

MATHEMATICS LITERACY P1 MEMO

NATIONAL SENIOR CERTIFICATE

GRADE 12: MATHEMATICS LITERACY P1

FEBRUARY/MARCH 2011

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

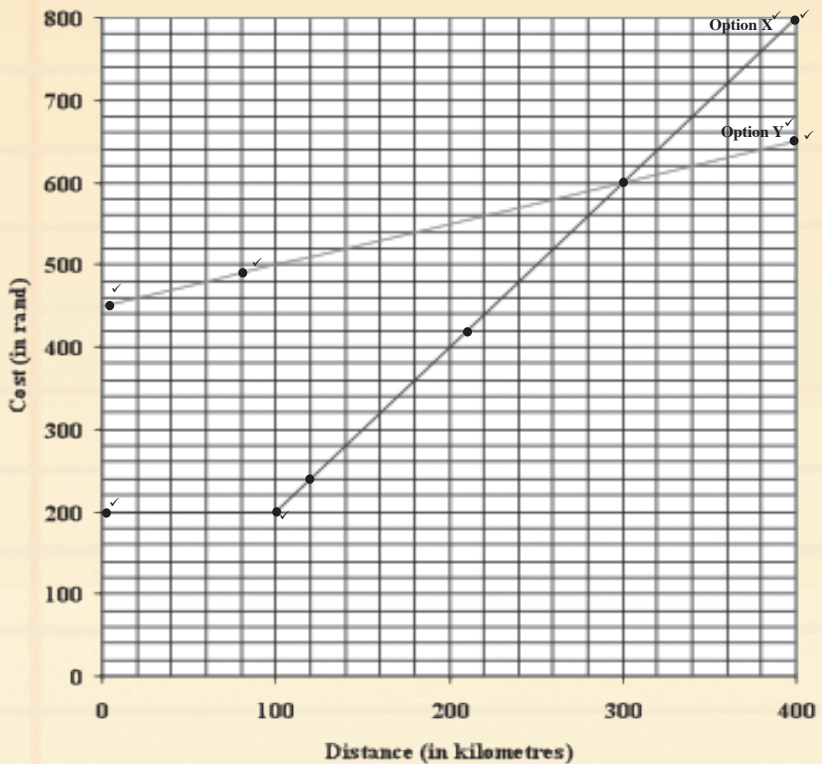
This memorandum consists of 4 pages.

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	$1,256 \text{ cm} = 1,256 \text{ } 10 \text{ mm}$ $= 12,56 \text{ mm} \checkmark A$	1A conversion (1)	12.3.2
1.1.3	$1(1,26 + 32,62) - \sqrt{2,25}$ $= \frac{3}{2} \times 33,88 - 1,5 \checkmark A$ $= 50,82 - 1,5$ $= 49,32$	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	$\frac{R 12,99}{12} = R1,08 \checkmark M \checkmark A$	1M division by 12 1A simplifying (2)	12.1.1
1.1.6	$R1 = 1,6915 \text{ MXN} \checkmark M$ $\therefore \text{ZAR } 1\,220 = 1\,220 \times 1,6915 \text{ MXN}$ $= 2\,063,63 \text{ MXN} \checkmark A$	1M multiplication 1A simplifying (2)	12.1.3
1.1.7	Growth (in cm) = $\frac{50}{10} \checkmark SF$ $= 5 \checkmark A$	1SF substituting t = 10 1A simplifying (2)	12.2.1
1.2.1	$7 - 5 = 2 \checkmark M \checkmark A$	1M subtraction 1A simplifying (2)	12.4.3
1.2.2	Modal age = 11 yrs $\checkmark A$	1A simplifying (1)	12.4.3
1.2.3	Mean = $\checkmark M$ $\frac{1+2+3+3+4+10+11+11+11+12+15+16}{12}$ $= \frac{99}{12} \checkmark A$ $= 8,25 \text{ years} \checkmark A$	1M finding the mean 1A correct values 1A simplifying (3)	12.4.3
1.2.4	P(10 years old) = $\frac{1}{12} \checkmark A$	1A numerator 1A denominator (2)	12.4.5

Ques	Explanation	Mark Allocation	AS
1.3.1	Cocoa powder : sugar $= \frac{1}{10} : 2 \checkmark A$ She would need 20 spoons of sugar $\checkmark C$	1A proportion 1CA number of spoons (2)	12.1.1
1.3.2	$\checkmark A$ Mass of milk powder = $\frac{3}{6} \times 900 \text{ g}$ $= \frac{1}{2} \times 900 \text{ g}$ $= 450 \text{ g} \checkmark CA$	1A proportion 1A total number of parts 1CA mass of milk powder (3)	12.1.1
1.4.1	Cost of the call = $R2,90 \times 5$ $= R14,50 \checkmark A$ OR $\checkmark \checkmark RG$ Cost of the call = R14,50	1M multiplying peak rate 1A cost of call 2RG cost of call (2)	12.2.3
1.4.2	Cost of the call = $R1,90 \times 5$ $= R9,50 \checkmark A$ OR $\checkmark \checkmark RG$ Cost of a call = R9,50	1M multiply off-peak rate 1A cost of call 2RG cost of call (2)	12.2.3
1.4.3	Maximum time = 9 2,9 $= 3,1 \text{ minutes} \checkmark A$ OR $\checkmark \checkmark RG$ 3 minutes	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 $\checkmark RT \checkmark RT$ Data manager Accounts manager	2RT reading from table OR 1RT if only 2 are correct (2)	12.4.4
2.1.2	Total earnings = $4 \times R22\,000$ $= R88\,000 \checkmark A$	1 M finding total earnings 1A total earnings (2)	12.1.3 12.4.4
2.1.3	31 July 2010 $\checkmark A \checkmark A$	1A day 1A month (2)	12.3.1
2.1.4	Accounts manager : Administration coordinator $\checkmark RT \checkmark RT$ $= 25\,000 : 15\,000$ $= 5 : 3$	2 RT reading from table 1A simplified ratio (3)	12.1.1 12.4.4
2.2.1	Radius = 30 cm	1A radius (1)	12.3.1
2.2.2	Area of the mirror $\checkmark SF \checkmark SF$ $= \frac{1}{2} \times 3,14 \times (60\,2)^2 + (60)^2$ $= 1\,413 \text{ cm}^2 + 3\,600 \text{ cm}^2$ $= 5\,013 \text{ cm}^2 \checkmark CA$	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	$\therefore \text{US } \$250 \text{ billion} = \checkmark C$ $\text{US } \$250 \times 1\,000 \text{ million}$ $= \text{US } \$250\,000 \text{ million} \checkmark A$	1C conversion 1A answer in millions (2)	12.1.1
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 = $100\% - 15\% - 28\%$ $= 57\% \checkmark A$	1M subtracting 1A % from services (2)	12.4.4 12.1.1
2.3.4	Industry = $27\% \times \text{US\$ } 250 \text{ billion}$ $= \text{US\$ } 67,5 \text{ billion} \checkmark A$	1M using percentage 1RG reading from graph 1A % from industry (3)	12.4.4 12.1.1
2.3.5	% Difference = $32\% - 15\%$ $= 17\% \checkmark A$	1M finding the difference 1A simplifying (2)	12.4.4 12.1.1

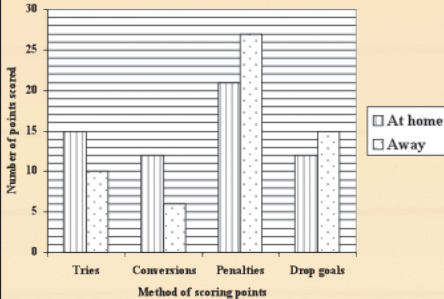
Ques	Explanation	Mark Allocation	AS
2.3.6	$\checkmark M$ Agriculture = 15% x US\$ 1 000 000 billion $\checkmark RG$ = US\$ 150 000 billion $\checkmark A$	1M using percentage 1RG reading from graph 1A amount from Agriculture (3)	12.4.4 12.1.1

QUESTION 3 [23 MARKS]			
Ques	Explanation	Mark Allocation	AS
3.1.1	$\checkmark M$ $A = 450 + 160 \times 0,5$ $\checkmark M$ $= 450 + 80$ $= R530$ $\checkmark A$	1M finding the cost 1A cost (2)	12.2.1
3.1.2	$\checkmark M$ $B = 200 + (250 - 100) \times 2$ $= 200 + 150 \times 2$ $= 200 + 300$ $\checkmark S$ $= R500$ $\checkmark CA$	1M subtracting 1S simplification 1A cost (3)	12.2.1
3.2	COST OF HIRING A CAR  Option X 1A point (0 ; 200) 1A point (400 ; 650) 1A correct straight line drawn 1A label Option Y 1A point (0 ; 450) 1A point (100 ; 200) 1A point (400 ; 800) 1A points joined correctly 1A label (9)	12.2.2	
3.3.1	300 km $\checkmark RT$ $\checkmark RT$	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
3.4	Time = $\frac{180 \text{ km}}{100 \text{ km/h}}$ $\checkmark SF$ $= 1,8 \text{ hrs}$ $\checkmark A$ $= 1 \text{ hr} + 0,8 \times 60 \text{ min}$ $= 1 \text{ hr } 48 \text{ min}$ $\checkmark C$ $\checkmark M$	1SF subst itution in formula 1A number of hours 1C converting to hr and min (3)	12.2.1 12.3.1
3.5	Litres of petrol = $\frac{258,24}{8,07}$ $\checkmark SF$ $= 32$ $\checkmark A$	1M finding number of litres 1SF correct substitution 1A simplifying (3)	12.1.1

QUESTION 4 [21 MARKS]			
Ques	Explanation	Mark Allocation	AS
4.1.1	$\checkmark M$ $\checkmark A$ $P = 2m + 8m + 1m + 3m + 3m$ $= 17m$ $\checkmark A$	1M adding the 5 sides 1A calculating 3m 1A simplifying (3)	12.3.1
4.1.2	$\checkmark M$ $\checkmark SF$ $A = (11m \times 3m) - (8m \times 1m)$ $= 33m^2 - 8m^2$ $= 25m^2$ $\checkmark CA$ $\checkmark A$ OR $\checkmark M$ $\checkmark S$ $A = (3m \times 3m) + (8m \times 2m)$ $= 9m^2 + 16m^2$ $= 25m^2$ $\checkmark CA$ $\checkmark A$	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)	$\checkmark M$ $A = \frac{60 \text{ hours}}{2}$ $\checkmark M$ $= 30 \text{ hours}$ $\checkmark A$	1M dividing 1A number of hours (2)	12.2.3
4.2.1 (b)	$B \times 15 = 60$ $B = \frac{60}{15}$ $\checkmark M$ $= 4 \text{ workers}$ $\checkmark A$	1M dividing 1A simplifying (2)	12.2.3
4.2.2	Indirect/Inverse proportion $\checkmark A$	1A type of proportion (1)	12.2.3
4.3.1	$\checkmark S$ $V = 3,14 \times (20 \text{ cm})^2 \times 60 \text{ cm}$ $= 75\,360 \text{ cm}^3$ $\checkmark A$ $\checkmark A$	1SF substitution in formula 1A volume 1A correct unit (3)	12.3.1
4.3.2	Lateral surface area of the pot $= 2 \times 3,14 \times 20 \text{ cm} \times 80 \text{ cm}$ $\checkmark S$ $= 10\,048 \text{ cm}^2$ $\checkmark A$	SF substitution in formula 1A surface area (2)	12.3.1
4.4	$\checkmark M$ $\checkmark M$ Costs = $(6 \times R45,50) + (4 \times R19,99)$ $= R273,00 + R79,96$ $\checkmark S$ $= R352,96$ $\checkmark CA$	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 $\checkmark RT$ $\checkmark RT$	2RT reading from table (2)	12.4.4
5.1.2	$93\,400 + 57\,500 + 117\,100 + 21\,000$ $= 289\,000 \text{ people}$ $\checkmark M$ $\checkmark RT$ $\checkmark A$	1 RT reading from table 1 M addition 1A simplifying (3)	12.4.4 12.1.1
5.1.3	$\checkmark RT$ $\checkmark RT$ Gauteng and KwaZulu-Natal	2RT reading from table (2)	12.4.4
5.1.4	$\checkmark RT$ $\checkmark M$ $\checkmark RT$ $117\,100 - 56\,400$ $= 60\,700 \text{ people}$ $\checkmark A$	2RT reading from table 1M subtracting 1A simplifying (4)	12.4.4 12.1.1
5.2.1	$\checkmark M$ Range = $R7\,250 - R4\,200$ $= R3\,050$ $\checkmark CA$	1M concept 1CA simplifying (2)	12.4.3
5.2.2	Median = $R4\,650$ $\checkmark A$ $\checkmark A$	1A arranging data 1A median (2)	12.4.3
5.2.3	Average(mean) $\checkmark M$ $= R \frac{5\,525 + 5\,500 + 5\,980 + 6\,250 + 6\,250 + 6\,250 + 6\,300 + 7\,800 + 8\,200 + 8\,900}{10}$ $= R \frac{66\,955}{10}$ $\checkmark A$ $= R6\,695,50$ $\checkmark CA$	1 M sum 1A dividing by 10 1CA mean salary (3)	12.4.3
5.2.4	$\checkmark A$ $\frac{3}{10} \times 100\%$ $\checkmark M$ $= 30\%$ $\checkmark CA$	1M salaries greater than maximum in Greytown 1M calculating % 1A simplifying (3)	12.4.4 12.1.1
5.3	$A = P(1 + i)^n$ $\checkmark SF$ $\checkmark A$ $= R6\,350 (1 + 0,058)^2$ $= R7\,107,9614$ $\checkmark CA$ $R7\,107,96$ $\checkmark R$	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	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 OR From Luke's residence, turn left into St George's Street. ✓A At the intersection, turn right into Markgraaf Street. 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 OR Any other possible route. ✓A	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 OR 1A turning into St George's Street 1A turning into Markgraaf Street 1A turning into Zastron Street 1A entry into the club	12.3.1
6.1.4	7 cm on map = 7 x 20 000 cm in real life = 140 000 cm ✓M = $\frac{140\,000}{100}$ m = 1 400 m ✓A = $\frac{1\,400}{1\,000}$ km = 1,4 km ✓CA	1M multiplication 1A converting to m 1CA simplifying	12.3.3 12.3.1
6.2.1	Final Score = (3 x 5) + (0 x 2) + (4 + 1) x 3 ✓A ✓SF = 15 + 0 + 5 x 3 ✓CA = 30 ✓CA	1SF substitution 1A correct values used 1CA simplification 1CA simplifying	12.2.1

6.2.2	RECORD OF POINTS SCORED  <table><caption>Data for Record of Points Scored</caption><tr><th>Method of scoring points</th><th>At home</th><th>Away</th></tr><tr><td>Tries</td><td>15</td><td>10</td></tr><tr><td>Conversions</td><td>12</td><td>5</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></table>	Method of scoring points	At home	Away	Tries	15	10	Conversions	12	5	Penalties	21	27	Drop goals	12	15	5A One for each bar (5)	12.4.2
Method of scoring points	At home	Away																
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TOTAL: 150