



basic education

Department:
Basic Education
REPUBLIC OF SOUTH AFRICA

NATIONAL SENIOR CERTIFICATE

GRADE 12

MATHEMATICAL LITERACY P1

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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 [33 MARKS]			
Ques	Explanation	Mark Allocation	AS
1.1.1	$148\% = \frac{148}{100} \checkmark M$ $= \frac{37}{25} \text{ OR } 1 \frac{12}{25} \checkmark A$	1M concept 1A simplifying (2)	12.1.1
1.1.2	$1,256 \text{ cm} = 1,256 \times 10 \text{ mm}$ $= 12,56 \text{ mm} \checkmark A$	1A conversion (1)	12.3.2
1.1.3	$1 \frac{1}{2} (1,26 + 32,62) - \sqrt{2,25}$ $\checkmark A$ $= \frac{3}{2} \times 33,88 - 1,5 \checkmark A$ $= 50,82 - 1,5$ $= 49,32 \checkmark A$	1A simplifying brackets 1A square root 1A simplifying (3)	12.1.1
1.1.4	$150 \text{ minutes} = \frac{150}{60} \text{ hours} \checkmark M$ $= 2 \frac{1}{2} \text{ hours} \checkmark A$	1M dividing 1A simplifying (2)	12.1.1
1.1.5	$\frac{R12,99}{12} = R1,08 \checkmark M \checkmark A$	1M division by 12 1A simplifying (2)	12.1.1
1.1.6	$R1 = 1,6915 \text{ MXN}$ $\therefore \text{ZAR } 1\ 220 = 1\ 220 \times 1,6915 \text{ MXN} \checkmark M$ $= 2\ 063,63 \text{ MXN} \checkmark A$	1M multiplication 1A simplifying (2)	12.1.3
1.1.7	$\text{Growth (in cm)} = \frac{50}{10} \checkmark SF$ $= 5 \checkmark A$	1SF substituting $t = 10$ 1A simplifying (2)	12.2.1

Ques	Explanation	Mark Allocation	AS
1.2.1	$7 - 5 = 2$ ✓M ✓A	1M subtraction 1A simplifying (2)	12.4.3
1.2.2	Modal age = 11 yrs ✓A	1A simplifying (1)	12.4.3
1.2.3	$\text{Mean} = \frac{1+2+3+3+4+10+11+11+11+12+15+16}{12}$ $= \frac{99}{12}$ $= 8,25 \text{ years}$ ✓M ✓A ✓A	1M finding the mean 1A correct values 1A simplifying (3)	12.4.3
1.2.4	$P(10 \text{ years old}) = \frac{1}{12}$ ✓A ✓A	1A numerator 1A denominator (2)	12.4.5
1.3.1	Cocoa powder : sugar = 1 : 2 = 10 : 20 ✓A She would need 20 spoons of sugar ✓CA	1A proportion 1CA number of spoons (2)	12.1.1
1.3.2	$\text{Mass of milk powder} = \frac{3}{6} \times 900 \text{ g}$ $= \frac{1}{2} \times 900 \text{ g}$ $= 450 \text{ g}$ ✓A ✓A ✓CA	1A proportion 1A total number of parts 1CA mass of milk powder (3)	12.1.1
1.4.1	$\text{Cost of the call} = R2,90 \times 5$ $= R14,50$ ✓M ✓A OR $\text{Cost of the call} = R14,50$ ✓✓RG	1M multiplying peak rate 1A cost of call 2RG cost of call (2)	12.2.3

Ques	Explanation	Mark Allocation	AS
1.4.2	Cost of the call = $R1,90 \times 5$ ✓M = $R9,50$ ✓A OR Cost of a call = $R9,50$ ✓✓RG	1M multiply off-peak rate 1A cost of call 2RG cost of call (2)	12.2.3
1.4.3	Maximum time = $9 \div 2,9$ ✓M = $3,1$ minutes ✓A OR 3 minutes ✓✓RG	1M dividing by rate 1A time 2RG duration of call (2)	12.2.3

QUESTION 2 [29 MARKS]			
Ques	Explanation	Mark Allocation	AS
2.1.1	Administration coordinator Hotel coordinator ✓RT✓RT Data manager Accounts manager	2RT reading from table OR 1RT if only 2 are correct (2)	12.4.4
2.1.2	Total earnings = $4 \times R22\,000$ ✓M = R88 000 ✓A	1 M finding total earnings 1A total earnings (2)	12.1.3 12.4.4
2.1.3	31 July 2010 ✓A ✓A	1A day 1A month (2)	12.3.1
2.1.4	Accounts manager : Administration coordinator ✓RT = 25 000 : 15 000 ✓RT = 5 : 3 ✓A	2 RT reading from table 1A simplified ratio (3)	12.1.1 12.4.4
2.2.1	Radius = 30 cm ✓A	1A radius (1)	12.3.1
2.2.2	Area of the mirror ✓SF ✓SF $= \frac{1}{2} \times 3,14 \times (60 \div 2)^2 + (60)^2$ ✓S ✓S $= 1\,413\text{ cm}^2 + 3\,600\text{ cm}^2$ $= 5\,013\text{ cm}^2$ ✓CA	1SF substituting diameter 1SF substituting side 1S area of semi-circle 1S area of square 1CA area of mirror (5)	12.3.1
2.3.1	\therefore US \$250 billion = US \$250 \times 1 000 million ✓C = US \$250 000 million ✓A	1C conversion 1A answer in millions (2)	12.1.1

Ques	Explanation	Mark Allocation	AS
2.3.2	$27\% + 32\% \checkmark M$ $= 59\% \checkmark A$ OR $100\% - 41\% \checkmark M$ $= 59\% \checkmark A$	1M adding 1A % not from services OR 1M subtracting 1A % not from services (2)	12.1.1
2.3.3	$Services = 100\% - 15\% - 28\% \checkmark M$ $= 57\% \checkmark A$	1M subtracting 1A % from services (2)	12.4.4 12.1.1
2.3.4	$Industry = 27\% \times US\$ 250 \text{ billion} \checkmark RG \checkmark M$ $= US\$ 67,5 \text{ billion} \checkmark A$	1M using percentage 1RG reading from graph 1A % from industry (3)	12.4.4 12.1.1
2.3.5	$\% \text{ Difference} = 32\% - 15\% \checkmark RG$ $= 17\% \checkmark A$	1M finding the difference 1A simplifying (2)	12.4.4 12.1.1
2.3.6	$Agriculture = 15\% \times US\$ 1\,000\,000 \text{ billion} \checkmark RG$ $= US\$ 150\,000 \text{ billion} \checkmark A$	1M using percentage 1RG reading from graph 1A amount from Agriculture (3)	12.4.4 12.1.1

QUESTION 3 [23 MARKS]			
Que s	Explanation	Mark Allocation	AS
3.1.1	$A = 450 + 160 \times 0,5 \quad \checkmark M$ $= 450 + 80$ $= R530 \quad \checkmark A$	1M finding the cost 1A cost (2)	12.2.1
3.1.2	$B = 200 + (250 - 100) \times 2 \quad \checkmark M$ $= 200 + 150 \times 2$ $= 200 + 300 \quad \checkmark S$ $= R500 \quad \checkmark CA$	1M subtracting 1S simplification 1A cost (3)	12.2.1
3.2	<p style="text-align: center;">COST OF HIRING A CAR</p>	<p>Option X</p> 1A point (0 ; 450) 1A point (400 ; 650) 1A correct straight line drawn 1A label	12.2.2
		<p>Option Y</p> 1A point (0 ; 200) 1A point (100 ; 200) 1A point (400; 800) 1A points joined correctly 1A label	(9)
3.3.1	300 km $\checkmark RT \quad \checkmark RT$	2RT reading from graph or table (2)	12.2.1
3.3.2	R600 $\checkmark RT$	1RT reading from graph or table (1)	12.2.3

Ques	Explanation	Mark Allocation	AS
3.4	$\text{Time} = \frac{180 \text{ km}}{100 \text{ km/h}} \quad \checkmark \text{SF}$ $= 1,8 \text{ hrs} \quad \checkmark \text{A}$ $= 1 \text{ hr} + 0,8 \times 60 \text{ min}$ $= 1 \text{ hr } 48 \text{ min} \quad \checkmark \text{C}$ <p style="text-align: center;">$\checkmark \text{M}$</p>	1SF substitution in formula 1A number of hours 1C converting to hr and min <p style="text-align: right;">(3)</p>	12.2.1 12.3.1
3.5	$\text{Litres of petrol} = \frac{258,24}{8,07} \quad \checkmark \text{SF}$ $= 32 \quad \checkmark \text{A}$	1M finding number of litres 1SF correct substitution 1A simplifying <p style="text-align: right;">(3)</p>	12.1.1

QUESTION 4 [21 MARKS]			
Ques	Explanation	Mark Allocation	AS
4.1.1	$P = 2\text{ m} + 8\text{ m} + 1\text{ m} + 3\text{ m} + 3\text{ m}$ $= 17\text{ m}$	1M adding the 5 sides 1A calculating 3m 1A simplifying (3)	12.3.1
4.1.2	$A = (11\text{ m} \times 3\text{ m}) - (8\text{ m} \times 1\text{ m})$ $= 33\text{ m}^2 - 8\text{ m}^2$ $= 25\text{ m}^2$ <p>OR</p> $A = (3\text{ m} \times 3\text{ m}) + (8\text{ m} \times 2\text{ m})$ $= 9\text{ m}^2 + 16\text{ m}^2$ $= 25\text{ m}^2$	1M finding area of patio 1SF substitution 1CA area of patio 1A correct unit OR 1M finding area of patio 1SF substitution 1CA area of patio 1A correct unit (4)	12.3.1
4.2.1 (a)	$A = \frac{60\text{ hours}}{2}$ $= 30\text{ hours}$	1M dividing 1A number of hours (2)	12.2.3
4.2.1 (b)	$B \times 15 = 60$ $B = \frac{60}{15}$ $= 4\text{ workers}$	1M dividing 1A simplifying (2)	12.2.3
4.2.2	Indirect/Inverse proportion	1A type of proportion (1)	12.2.3
4.3.1	$V = 3,14 \times (20\text{ cm})^2 \times 60\text{ cm}$ $= 75\,360\text{ cm}^3$	1SF substitution in formula 1A volume 1A correct unit (3)	12.3.1

Ques	Explanation	Mark Allocation	AS
4.3.2	Lateral surface area of the pot $= 2 \times 3,14 \times 20 \times 80 \text{ cm}^2 \quad \checkmark\text{SF}$ $= 10\,048 \text{ cm}^2 \quad \checkmark\text{A}$	SF substitution in formula 1A surface area (2)	12.3.1
4.4	$\begin{aligned} \text{Costs} &= (6 \times \overset{\checkmark\text{M}}{\text{R}45,50}) + (4 \times \text{R}19,99) \quad \checkmark\text{M} \\ &= \overset{\checkmark\text{S}}{\text{R}273,00} + \text{R}79,96 \\ &= \text{R}352,96 \quad \checkmark\text{CA} \end{aligned}$	2M finding the costs 1S simplification 1CA amount paid (4)	12.1.1

QUESTION 5 [25 MARKS]			
Ques	Explanation	Mark Allocation	AS
5.1.1	21 000 ✓RT ✓RT	2RT reading from table (2)	12.4.4
5.1.2	$93\,400 + 57\,500 + 117\,100 + 21\,000$ ✓M ✓RT = 289 000 people ✓A	1 RT reading from table 1 M addition 1A simplifying (3)	12.4.4 12.1.1
5.1.3	✓RT ✓RT Gauteng and KwaZulu-Natal	2RT reading from table (2)	12.4.4
5.1.4	✓RT ✓M ✓RT $117\,100 - 56\,400$ = 60 700 people ✓A	2RT reading from table 1M subtracting 1A simplifying (4)	12.4.4 12.1.1
5.2.1	✓M Range = R7 250 – R4 200 = R3 050 ✓CA	1M concept 1CA simplifying (2)	12.4.3
5.2.2	Median = R4 650 ✓A ✓A	1A arranging data 1A median (2)	12.4.3
5.2.3	Average(mean) = $R \frac{5\,525 + 5\,500 + 5\,980 + 6\,250 + 6\,250 + 6\,250 + 6\,300 + 7\,800 + 8\,200 + 8\,900}{10}$ ✓M ✓A = $\frac{R\,66\,955}{10}$ = R6 695,50 ✓CA	1 M sum 1A dividing by 10 1CA mean salary (3)	12.4.3
5.2.4	✓A ✓M $\frac{3}{10} \times 100\%$ = 30 % ✓CA	1M salaries greater than maximum in Greytown 1M calculating % 1A simplifying (3)	12.4.4 12.1.1

Ques	Explanation	Mark Allocation	AS
5.3	$A = P(1 + i)^n$ $= R6\,350 (1 + 0,058)^2$ $= R7\,107,9614$ $\approx R7\,107,96$	1A value of i 1SF substitution 1CA amount 1R rounding off to the nearest cent (4)	12.1.1 12.2.1

QUESTION 6 [19 MARKS]			
Ques	Explanation	Mark Allocation	AS
6.1.1	D2 or 2D ✓A	1A solution (1)	12.3.4
6.1.2	Maitland; Peet Avenue; Bastion; Yoxall ✓A ✓A	1A two streets correct 1A all streets correct (2)	12.3.4
6.1.3	<p>From Luke's residence you turn right into St George's Street. ✓A At the first intersection, you turn left into President Brand Street. ✓A Continue with the road until you reach Zastron Street. Turn right into Zastron Street. ✓A Immediately after crossing Aliwal Street you will find the entrance on your left-hand side. ✓A</p> <p>OR</p> <p>From Luke's residence, turn left into St George's Street. ✓A At the intersection, turn right into Markgraaf Street. ✓A Proceed until you reach Zastron Street. Turn right into Zastron Street. ✓A Proceed until you cross Aliwal Street and the entrance is on the left hand side. ✓A</p> <p>OR</p> <p>Any other possible route.</p>	<p>1A turning into St George's Street 1A correct turn at first intersection from the residence 1A correct turn into Zastron Street 1A entry into the club</p> <p>OR</p> <p>1A turning into St George's Street 1A turning into Markgraaf Street 1A turning into Zastron Street 1A entry into the club</p> <p>(4)</p>	12.3.1
6.1.4	$7 \text{ cm on map} = 7 \times 20\,000 \text{ cm in real life}$ $= 140\,000 \text{ cm} \quad \checkmark M$ $= \frac{140\,000}{100} \text{ m}$ $= 1\,400 \text{ m} \quad \checkmark A$ $= \frac{1\,400}{1\,000} \text{ km}$ $= 1,4 \text{ km} \quad \checkmark CA$	<p>1M multiplication</p> <p>1A converting to m</p> <p>1CA simplifying</p> <p>(3)</p>	12.3.3 12.3.1
6.2.1	$\text{Final Score} = (3 \times 5) + (0 \times 2) + (4 + 1) \times 3 \quad \checkmark SF \quad \checkmark A$ $= 15 + 0 + 5 \times 3 \quad \checkmark CA$ $= 30 \quad \checkmark CA$	<p>1SF substitution 1A correct values used 1CA simplification 1CA simplifying</p> <p>(4)</p>	12.2.1

Ques	Explanation	Mark Allocation	AS															
6.2.2	<p style="text-align: center;">RECORD OF POINTS SCORED</p> <table border="1" style="margin-left: auto; margin-right: auto;"> <caption>Data from Record of Points Scored Chart</caption> <thead> <tr> <th>Method of scoring points</th> <th>At home</th> <th>Away</th> </tr> </thead> <tbody> <tr> <td>Tries</td> <td>15</td> <td>10</td> </tr> <tr> <td>Conversions</td> <td>12</td> <td>6</td> </tr> <tr> <td>Penalties</td> <td>21</td> <td>27</td> </tr> <tr> <td>Drop goals</td> <td>12</td> <td>15</td> </tr> </tbody> </table>	Method of scoring points	At home	Away	Tries	15	10	Conversions	12	6	Penalties	21	27	Drop goals	12	15	<p>5A One for each bar</p> <p style="text-align: right;">(5)</p>	<p>12.4.2</p>
Method of scoring points	At home	Away																
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TOTAL: 150