

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.

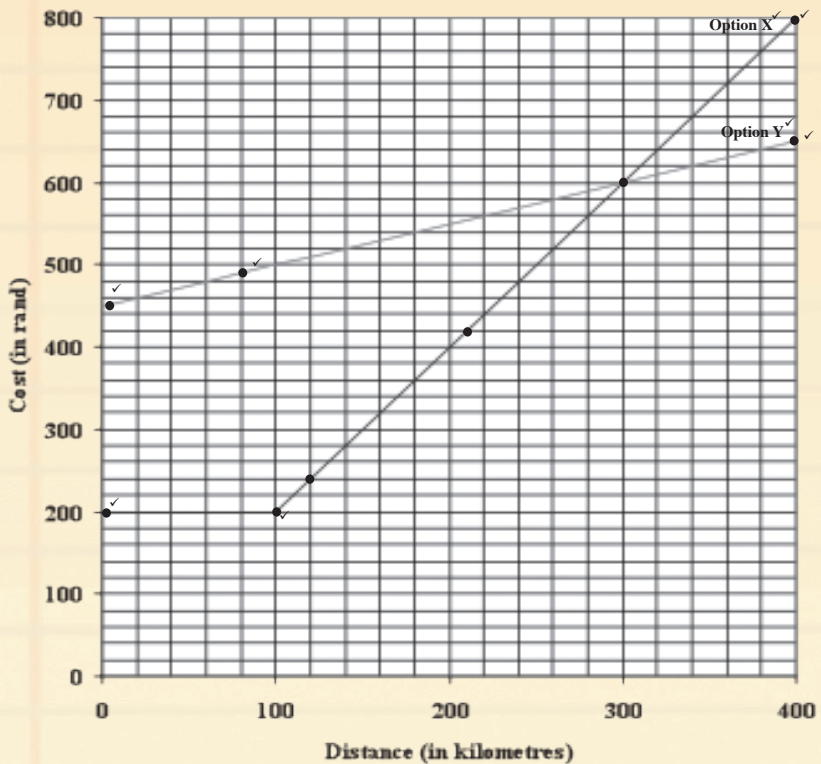
QUESTION 1 [33 MARKS]			
Ques	Explanation	Mark Allocation	AS
1.1.1	$148\% = \frac{148}{100} \checkmark M$ $= \frac{37}{25} \text{ OR } 1 \frac{12}{25} \checkmark A$	1M concept  1A simplifying  (2)	12.1.1
1.1.2	$1,256 \text{ cm} = 1,256 \text{ } 10 \text{ mm}$ $= 12,56 \text{ mm} \checkmark A$	1A conversion  (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 = 1 : 2 = 10 : 20 $\checkmark A$  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 $\checkmark M \checkmark A$  <b>OR</b> $\checkmark \checkmark RG$ 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 $\checkmark M \checkmark A$  <b>OR</b> $\checkmark \checkmark RG$ 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 minutes $\checkmark M \checkmark A$  <b>OR</b> $\checkmark \checkmark RG$ 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 <b>OR</b> 1RT if only 2 are correct  (2)	12.4.4
2.1.2	Total earnings = $4 \times R22\,000$ = R88 000 $\checkmark M \checkmark A$	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	$\therefore \text{US } \$250 \text{ billion} = \text{US } \$250 \times 1\,000 \text{ million}$ $= \text{US } \$250\,000 \text{ million} \checkmark C \checkmark A$	1C conversion  1A answer in millions  (2)	12.1.1
2.3.2	$27\% + 32\% \checkmark M$ $= 59\% \checkmark A$  <b>OR</b> $100\% - 41\% \checkmark M$ $= 59\% \checkmark A$	1M adding 1A % not from services  <b>OR</b>  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 = $27\% \times \text{US\$ } 250 \text{ billion}$  $= \text{US\$ } 67,5 \text{ billion} \checkmark M \checkmark A$	1M using percentage 1RG reading from graph 1A % from industry  (3)	12.4.4 12.1.1
2.3.5	% Difference = $32\% - 15\%$ $= 17\% \checkmark RG \checkmark A$	1M finding the difference  1A simplifying  (2)	12.4.4 12.1.1



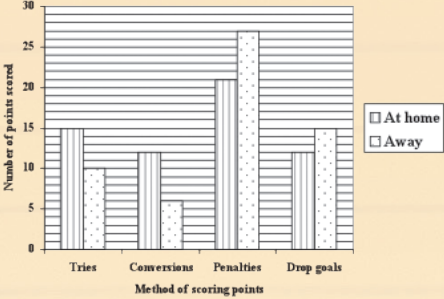
Ques	Explanation	Mark Allocation	AS
2.3.6	$\checkmark M$ Agriculture = 15% x US\$ 1 000 000 billion $\checkmark RG$ = US\$ 150 000 billion $\checkmark A$	1M using percentage 1RG reading from graph 1A amount from Agriculture (3)	12.4.4 12.1.1

QUESTION 3 [23 MARKS]			
Ques	Explanation	Mark Allocation	AS
3.1.1	$\checkmark M$ $A = 450 + 160 \times 0,5$ $= 450 + 80$ $= R530$ $\checkmark A$	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	<p style="text-align: center;"><b>COST OF HIRING A CAR</b></p>  <p><b>Option X</b></p> <p>1A point (0 ; 200)  1A point (100 ; 450)  1A correct straight line drawn  1A label</p> <p><b>Option Y</b></p> <p>1A point (0 ; 450)  1A point (100 ; 500)  1A point (300 ; 600)  1A point (400 ; 650)  1A points joined correctly  1A label  (9)</p>	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 substitution 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	$\checkmark M$ $\checkmark SF$ $A = (11m \times 3m) - (8m \times 1m)$ $= 33m^2 - 8m^2$ $= 25m^2$ $\checkmark CA$ $\checkmark A$ <b>OR</b> $\checkmark M$ $\checkmark S$ $A = (3m \times 3m) + (8m \times 2m)$ $= 9m^2 + 16m^2$ $= 25m^2$ $\checkmark CA$ $\checkmark A$	1M finding area of patio 1SF substitution 1CA area of patio 1A correct unit <b>OR</b> 1M finding area of patio 1SF substitution 1CA area of patio 1A correct unit (4)	12.3.1
4.2.1 (a)	$\checkmark M$ $A = \frac{60 \text{ hours}}{2}$ $= 30 \text{ hours}$ $\checkmark A$	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	D2 or 2D ✓A	1A solution (1)	12.3.4
6.1.2	✓A ✓A Maitland; Peet Avenue; Bastion; Yoxall	1A two streets correct 1A all streets correct (2)	12.3.4
6.1.3	<p>✓A 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><b>OR</b></p> <p>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</p> <p><b>OR</b></p> <p>Any other possible route. ✓A</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><b>OR</b></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>	12.3.1 (4)
6.1.4	<p>7 cm on map = 7 x 20 000 cm in real life = 140 000 cm ✓M = <math>\frac{140\,000}{100}</math> m = 1 400 m ✓A = <math>\frac{1\,400}{1\,000}</math> km = 1,4 km ✓CA</p>	<p>1M multiplication</p> <p>1A converting to m</p> <p>1CA simplifying</p>	12.3.3 12.3.1 (3)
6.2.1	<p>Final Score = (3 x 5) + ✓A (0 x 2) + (4 + 1) x 3 ✓SF = 15 + 0 + 5 x 3✓CA = 30✓CA</p>	<p>1SF substitution 1A correct values used 1CA simplification 1CA simplifying</p>	12.2.1 (4)

6.2.2	<div> <div>RECORD OF POINTS SCORED</div>  </div>	<p>5A One for each bar</p> <p>(5)</p>	12.4.2
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TOTAL: 150