9 247,95} - \text{R4 000} \\ &= \text{R5 247,95} \end{aligned}$	$\checkmark M$ 1M subtracting 1A amount (2)	F L1
5.1.2 (a)	$\frac{\text{R350}}{\text{R10 000}} \times 100\% = 3,5\%$	$\checkmark A$ $\checkmark M$ 1A correct fraction 1M multiply by 100% 1A percentage (3)	F L1
5.1.2 (b)	$\begin{aligned} \text{Total monthly amount} &= \text{R764,84} + \text{R75,00} + \text{R20,50} \\ &= \text{R860,34} \end{aligned}$	$\checkmark M$ 1M adding 1A simplify (2)	F L1
5.1.2 (c)	$\begin{aligned} \text{Total amount of loan} &= \text{R764,84} \times 36 \text{ months} \\ &= \text{R27 534,24} \\ \text{Interest} &= \text{R27 534,24} - \text{R10 000} \\ &= \text{R17 534,24} \end{aligned}$	$\checkmark RT$ $\checkmark M$ 1RT reading values 1M multiply 1CA simplify 1M subtract 1CA interest (4)	F L2
5.2.1	$\begin{aligned} \text{Amount} &= \text{R149 995,00} - \text{R25 000} \\ &= \text{R124 995,00} \end{aligned}$	$\checkmark RD$ $\checkmark M$ 1RT reading values 1M subtract 1CA amount (3)	F L1
5.2.2	$\begin{aligned} \text{Total monthly repayments} &= \text{R4 068,06} \times 36 \\ &= \text{R146 450,16} \end{aligned}$	$\checkmark M$ $\checkmark CA$ 1M multiplying 1CA correct amounts (2)	F L1
5.2.3	$\begin{aligned} \text{Difference} &= \text{R5 819,44} - \text{R4068,06} \\ &= \text{R1 751,38} \end{aligned}$	$\checkmark RD$ $\checkmark M$ 1RD reading values 1M subtracting 1A difference (3)	F L1

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