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
R/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 12 pages.

QUESTION 1 [26]			
Ques	**Solution**	**Explanation**	**AS**
1.1.1	$\qquad$ 464 **:** 128 $(\div 16) \qquad$ 29 **:** 8 $\quad \checkmark$A	1A solution (1)	12.1.1
1.1.2	$\dfrac{379}{250}$ = 1,516 $\quad \checkmark$CA $\approx$ 1,52 $\quad \checkmark$A	1A solution 1CA rounding off **ANSWER ONLY FULL MARKS** (2)	12.1.1
1.1.3	$\overset{\checkmark \text{A}}{7 +} \dfrac{1}{3}(57)$ = 7 + 19 $\quad \checkmark$CA = 26 $\checkmark$CA	1A square root 1CA simplifying brackets and dividing 1CA simplification **ANSWER ONLY FULL MARKS** (3)	12.1.1
1.1.4	$\quad$ 1,25 $\times$ 1 000 mℓ $\quad \checkmark$M = 1 250 mℓ $\quad \checkmark$C	1M multiplying 1C conversion **ANSWER ONLY FULL MARKS** (2)	12.3.2
1.1.5	16% of 1 255 kg = $\dfrac{16}{100} \times$ 1 255 kg $\quad \checkmark$M $\qquad \qquad$ = 200,8 kg $\quad \checkmark$A New amount $\quad$ = 1 255 kg + 200,8 kg $\qquad \qquad$ = 1 455,8 kg $\quad \checkmark$CA **OR** 16% increase = 1,16 $\quad \checkmark$A New amount = 1,16 $\times$ 1 255 kg $\quad \checkmark$M $\qquad$ = 1 455,8 kg $\quad \checkmark$CA	1M calculating % 1A solution 1CA increase in % 1A total % 1M multiplying 1CA solution **ANSWER ONLY FULL MARKS** (3)	12.1.1 12.3.1
1.1.6	$1 = R10,52 $1 215,00 = R10,52 $\times$ 1 215,00 $\quad \checkmark$M $\qquad \qquad$ = R12 781,80 $\quad \checkmark$CA	1M multiplying 1CA simplification **ANSWER ONLY FULL MARKS** (2)	12.1.3

Ques	Solution	Explanation	AS
1.2.1	$\dfrac{R\,399,00}{30}$ ✓MA = R13,30 ✓CA	1MA dividing 1CA simplification **ANSWER ONLY FULL MARKS** (2)	12.1.1
1.2.2	1 or 100% or certain ✓✓A	2A correct probability (2)	12.4.5
1.2.3	Temp in ^{o}F = $\dfrac{9}{5}$✓SF$\times 225^o + 32^o$ = 405 ^{o}F + 32 ^{o}F = 437 ^{o}F ✓S ≈ 435 ^{o}F ✓CA	1SF substitution in formula 1S simplification 1CA simplification **ANSWER ONLY FULL MARKS** (3)	12.3.2
1.3.1	Cost price of 1 orange = $\dfrac{R\,9,00}{12}$ ✓M = R0,75 ✓CA	1M division by 12 1CA simplification **ANSWER ONLY FULL MARKS** (2)	12.1.1
1.3.2	1 dozen oranges sell for R12,00 Profit = R12,00 – R9,00 ✓M = R3,00 ✓CA	1M finding profit 1CA solution **ANSWER ONLY FULL MARKS** (2)	12.1.3
1.3.3	Cost = 108 × R0,75 ✓CA = R81,00 ✓CA **OR** 12 oranges cost R9,00 108 oranges = $\dfrac{108 \times R\,9,00}{12}$ ✓M = R81,00 ✓CA	1CA cost per orange 1CA cost for 108 oranges 1M finding number of dozens 1CA cost for 108 oranges **ANSWER ONLY FULL MARKS** (2)	12.1.1

QUESTION 2 [31]		Penalty for units in 2.1.2	
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 = 24,5 cm ✓CA	1M finding length 1CA length of certificate (2)	12.3.1
2.1.3	A = πr^2 = 3,14 × (5 cm)^2 ✓SF = 78,5 cm^2 ✓CA ✓A	1SF substitution in formula 1CA simplifying 1A unit (3)	12.3.1
2.1.4	P = 2 (29,5 cm + 21 cm)✓SF = 2 × 50,5 cm = 101 cm ✓CA	1SF substitution in formula 1CA simplifying (2)	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)	12.3.1
2.2.1	315 : 1 050 ✓MA = 3 : 10 ✓A	1MA correct ratio 1CA simplifying (2)	12.1.1
2.2.2	✓A $\frac{2}{7}$×315 guests = 90 guests ✓CA	1A correct fraction 1CA simplifying (2)	12.1.1
2.2.3	1 litre concentrate makes 5 litres of juice✓MA 5 litres concentrate makes 5 × 5 ℓ = 25 ℓ ✓CA **OR** Number of litres of juice = 4 × 5 ℓ + 1× 5 ℓ ✓MA = 20 ℓ + 5 ℓ = 25 ℓ ✓CA	1MA dilution ratio 1CA simplifying 1MA dilution ratio 1CA simplifying (2)	12.1.1

Ques	Solution	Explanation	AS
2.3.1	Eastern Cape ✓CA	1CA correct province (1)	12.4.4
2.3.2	C = 100% – 15% – 6% – 13% –50% ✓MA = 16 % ✓CA	1MA setting up model 1CA simplifying (2)	12.4.4
2.3.3	Gauteng ✓CA	1CA correct province (1)	12.4.4
2.3.4	$\dfrac{18}{100} \times 88\,144$ vehicles **OR** $0{,}18 \times 88\,144$ ✓MA ✓MA = 15 865,92 vehicles ✓CA ≈ 15 866 vehicles ✓R	1MA 18% of vehicles stolen 1MA correct no. of vehicles 1CA simplifying 1R rounding (4)	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)	She will make a loss ✓A	1A solution (1)	12.2.3
2.4.1 (c)	10 ✓✓RG	2RG reading from graph (2)	12.2.3
2.4.2	Percentage profit = $\dfrac{\text{Pr ofit}}{\text{Expenses}} \times 100\%$ = $\dfrac{R\,400}{R\,850} \times 100\%$ ✓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 $= \dfrac{16 + 16 + 16 + 17 + 17 + 17 + 17 + 17 + 18 + 18 + 19 + 19 + 19 + 20 + 22}{15}$ ✓SF $= \dfrac{268}{15}$ ✓MA $= 17,8666\ldots$ ✓CA $= 17,87$ years ✓R	1SF correct substitution 1MA dividing by size of sample 1CA simplifying 1R rounding off (4)	12.4.3
3.2.1 (a)	✓A 20%	1A lowest (1)	12.4.3
3.2.1 (b)	100% ✓A	1A highest (1)	12.4.3
3.2.2	<table><tr><th>PERFOR-MANCE LEVEL</th><th>PERCENTAGE RANGE</th><th>TALLY</th><th>FRE-QUENCY</th></tr><tr><td>1</td><td>0 to 29</td><td>////</td><td>4</td></tr><tr><td>2</td><td>30 to 39</td><td>////</td><td>5</td></tr><tr><td>3</td><td>40 to 49</td><td>//// //// /</td><td>11</td></tr><tr><td>4</td><td>50 to 59</td><td>//// ///</td><td>8</td></tr><tr><td>5</td><td>60 to 69</td><td>////</td><td>5</td></tr><tr><td>6</td><td>70 to 79</td><td>//// ///</td><td>8</td></tr><tr><td>7</td><td>80 to 100</td><td>//// //// /</td><td>11</td></tr></table> ✓A ✓A ✓A ✓A ✓A ✓A ✓A	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)	12.4.2
3.3.1	52 learners × 1,6 m²/learner ✓M = 83,2 m² ✓A	1M method 1A simplifying (2)	12.3.1
3.3.2	Number of learners $= \dfrac{96}{1,6}$ ✓M $= 60$ learners ✓A	1M division 1A solution (2)	12.3.1

QUESTION 4 [23]

Ques	Solution	Explanation	AS
4.1.1	90 km ✓C ✓RG	1C conversion to hrs 1RG reading from graph (2)	12.2.3
4.1.2	08:45 ✓✓R	2RG reading from graph (2)	12.2.3
4.1.3 (a)	Speed $= \dfrac{120\,km}{2\,h}$ ✓SF $= 60$ km/h ✓CA	1SF substitution into formula 1CA solution (2)	12.2.1
4.1.3 (b)	72 minutes = 1,2 hours ✓A $\dfrac{Distance}{1,2\,h} = 80$ km/h ✓SF Distance = 80 × 1,2 km $\qquad = 96$ km ✓CA	1A conversion to hours 1SF substitution into formula 1CA solution (3)	12.2.1
4.1.4		1A line 7:00 to 7:15 1A plot other 3 points 1A joining the 3 points 1A shape of graph (4)	12.2.2

Ques	Solution	Explanation	AS
4.1.5 (a)	1 hour ✓RG	1RG Reading from the graph (1)	12.2.3
4.1.5 (b)	60 km ✓RG✓RG	2RG Reading from the graph (2)	12.2.3

4.1.5 (c)	Dist (Mr Lebelo) – Dist (Mr Goldman)✓M
	    ✓RG ✓RG
	= 100 km – 90 km
	
	    ✓CA
	= 10 km
		1M method
		1RG reading from graph or table
		1RG reading from graph or table
		
		1CA simplifying (4)
			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)	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)	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)	12.4.3
5.1.4	Lowest jump = 7,23 m ✓A 7,23 m = 7,23 × 100 cm ✓C = 723 cm ✓CA	1A lowest jump 1C conversion 1CA answer in cm (3)	12.3.2
5.1.5	Median = $\dfrac{7,64+7,82}{2}$ m ✓M = 7,73 m ✓A	1M method 1A solution (2)	12.4.3
5.1.6	Charles ✓A✓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 (3)	12.3.1
5.3	August 1991 – October 1968 ✓MA = 22 years 10 months ✓CA ≈ 23 years ✓CA	1MA method 1CA solution 1CA rounding off (3)	12.1.1 12.4.4

QUESTION 6 [18]

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

6.1.4	**GRANT TYPES AS A PERCENTAGE OF TOTAL GRANTS RECEIVED** 	1A Old-age 2007 1A Child support in 2007 1A Disability in 2007 1A Other 2007 (4)	12.4.2
6.2.1	$\dfrac{30}{960}$ ✓RT ✓M $= \dfrac{1}{32}$ ✓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 **ANSWER ONLY FULL MARKS** (3)	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)	12.2.1
7.1.1 (b)	$10 = 3 \times B + 1$ ✓SF $3B = 9$ ✓S $B = 3$ ✓CA	1 SF substitution into formula 1S simplifying equation 1CA value of B (3)	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 ✓RG	1RG reading from the map (1)	12.3.4
7.2.2	From Kokstad College travel in a NE direction along Brownlee Rd to Elliot St. ✓A Travel in a SE direction along Elliot St and turn right into Barclay Rd. Kokstad Rugby Club will be on the left. ✓A	2A correct directions (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 $20\,000 \times 5$ cm ✓M $= 100\,000$ cm ✓S $= 1\,000$ m ✓C	1A scale interpretation 1M multiplication 1S simplification 1C conversion (4)	12.3.3

TOTAL: **150**