education

Department:
Education
REPUBLIC OF SOUTH AFRICA

NATIONAL SENIOR CERTIFICATE

GRADE 12

MATHEMATICAL LITERACY P1

NOVEMBER 2009

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
SF	Correct substitution in a formula
O	Opinion/Example
P	Penalty, e.g. for no units, incorrect rounding off etc.
R	Rounding off

This memorandum consists of 16 pages.

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QUESTION 1 [26]			
Ques	**Solution**	**Explanation**	**AS**
1.1.1	$464 : 128$ $(\div 16) \quad 29 : 8$ ✓A	1A solution (1)	12.1.1
1.1.2	$\frac{379}{250} = 1{,}516$ ✓A $\approx 1{,}52$ ✓CA	1A solution 1CA rounding off (2) **ANSWER ONLY – FULL MARKS** 1,5 or 1,51 – 1 mark Any other incorrect answer - 0	12.1.1
1.1.3	✓A $7 + \frac{1}{3}(57)$ $= 7 + 19$ ✓A $= 26$ ✓CA OR ✓A $7 + \frac{57}{3} = \frac{21+57}{3}$ ✓A $= \frac{78}{3}$ $= 26$ ✓CA	1A square root 1A simplifying brackets and dividing 1CA simplification (3) **ANSWER ONLY – 2 marks**	12.1.1
1.1.4	$1{,}25 \times 1\,000\ \text{m}\ell$ ✓M $= 1\,250\ \text{m}\ell$ ✓A	1M multiplying by 1 000 1A accurate conversion (2) **ANSWER ONLY – FULL MARKS** No penalty if units are omitted	12.3.2
1.1.5	16% of 1 255 kg $= \frac{16}{100} \times$ 1 255 kg ✓M $= 200{,}8$ kg ✓A New amount $= 1\,255$ kg $+ 200{,}8$ kg $= 1\,455{,}8$ kg ✓CA **OR** 16% increase = 1,16 ✓A New amount $= 1{,}16 \times 1\,255$ kg ✓M $= 1\,455{,}8$ kg ✓CA	1M calculating % 1A solution 1CA increase in % 1A total % 1M multiplying 1CA solution (3) **ANSWER ONLY – FULL MARKS** No penalty if units are omitted	12.1.1 12.3.1

Ques	Solution	Explanation	AS
1.1.6	\$1 = R10,52 ✓M \$1 215,00 = R10,52 × 1 215,00 = R12 781,80 ✓CA	1M multiplying 1CA simplification (2) **ANSWER ONLY – FULL MARKS**	12.1.3
1.2.1	$\frac{R\,399,00}{30}$ ✓MA = R13,30 ✓A **OR** Total number of grams in a box = 500 g × 30 = 15 000 g ✓MA Cost of 500 g = $\frac{R399,00}{15000} \times 500$ = R13,30 ✓A	1MA dividing 1A simplification 1MA multiplying 1A simplification (2) **ANSWER ONLY – FULL MARKS**	12.1.1
1.2.2	1 or 100% or certain ✓✓A	2A correct probability (2) **ANSWER WRITTEN AS A RATIO – 1 mark**	12.4.5
1.2.3	Temp in $^oF = \frac{9}{5} \times 225^o + 32^o$ ✓SF = 405 ^oF + 32 ^oF ✓S = 437 ^oF ≈ 435 ^oF ✓CA	1SF substitution in formula 1S simplification 1CA rounded off to 5 degrees (3) **ANSWER ONLY – FULL MARKS**	12.3.2

Ques	Solution	Explanation	AS
1.3.1	Cost price of 1 orange $= \frac{R\,9{,}00}{12}$ ✓M $= R0{,}75$ ✓CA **OR** Cost price of 1 orange $= \frac{R9{,}00 \times 100}{12}$ ✓M = 75 cents ✓CA	1M division by 12 1CA simplification (2) **ANSWER ONLY – FULL MARKS** 0,75 with no units – 2 marks 75 with no units – 1 mark	12.1.1
1.3.2	1 dozen oranges sell for R12,00 ✓A Profit = R12,00 – R9,00 = R3,00 ✓CA **OR** Selling price per orange = 100 cents Cost price per orange = 75 cents Profit per orange = 25 cents ✓A Profit per dozen orgaanges = 25 cents $\times 12$ = 300 cents = R3,00 ✓CA	1A selling price for 1 dozen 1CA difference 1A profit per orange 1CA profit per dozen (2) **ANSWER ONLY – FULL MARKS**	12.1.3

Ques	Solution	Explanation	AS
1.3.3	Cost = 108 × R0,75 ✓CA = R81,00 ✓CA **OR** 12 oranges cost R9,00 108 oranges = $\frac{108 \times R\,9{,}00}{12}$ ✓M = R81,00 ✓CA **OR** Number of dozen = $\frac{108}{12} = 9$ ✓M Cost = 9 dozen × R9,00 per dozen = R81,00 ✓CA	1CA cost per orange 1CA cost for 108 oranges 1M finding number of dozens 1CA cost for 108 oranges 1M dividing 1CA cost for 108 oranges (2) **ANSWER ONLY – FULL MARKS**	12.1.1

QUESTION 2 [31]			
Ques	**Solution**	**Explanation**	**AS**
2.1.1	D = 10 cm ✓A	1A doubling the radius (1)	12.3.1
2.1.2	L = 29,5 cm – 2,5 cm – 2,5 cm ✓M/A = 24,5 cm ✓CA	1MA reducing 29,5 cm 1CA length of certificate (2) **ANSWER ONLY – FULL MARKS** Only subtract 2,5 once – 1 mark Use the width – 1 mark Using a length = 29,5 cm and having an answer less than 29,5cm - 1 mark	12.3.1
2.1.3	A = πr^2 = 3,14 × $(5\text{ cm})^2$ ✓SF = 78,5 cm^2 ✓CA ✓A	1SF/CA substitution in formula (CA from 21.1.0 1CA simplifying 1A unit (3) **ANSWER ONLY – FULL MARKS** **Accept $\pi = \frac{22}{7}$ or π on the calculator**	12.3.1
2.1.4	P = 2 (29,5 cm + 21 cm) ✓SF = 101 cm ✓CA	1SF substitution in formula 1CA simplifying (2) **ANSWER ONLY – FULL MARKS**	12.3.1
2.1.5	A = 29,5 cm × 21 cm ✓SF = 619,5 cm^2 ✓CA	1SF substitution in formula 1CA simplifying (2) **ANSWER ONLY – FULL MARKS**	12.3.1

Ques	Solution	Explanation	AS
2.2.1	315 : 1 050 ✓MA = 3 : 10 ✓CA	1MA ratio in correct order 1CA simplifying (2) **ANSWER ONLY – FULL MARKS** 1 mark if one of the numbers is 1 Accept notation $\frac{3}{10}$ but refer to question 1.1	12.1.1
2.2.2	✓A $\frac{2}{7} \times 315$ guests = 90 guests ✓CA	1A correct fraction 1CA simplifying (2) **CORRECT ANSWER ONLY – FULL MARKS**	12.1.1
2.2.3*	1 litre concentrate makes 5 litres of juice ✓MA 5 litres concentrate makes $5 \times 5\ \ell$ $= 25\ \ell$ ✓CA **OR** Number of litres of juice = $4 \times 5\ \ell + 1 \times 5\ \ell$ ✓MA $= 20\ \ell + 5\ \ell$ $= 25\ \ell$ ✓CA	1MA dilution ratio 1CA simplifying 1MA dilution ratio 1CA simplifying (2) **ANSWER ONLY – FULL MARKS** 20 *l* – 1 mark	12.1.1

Ques	Solution	Explanation	AS
2.3.1	Eastern Cape or A ✓A	1A correct province (1)	12.4.4
2.3.2	D = 100% – 15% – 6% – 13% –50% ✓MA = 16 % or 0,16 or $\frac{16}{100}$ ✓CA	1MA setting up model 1CA simplifying (2) **ANSWER ONLY – FULL MARKS**	12.4.4
2.3.3	Gauteng or B ✓CA	1CA correct province (1) Check the answer to D (2.3.2)	12.4.4
2.3.4	✓MA ✓MA $\frac{18}{100} \times 88\ 144$ vehicles **OR** $0{,}18 \times 88\ 144$ = 15 865,92 vehicles ✓CA ≈ 15 866 vehicles ✓R	1MA 18% of vehicles stolen 1MA correct no. of vehicles 1CA simplifying the product 1R rounding (4) **ANSWER ONLY – FULL MARKS**	12.1.1 12.4.4
2.4.1 (a)	R750 ✓RG	1 RG reading from graph (1)	12.2.3
2.4.1 (b)	Loss ✓A	1A (1)	12.2.3
2.4.1 (c)	10 ✓✓RG	2RG reading from graph (2)	12.2.3
2.4.2	Percentage profit = $\frac{\text{Profit}}{\text{Expenses}} \times 100\%$ = $\frac{\text{R}400}{\text{R}850} \times 100\%$ ✓SF = 47,0588 ...% ✓S ≈ 47,1% ✓R	1SF substitution into formula 1S simplification 1R rounding off (3)	12.1.3 12.2.1

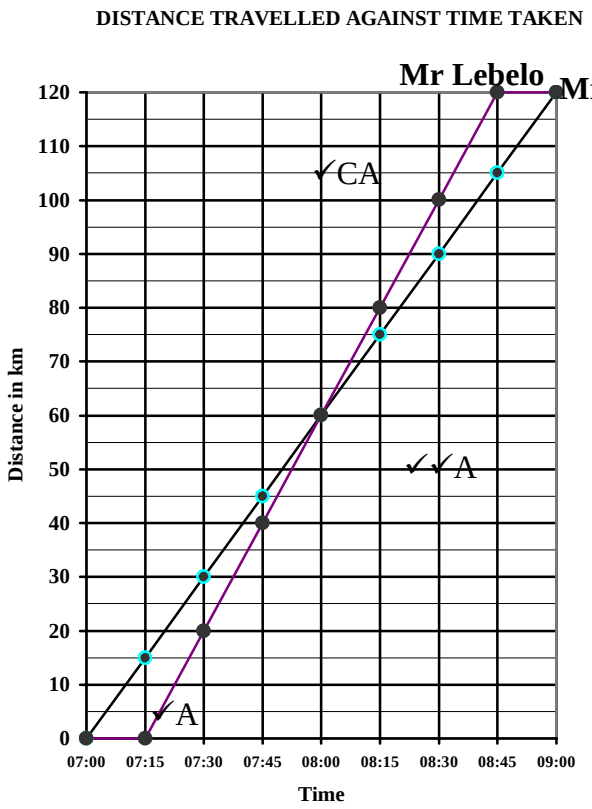
QUESTION 3 [19]

Ques	Solution	Explanation	AS
3.1.1	17 years ✓A	1A modal age (1)	12.4.3
3.1.2	17 years ✓A	1A median (1)	12.4.3
3.1.3	Mean $= \frac{16+16+16+17+17+17+17+17+18+18+19+19+19+20+22}{15}$ ✓M ✓MA $= \frac{268}{15}$ years = 17,8666 … years ✓CA = 17,87 years ✓R	1M sum of values 1MA dividing by size of sample 1CA simplifying 1R rounding off (4) **ANSWER ONLY – FULL MARKS**	12.4.3
3.2.1 (a)	20% ✓A	1A lowest (1)	12.4.3
3.2.1 (b)	100% ✓A	1A highest (1)	12.4.3
3.2.2		1A learners in level 1 1A learners in level 2 1A learners in level 3 1A learners in level 4 1A learners in level 5 1A learners in level 6 1A learners in level 7 (7) If cumulative frequency is correct, maximum of 3 marks. If addition shown in cumulative frequency, maximum of 4 Ignore cumulative frequency if both are given	12.4.2

PERFOR-MANCE LEVEL	PERCENTAGE RANGE	TALLY	FRE-QUENCY	
1	**0 to 29**	////	4	✓A
2	**30 to 39**	~~////~~	5	✓A
3	**40 to 49**	~~////~~ ~~////~~ /	11	✓A
4	**50 to 59**	~~////~~ ///	8	✓A
5	**60 to 69**	~~////~~	5	✓A
6	**70 to 79**	~~////~~ ///	8	✓A
7	**80 to 100**	~~////~~ ~~////~~ /	11	✓A

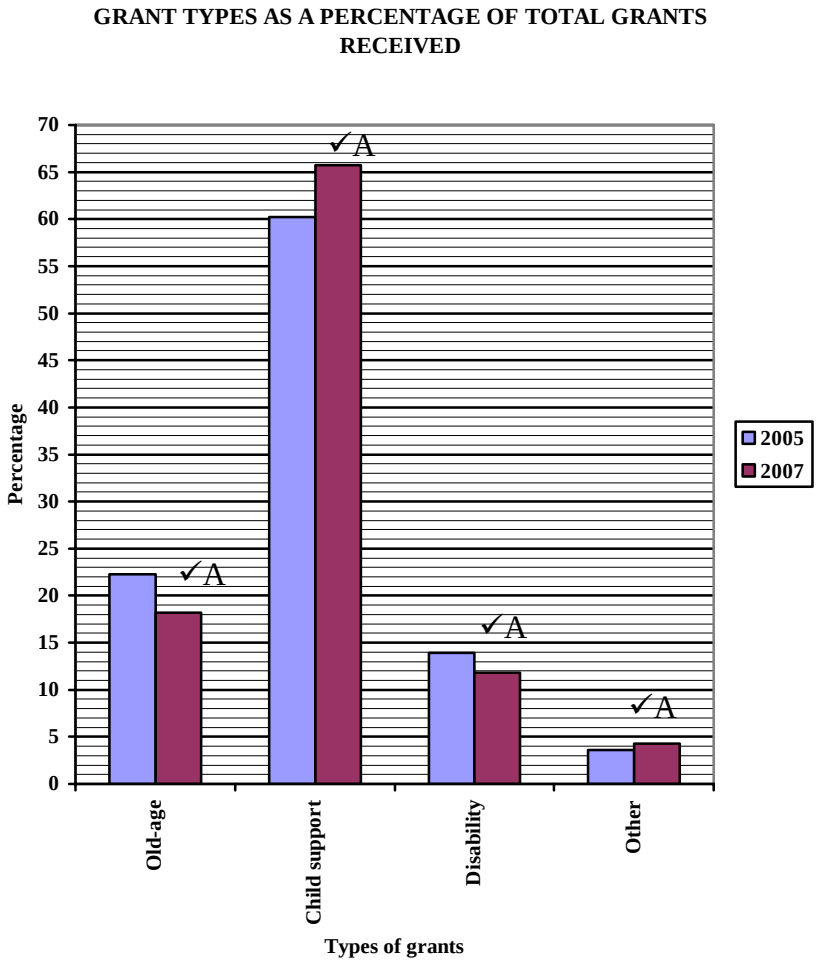
Ques	Solution	Explanation	AS
3.3.1	52 learners × 1,6 m^2/learner ✓M/A = 83,2 m^2 ✓A	1M/A multiplication 1A simplifying (2) **ANSWER ONLY – FULL MARKS**	12.3.1
3.3.2	Number of learners = $\frac{96}{1,6}$ ✓M = 60 learners ✓A	1M division/correct values 1A solution (2) **ANSWER ONLY – FULL MARKS**	12.3.1

QUESTION 4 [23]			
Ques	**Solution**	**Explanation**	**AS**
4.1.1	90 km ✓C ✓R	1C conversion to time 08:30 1R reading from table (2)	12.2.3
4.1.2	08:45 ✓✓RT	2RT reading from table (2)	12.2.3
4.1.3 (a)	Speed = $\frac{120\,\text{km}}{2\,\text{h}}$ ✓SF = 60 km/h ✓CA	1SF substitution into formula 1CA solution (2) **ANSWER ONLY – FULL MARKS**	12.2.1
4.1.3 (b)	72 minutes = 1,2 hours ✓A $\frac{\text{Distance}}{1{,}2\,\text{h}}$ = 80 km/h ✓SF Distance = 80 × 1,2 km = 96 km ✓CA **OR** 60 minutes → 80 km ✓A 12 minutes → $\frac{12}{60} \times 80\,\text{km}$ = 16 km ✓A 72 minutes = 80 km + 16 km = 96 km ✓CA	1A conversion to hours 1SF substitution into formula 1CA solution **OR** 1A distance for 1 hour 1A distance for 12 minutes 1CA distance for 72 minutes (3) **ANSWER ONLY – FULL MARKS** 80 X 72 - 1 Mark	12.2.1

Ques	Solution	Explanation	AS
4.1.4		1A starting point for Mr Lebelo at 07:15 2A plot any 4 points 1CA joining all points plotted (4) **CORRECT GRAPH WITHOUT PLOTTING INDIVIDUAL POINTS – FULL MARKS**	12.2.2
4.1.5 (a)	1 hour (in terms of Mr Goldman) ✓RG ¾ hour or 45 minutes (in terms of Mr Lebelo)	1RG Reading from the graph or table (1)	12.2.3
4.1.5 (b)	60 km ✓RG✓RG	2RG Reading from the graph or table (2)	12.2.3
4.1.5 (c)	✓RG ✓RG 100 km – 90 km ✓M = 10 km ✓CA	1M subtraction 1RG reading from graph or table 1RG reading from graph or table 1CA simplifying (4) **ANSWER ONLY – FULL MARKS**	12.2.3
4.2*	✓A ✓M Cost of petrol = 10 journeys × 8 ℓ × R8,23 per ℓ = R658,40 ✓CA	1A Number of journeys 1M multiplication 1CA simplifying (3) **ANSWER ONLY – FULL MARKS**	12.1.3

Question 5 [18]				
Ques	**Solution**		**Explanation**	**AS**
5.1.1	7,51 ; 7,51 ; 7,64 ; 7,71 ; 7,81 ; 7,91 ; 8,05 ; 8,22 ✓A✓A		2A ascending order (2) **Descending order – 1 mark** **Leave off 1 value – 1 mark**	12. 4.2
5.1.2	7,51 metres ✓A		1A mode (1)	12. 4.3
5.1.3	Range = 8,02 m – 7,23 m ✓M = 0,79 m ✓CA		1M largest – smallest 1CA solution (2) **ANSWER ONLY – FULL MARKS**	12. 4.3
5.1.4	Shortest jump = 7,23 m ✓A 7,23 m = 7,23 × 100 cm ✓C ✓CA = 723 cm		1A shortest jump 1C conversion 1CA answer in cm (3) **ANSWER ONLY – FULL MARKS**	12. 3.2
5.1.5	Median = $\frac{7,64+7,82}{2}$ m ✓M = 7,73 m ✓A		1M method 1A solution (2) **ANSWER ONLY – FULL MARKS**	12. 4.3
5.1.6	Charles ✓✓A		2A solution (2)	12. 4.1
5.2	V = 9 m × 2,75 m× 0,07 m ✓SF = 1,7325 m^3 ✓CA ≈ 1,733m^3 ✓CA		1SF substitution 1CA simplification 1CA rounding off and correct unit (3) **ANSWER ONLY – FULL MARKS**	12. 3.1
5.3	August 1991 – October 1968 ✓MA = 22 years 10 months ✓CA ≈ 23 years ✓CA	**Also accept** 1991 – 1968 = 23 years	1MA method 1CA solution 1CA rounding off (3) **ANSWER ONLY – FULL MARKS**	12. 1.1 12. 4.4

QUESTION 6 [18]			
Ques	**Solution**	**Explanation**	**AS**
6.1.1	18,2% ✓RT	1RT reading from table (1)	12.4.4
6.1.2	✓RT ✓RT Difference = 7 908 138 – 5 662 911 = 2 245 227 ✓CA	2RT reading from table 1CA difference (3) **ANSWER ONLY – FULL MARKS**	12.1.1 12.4.4
6.1.3 (a)	A = 100% – 22,3% – 60,2% – 3,6% ✓MA = 13,9% ✓CA **OR** $A = \frac{1\,307\,549}{9\,406\,829} \times 100\%$ ✓MA = 13,9 % ✓CA	1MA correct values 1CA value of A (2) **ANSWER ONLY – FULL MARKS**	12.1.1 12.4.4
6.1.3 (b)	✓RT B = 2 194 066 + 7 908 138 + 1 420 335 + 517 580 = 12 036 739 ✓CA	1RT reading from table 1CA finding the sum (2) **ANSWER ONLY – FULL MARKS**	12.1.1 12.4.4

Ques	Solution	Explanation	AS
6.1.4		1A Old-age 2007 (accept 18%) 1A Child support in 2007 (accept 66%) 1A Disability in 2007 (accept 12%) 1A Other 2007 (accept 4%) *(take out bold lines in English memo)* (4)	12.4.2
6.2.1	$\frac{30}{960}$ ✓RT ✓M $= \frac{1}{32}$ **OR** 0,03 **OR** 3,13% ✓S	1RT reading correct value for burial policy 1M dividing value by total 1S simplifying **ANSWER ONLY FULL MARKS** (3)	12.1.1
6.2.2	✓RT ✓M R960 – R15,45 – R24,50 – R60,00 – R30,00 – R40,00 – R86,40 = R703,65 ✓CA	1RT correct values 1M method 1CA simplifying (3) **ANSWER ONLY FULL MARKS**	12.1.1

QUESTION 7 [15]			
Ques	**Solution**	**Explanation**	**AS**
7.1.1 (a)	$A = 2 \times 3 + 1$ ✓SF $= 7$ ✓CA	1 SF substitution into formula 1CA value of A (2) **ANSWER ONLY – FULL MARKS**	12.2.1
7.1.1 (b)	$10 = B \times 3 + 1$ ✓SF $3B = 9$ ✓S $B = 3$ ✓CA **OR** $10 = 3 \times 3 + 1$ ✓SF ✓S $\therefore B = 3$ ✓CA	1 SF substitution into formula 1S simplifying equation 1CA value of B 1SF substitution into formula 1S simplifying equation 1CA value of B (3) **ANSWER ONLY – FULL MARKS**	12.2.1
7.1.2	St Patrick's College ✓RT✓RT	2RT reading from the table (2)	12.2.3
7.2.1	C2 (or 2C) ✓RG	1RG reading from the map (1)	12.3.4
7.2.2**	From Kokstad College turn ***right*** /**NE** into ***Elliot Street***. ✓A Continue At ***Barclay Road*** turn ***right/ SE.*** ✓A Kokstad Rugby Club will be on the left.	2A correct directions (Street name and direction) (2)	12.3.4
7.2.3**	South-east/North-west ✓A	1A correct direction (1)	12.3.4
7.2.4	1 cm represents 20 000 cm ✓A Therefore, 5 cm would represent $5 \times 20\,000$ cm ✓M $= 100\,000$ cm ✓S $= 1\,000$ m ✓C	1A scale interpretation 1M multiplication 1S simplification 1C conversion (4) **ANSWER ONLY – FULL MARKS**	12.3.3

TOTAL: 150 marks