



education

Department:
Education
REPUBLIC OF SOUTH AFRICA

**NATIONAL
SENIOR CERTIFICATE**

GRADE 12

MATHEMATICAL LITERACY P1

FEBRUARY/MARCH 2010

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 14 pages.

QUESTION 1 [35]			
Ques	Solution	Explanation	AS
1.1.1	$5 \times (17 - 3) + \sqrt{121}$ $= 5 \times 14 + 11$ $= 70 + 11$ $= 81$	1A Simplifying brackets 1A Finding square root 1CA Solution (3)	12.1.1
1.1.2	$\frac{33}{125} = 0,264$	1A Solution (1)	12.1.1
1.1.3	$\frac{7\frac{1}{2}}{100} \times R650\,000$ $= R48\,750$	1MA Expressing as % 1CA Solution (2)	12.1.1
1.1.4	If 15 trips cost R110,10, then 1 trip will cost $\frac{R110,10}{15}$ $= R7,34$	1M Method 1CA Solution (2)	12.1.1
1.1.5	$2\,000 : 1\,500$ $= 4 : 3$ <p style="text-align: center;">OR</p> $1\,500\text{ m} = 1,5\text{ km}$ $= 4 : 3$	1A Writing as a ratio 1CA Simplified ratio OR 1A Conversion 1CA Simplified ratio (2)	12.3.2 12.1.1
1.1.6	$R1,00 = \text{€}0,11$ $R10\,500 = 10\,500 \times \text{€}0,11$ $= \text{€}1\,155$	1M Method 1CA Solution (2)	12.1.3

Ques	Solution	Explanation	AS
1.2.1	$\begin{aligned} \text{Number employed} &= 190\,000 - 55\,000 \quad \checkmark M \\ &= 135\,000 \text{ police officers} \quad \checkmark CA \end{aligned}$	1M Subtraction 1CA Solution (2)	12.1.1
1.2.2	$\begin{aligned} \text{Percentage increase} &= \frac{55\,000}{190\,000 - 55\,000} \times 100\% \quad \checkmark SF \\ &= \frac{55\,000}{135\,000} \times 100\% \quad \checkmark A \\ &= 40,7407 \dots \quad \checkmark A \\ &\approx 40,7\% \quad \checkmark CA \end{aligned}$	1SF Substitution 1A Subtraction 1A Simplification 1CA Rounding off (4)	12.2.1
1.3	$\begin{aligned} \text{Number} &= \frac{120\text{ m}}{2,5\text{ m}} \quad \checkmark M \\ &= 48 \quad \checkmark A \end{aligned}$	1M Division 1A Simplification (2)	12.3.1
1.4	$\begin{aligned} \text{Profit margin} &= \frac{R650 - R350}{R650} \times 100\% \quad \checkmark SF \\ &= \frac{R300}{R650} \times 100\% \\ &= 46,1538 \dots\% \quad \checkmark A \\ &\approx 46,15\% \quad \checkmark R \end{aligned}$	1SF Substitution 1A Subtraction 1A Simplification 1R Rounding correctly (4)	12.2.1
1.5	$\begin{aligned} \text{Total outer surface area} &= 2 \times (40\text{ cm} \times 30\text{ cm} + 40\text{ cm} \times 50\text{ cm} \\ &\quad + 30\text{ cm} \times 50\text{ cm}) \quad \checkmark SF \\ &= 2 \times (4\,700\text{ cm}^2) \quad \checkmark CA \\ &= 9\,400\text{ cm}^2 \quad \checkmark CA \end{aligned}$	1SF Substitution into formula 1CA Simplification 1CA Surface area (3)	12.3.1
1.6.1 (a)	10 workers $\checkmark\checkmark RG$	2RG Reading from graph (2)	12.2.3
1.6.1 (b)	4 workers $\checkmark\checkmark RG$	2RG Reading from graph (2)	12.2.3

1.6.2	1 hr 15 min OR $1\frac{1}{4}$ hours OR $\checkmark\checkmark$ RG 75 minutes	2RG Reading from graph (2)	12.2.3
1.6.3	Total time = 5 hours + 2 × (15 minutes) + 30 min = 6 hours \checkmark A Finishing time = 08:00 + 6 hours = 14:00 (or 2 p.m.) \checkmark CA	1A Total number of hours 1CA Finishing time (2)	12.3.1

QUESTION 2 [25]			
Ques	Solution	Explanation	AS
2.1.1	IsiZulu ✓RG	2RG Reading from graph (1)	12.4.4
2.1.2	IsiNdebele; Siswati; Tshivenda and Xitsonga ✓ ✓RG	2RG Reading from graph (any two, 1 mark) (2)	12.4.4
2.1.3	Siswati = 100% – (14,3 + 8,6 + 1,5 + 17,6 + 23,8 + 9,4 + 7,9 + 8,2 + 1,7 + 4,4)% ✓RG = 100% – 97,4% = 2,6% ✓CA	1RG Reading from graph 1CA Solution (2)	12.4.4
2.1.4	English = 8,6% × 47 900 000 = 4 119 400 ✓CA	1RG Reading from graph 1M Method 1CA Solution (3)	12.2.1 12.4.4
2.1.5	IsiXhosa = 17,6% of 100 000 = 0,176 × 100 000 ✓M = 17 600 ✓CA	1 RG Reading from graph 1M Method 1CA Solution (3)	12.4.4
2.2.1	D = 136 cm ✓A	1A Diameter (1)	12.3.1
2.2.2	P = 4 × length = 4 × 136 cm = 544 cm ✓CA	1M Method 1CA Solution (2)	12.3.1
2.2.3	A = π × (radius) ² = 3,14 × (68 cm) ² ✓SF = 14 519,36 cm ² ✓CA ✓A	1SF Substitution in formula 1CA Solution 1A Correct units (3)	12.3.1

Ques	Solution	Explanation	AS
2.2.4	$\text{Circumference} = 2 \times \pi \times \text{radius}$ $= 2 \times 3,14 \times 68 \text{ cm} \checkmark \text{SF}$ $= 427,04 \text{ cm} \checkmark \text{A}$	1SF Substitution in formula 1A Correct units (2)	12.3.1
2.2.5	$\text{Cost} = 425 \times 54c \checkmark \text{M}$ $= 22\,950c \checkmark \text{A}$ $= \text{R}229,50 \checkmark \text{CA}$ <p style="text-align: center;">OR</p> $\begin{array}{l} \checkmark \text{M} \quad \quad \checkmark \text{C} \\ \text{Cost} = 425 \times \text{R}0,54 \\ = \text{R}229,50 \quad \checkmark \text{CA} \end{array}$	1M Multiplication 1A Cost 1CA Conversion to rand <p style="text-align: center;">OR</p> 1M Multiplication 1C Conversion to rand 1CA Cost (3)	12.1.1
2.2.6	$\begin{array}{l} \checkmark \text{SF} \\ \text{Mass} = 7\,259,68 \text{ cm}^3 \times 2,5 \text{ g/cm}^3 \\ = 18\,149,2 \text{ g} \quad \checkmark \text{A} \quad \checkmark \text{M} \\ \approx 18,15 \text{ kg} \end{array}$	1SF Substitution 1A Solution 1M Correct unit/rounding (3)	12.3.1

QUESTION 3 [22]			
Ques	Solution	Explanation	AS
3.1.1(a)	Senegal ✓RT	1RT Reading from graph (1)	12.4.4
3.1.1(b)	Mali ✓RT	1RT Reading from graph (2)	12.4.4
3.1.2	4 (Four) ✓RT	1RT Reading from graph (1)	12.4.4
3.1.3	72 : 9 ✓RT = 8 : 1 ✓A	1RT Reading from table 1A Simplified ratio (2)	12.1.1 12.4.4
3.1.4	Percentage resulting in death = $\frac{661}{43\,279} \times 100\%$ ✓M = 1,527 ... % ✓CA $\approx 1,53\%$ ✓R	1M Method 1CA Solution 1R Rounding off (3)	12.1.1 12.4.4
3.2.1	5 000 cm ³ ✓A	1A Conversion (1)	12.3.2
3.2.2	1 ℓ water needs 5 drops of Jik 16 ℓ water need 16 × 5 drops ✓M = 80 drops ✓A OR 1 ℓ : 5 drops = 16 ℓ : x drops ✓M x = 16 × 5 drops = 80 drops ✓A	1M Calculating number of drops 1A Number of drops of Jik OR 1M Setting up the proportion 1A Number of drops of Jik (2)	12.3.1 12.1.1

Ques	Solution	Explanation	AS
3.2.3	$3,8 \ell = 1 \text{ gallon}$ $1 \ell = \frac{1}{3,8} \text{ gallon} \quad \checkmark A$ $5 \ell = \frac{5}{3,8} \text{ gallons} \quad \checkmark CA$ $= 1,315 \dots \text{ gallons}$ $\quad \checkmark R$ $\approx 1,3 \text{ gallons}$ <p style="text-align: center;">OR</p> $3,8 \ell : 1 \text{ gallon}$ $1 \ell : \frac{1}{3,8} \text{ gallon} \quad \checkmark A$ $5 \ell : \frac{5}{3,8} \text{ gallons} \quad \checkmark CA$ $5 \ell : 1,3 \text{ gallons} \quad \checkmark R$	 1A Proportion 1CA Solution 1R Rounding off <p style="text-align: center;">OR</p> 1A Proportion 1CA Solution 1R Rounding off (3)	12.3.2
3.2.4	$V = \pi \times (\text{radius})^2 \times \text{height}$ $= 3,14 \times (20 \text{ cm})^2 \times 60 \text{ cm} \quad \checkmark SF$ $= 75\,360 \text{ cm}^3 \quad \checkmark CA \quad \checkmark A$	 1SF Substitution in formula 1CA Solution 1A Correct unit (3)	12.3.1
3.3.1	Ratio = $8 : \frac{1}{2} \quad \checkmark A$ = $16 : 1 \quad \checkmark CA$	 1A Writing the ratio 1CA Simplifying the ratio (2)	12.1.1
3.3.2	$6 \times \frac{1}{2} \text{ tsp} \quad \checkmark A$ = $3 \text{ tsp} \quad \checkmark CA$	 1A Method 1CA Solution (2)	12.1.1

QUESTION 4 [30]			
Ques	Solution	Explanation	AS
4.1.1	Mode = 8 days ✓A	1A Correct mode (1)	12.4.3
4.1.2	Range = (10 – 0) days ✓A = 10 days ✓CA	1A Method 1CA Solution (2)	12.4.3
4.1.3	Median = $\frac{4+5}{2}$ days ✓M = $\frac{9}{2}$ days = 4,5 days ✓CA	1M Method 1CA Solution (2)	12.4.3
4.1.4	Mean ✓M = $\frac{0+0+1+2+3+4+5+6+7+8+8+10}{12}$ days = $\frac{54}{12}$ days ✓CA = 4,5 days ≈ 5 days ✓A	1M Method 1CA Correct addition 1A Solution (3)	12.4.3 12.1.2
4.1.5	Ratio = 4 : 8 ✓A ✓M = 1 : 2 ✓CA	1A Number of managers 1M Finding ratio 1CA Simplified ratio (3)	12.1.1
4.2.1(a)	R0 OR nothing ✓A	1A Wage for 0 hours (1)	12.2.1
4.2.1(b)	B = R100 + R30 × 4 ✓SF = R220 ✓CA	1SF Substitution in formula 1CA Value of B (2)	12.2.1
4.2.1(c)	R280 = R100 + R30 × C ✓SF R180 = R30 × C 6 = C ✓CA	1SF Substitution into formula 1CA Value of C (2)	12.2.1

Ques	Solution	Explanation	AS																																							
4.2.2	<p style="text-align: center;">DAILY WAGES EARNED BY THE TWO GENERAL ASSISTANTS</p> <table border="1" style="margin-left: auto; margin-right: auto;"> <caption>Data points from the graph</caption> <thead> <tr> <th>Company</th> <th>Hours Worked</th> <th>Daily Wage (rand)</th> </tr> </thead> <tbody> <tr> <td>Mango Computech</td> <td>0</td> <td>0</td> </tr> <tr> <td>Mango Computech</td> <td>1</td> <td>310</td> </tr> <tr> <td>Mango Computech</td> <td>2</td> <td>310</td> </tr> <tr> <td>Mango Computech</td> <td>6</td> <td>310</td> </tr> <tr> <td>Mango Computech</td> <td>7</td> <td>310</td> </tr> <tr> <td>Mango Computech</td> <td>8</td> <td>310</td> </tr> <tr> <td>Lithe Fitters</td> <td>0</td> <td>0</td> </tr> <tr> <td>Lithe Fitters</td> <td>1</td> <td>130</td> </tr> <tr> <td>Lithe Fitters</td> <td>2</td> <td>160</td> </tr> <tr> <td>Lithe Fitters</td> <td>6</td> <td>280</td> </tr> <tr> <td>Lithe Fitters</td> <td>7</td> <td>310</td> </tr> <tr> <td>Lithe Fitters</td> <td>8</td> <td>340</td> </tr> </tbody> </table>	Company	Hours Worked	Daily Wage (rand)	Mango Computech	0	0	Mango Computech	1	310	Mango Computech	2	310	Mango Computech	6	310	Mango Computech	7	310	Mango Computech	8	310	Lithe Fitters	0	0	Lithe Fitters	1	130	Lithe Fitters	2	160	Lithe Fitters	6	280	Lithe Fitters	7	310	Lithe Fitters	8	340	<p>3A 3 points plotted (0 ; 100), (2 ; 160), (6 ; 280) or (7 ; 310)</p> <p>1A Joining point by line and labelling (4)</p>	12.2.2
Company	Hours Worked	Daily Wage (rand)																																								
Mango Computech	0	0																																								
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Ques	Solution	Explanation	AS
4.2.3(a)	7 ✓CA	1CA Reading from drawn graph or from table (1)	12.2.3
4.2.3(b)	Lithe Fitters ✓CA	1CA Correct company (1)	12.2.3
4.2.3(c)	Difference in wages = R310 – R130 ✓RG = R180 ✓CA	1RG Reading from graph or table 1CA Solution (2)	12.2.3
4.3.1	$A = \frac{1}{2} \times 60 \text{ cm} \times (210 + 130) \text{ cm}$ ✓SF = 30 cm × (340) cm ✓CA = 10 200 cm ² ✓CA ✓M	2SF Substitution 1 CA Addition 1CA Solution (4)	12.3.1
4.3.2	Length = 210 cm + 72,1 cm + 130 cm + 72,1 cm = 484,2 cm ✓CA	1M Method 1 CA Solution (2)	12.3.1

QUESTION 5 [23]			
Ques	Solution	Explanation	AS
5.1.1	C3 ✓RT	1RT Reading a grid (1)	12.3.4
5.1.2	NW ✓✓A	2A Correct direction (2)	12.3.4
5.1.3	From Injoloba High School <ul style="list-style-type: none"> • Turn left into Oakleigh Drive ✓A • Cross Morling Street ✓A • Turn left into Harvard Street • Proceed along Braemar Crescent; Devonshire Avenue; Umgeni Ave ✓CA • Turn right into Amber Avenue ✓CA • Turn left into Howick High School 	1A Crossing Morling St. 1A Turning left into Harvard St. 1CA Turning into Amber Ave. 1CA Finishing (4)	12.3.4
5.1.4	13 cm ✓✓A	2A Correct distance in cm (2)	12.3.2
5.1.5	Distance = $45 \text{ km/h} \times \frac{1}{10} \text{ h}$ ✓SF = 4,5 km ✓A ✓A	1SF Substitution in formula 1A Solution 1A Correct units (3)	12.2.1
5.2.1 (a)	$A = 5$ ✓A	1A Solution (1)	12.2.3
5.2.1 (b)	$B = (0 \times 3) + 2$ ✓SF = 2 ✓CA	1SF Substitution in formula 1CA Solution (2)	12.2.1
5.2.2 (a)	Leopard's final points = $(2 \times 3) + 2$ ✓SF = 8 ✓CA	1SF Substitution into formula 1CA Solution (2)	12.2.1
5.2.2 (b)	Panthers' final points = $(2 \times 3) + 3$ ✓SF = 9 ✓CA	1SF Substitution into formula 1CA Solution (2)	12.2.1

Ques	Solution	Explanation	AS
5.3.1	$P(\text{strawberry-flavoured sweet}) = \frac{44}{144} \checkmark M$ $= \frac{11}{36} \text{ or } 0,305\dots \checkmark CA$	1M Method numerator 1M Method denominator 1CA Solution (3)	12.4.5
5.3.2	$P(\text{pear-flavoured sweet}) = 0 \quad \text{OR}$ $\text{impossible} \quad \checkmark A$	1A Solution (1)	12.4.5

QUESTION 6 [15]			
Ques	Solution	Explanation	AS
6.1	$\begin{aligned} & \checkmark A \\ & \text{The number of people in Gauteng using electricity for lighting} \\ & \checkmark A \end{aligned}$	1A Correct description 1A Correct province (2)	12.1.1
6.2.1	$\begin{aligned} A &= \text{Total} && \checkmark M/A \\ &= 2\,703\,733 + 10\,232\,227 + 1\,003\,041 + 4\,595\,534 \\ &\quad + 2\,941\,481 + 8\,145\,829 + 4\,379\,207 + 3\,345\,526 \\ &\quad + 521\,524\,2 \\ &= 42\,561\,820 && \checkmark CA \end{aligned}$	1M/A Method 1CA Simplification (2)	12.1.1 12.4.4
6.2.2	$\begin{aligned} B &= \text{Percentage people using electricity for lighting in SA} \\ & \checkmark M/A \\ &= \frac{38\,569\,410}{48\,502\,063} \times \frac{100\%}{1} && \checkmark M/A \\ &= 79,5\% && \checkmark CA \end{aligned}$	2M/A Method 1CA Simplification (3)	12.1.1 12.4.4
6.2.3	$\begin{aligned} C &= \text{Number of people in Gauteng using electricity for lighting} \\ & \checkmark M/A \\ &= 83,5\% \times 10\,451\,713 && \checkmark M/A \\ &= 8\,727\,180 && \checkmark CA \end{aligned}$	2M/A Method 1CA Simplification (3)	12.1.1 12.4.4
6.2.4	$\begin{aligned} D &= \text{Percentage of people in KwaZulu-Natal having access to} \\ & \text{piped water} \\ & \checkmark M/A \\ &= \frac{8\,145\,829}{10\,259\,230} \times \frac{100\%}{1} \\ & \checkmark M/A \\ &= 79,4\% && \checkmark CA \end{aligned}$	2M/A Method 1CA Simplification (3)	12.1.1 12.4.4
6.3	$\text{Eastern Cape} \quad \checkmark RT \checkmark RT$	2RT Reading from table (2)	12.4.4

TOTAL: 150