# 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]**

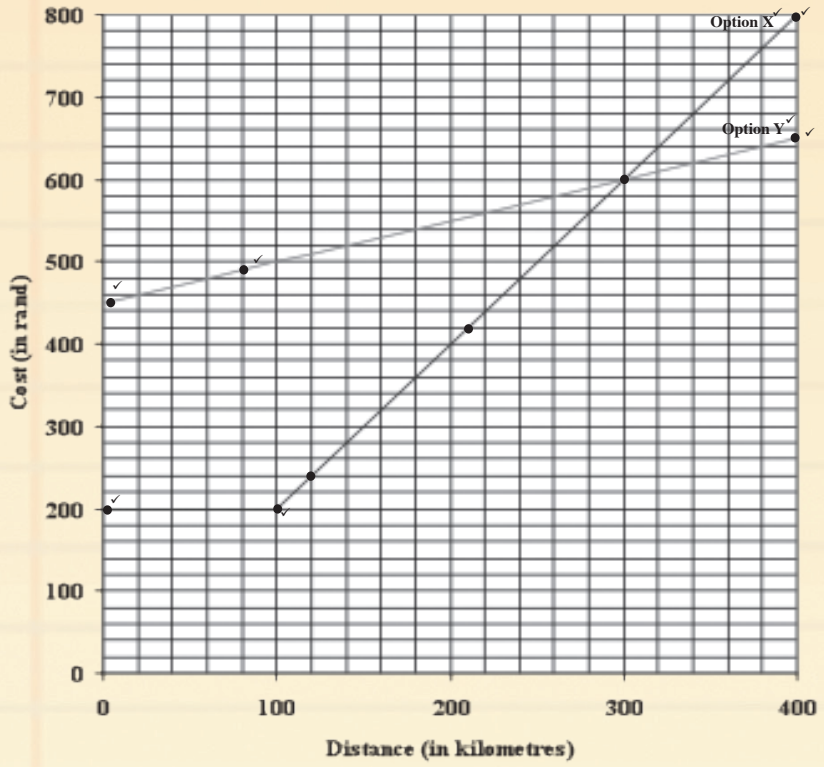
| Ques | Explanation | Mark Allocation | AS |
|---|---|---|---|
| 1.1.1 | $148\% = \frac{148}{100}$ ✓M<br>$= \frac{37}{25}$ **OR** $1\frac{12}{25}$ ✓A | 1M concept<br>1A simplifying<br>(2) | 12.1.1 |
| 1.1.2 | 1,256 cm = 1,256 10 mm<br>= 12,56 mm ✓A | 1A conversion<br>(1) | 12.3.2 |
| 1.1.3 | $1(1{,}26 + 32{,}62) - \sqrt{2{,}25}$<br>$= \frac{3}{2} \times 33{,}88 - 1{,}5$ ✓A<br>= 50,82 – 1,5<br>= 49,32 | 1A simplifying brackets<br>1A square root<br>1A simplifying<br>(3) | 12.1.1 |
| 1.1.4 | 150 minutes = $\frac{150}{60}$ hours ✓M<br>= $2\frac{1}{2}$ hours ✓A | 1M dividing<br>1A simplifying<br>(2) | 12.1.1 |
| 1.1.5 | $\frac{\text{R } 12{,}99}{12}$ ✓M = R1,08 ✓A | 1M division by 12<br>1A simplifying<br>(2) | 12.1.1 |
| 1.1.6 | R1 = 1,6915 MXN ✓M<br>∴ ZAR 1 220 = 1 220×1,6915 MXN<br>= 2 063, 63 MXN ✓A | 1M multiplication<br>1A simplifying<br>(2) | 12.1.3 |
| 1.1.7 | Growth (in cm) = $\frac{50}{10}$ ✓SF<br>= 5 ✓A | 1SF substituting t = 10<br>1A simplifying<br>(2) | 12.2.1 |
| 1.2.1 | 7 – 5 = 2 ✓M ✓A | 1M subtraction<br>1A simplifying<br>(2) | 12.4.3 |
| 1.2.2 | Modal age = 11 yrs ✓A | 1A simplifying<br>(1) | 12.4.3 |
| 1.2.3 | Mean = ✓M<br>$\frac{1+2+3+3+4+10+11+11+11+12+15+16}{12}$<br>$= \frac{99}{12}$ ✓A<br>= 8,25 years ✓A | 1M finding the mean<br>1A correct values<br>1A simplifying<br>(3) | 12.4.3 |
| 1.2.4 | P(10 years old) = $\frac{1}{12}$ ✓A ✓A | 1A numerator<br>1A denominator<br>(2) | 12.4.5 |
| 1.3.1 | Cocoa powder : sugar<br>= 1 : 2<br>= 10 : 20 ✓A<br>She would need 20 spoons of sugar ✓C | 1A proportion<br>1CA number of spoons<br>(2) | 12.1.1 |
| 1.3.2 | Mass of milk powder = $\frac{3}{6}$ ✓A × 900 g<br>= $\frac{1}{2}$ × 900 g<br>= 450 g ✓CA | 1A proportion<br>1A total number of parts<br>1CA mass of milk powder<br>(3) | 12.1.1 |
| 1.4.1 | Cost of the call = R2,90 ×5 ✓M<br>= R14,50 ✓A<br>**OR**<br>Cost of the call = R14,50 ✓✓RG | 1M multiplying peak rate<br>1A cost of call<br>2RG cost of call<br>(2) | 12.2.3 |
| 1.4.2 | Cost of the call = R1,90 × 5 ✓M<br>= R9,50 ✓A<br>**OR**<br>Cost of a call = R9,50 ✓✓RG | 1M multiply off-peak rate<br>1A cost of call<br>2RG cost of call<br>(2) | 12.2.3 |
| 1.4.3 | Maximum time = 9 2,9 ✓M<br>= 3,1 minutes ✓A<br>**OR**<br>3 minutes ✓✓RG | 1M dividing by rate<br>1A time<br>2RG duration of call<br>(2) | 12.2.3 |

**QUESTION 2 [29 MARKS]**

| Ques | Explanation | Mark Allocation | AS |
|---|---|---|---|
| 2.1.1 | Administration coordinator<br>Hotel coordinator ✓RT ✓RT<br>Data manager<br>Accounts manager | 2RT reading from table<br>**OR**<br>1RT if only 2 are correct<br>(2) | 12.4.4 |
| 2.1.2 | Total earnings = 4 x R22 000 ✓M<br>= R88 000 ✓A | 1 M finding total earnings<br>1A total earnings<br>(2) | 12.1.3<br>12.4.4 |
| 2.1.3 | 31 July 2010 ✓A ✓A | 1A day<br>1A month<br>(2) | 12.3.1 |
| 2.1.4 | Accounts manager : Administration coordinator<br>✓RT ✓RT<br>= 25 000 : 15 000<br>= 5 : 3 | 2 RT reading from table<br>1A simplified ratio<br>(3) | 12.1.1<br>12.4.4 |
| 2.2.1 | Radius = 30 cm | 1A radius<br>(1) | 12.3.1 |
| 2.2.2 | Area of the mirror ✓SF ✓SF<br>$= \frac{1}{2}$ x 3,14 x (60 2)² + (60)²<br>✓S ✓S<br>= 1 413 cm² + 3 600 cm²<br>= 5 013 cm² ✓CA | 1SF substituting diameter<br>1SF substituting side<br>1S area of semi-circle<br>1S area of square<br>1CA area of mirror<br>(5) | 12.3.1 |
| 2.3.1 | ∴ US $250 billion = ✓C<br>US $250 x 1 000 million<br>✓A<br>= US $250 000 million | 1C conversion<br>1A answer in millions<br>(2) | 12.1.1 |
| 2.3.2 | 27% + 32% ✓M<br>= 59% ✓A<br>**OR**<br>100% – 41% ✓M<br>= 59% ✓A | 1M adding<br>1A % not from services<br>**OR**<br>1M subtracting<br>1A % not from services<br>(2) | 12.1.1 |
| 2.3.3 | Services = 100% – 15% – 28%<br>= 57% ✓A | 1M subtracting<br>1A % from services<br>(2) | 12.4.4<br>12.1.1 |
| 2.3.4 | Industry = 27% x US$ 250 billion ✓RG ✓M<br>= US$ 67,5 billion ✓A | 1M using percentage<br>1RG reading from graph<br>1A % from industry<br>(3) | 12.4.4<br>12.1.1 |
| 2.3.5 | % Difference = 32% – 15% ✓RG<br>= 17 % ✓A | 1M finding the difference<br>1A simplifying<br>(2) | 12.4.4<br>12.1.1 |

| Ques | Explanation | Mark Allocation | AS |
|---|---|---|---|
| 2.3.6 | ✓M<br>Agriculture = 15% x<br>US$ 1 000 000 billion ✓RG<br><br>= US$ 150 000 billion ✓A | 1M using percentage<br>1RG reading from graph<br>1A amount from Agriculture<br>(3) | 12.4.4<br>12.1.1 |

**QUESTION 3 [23 MARKS]**

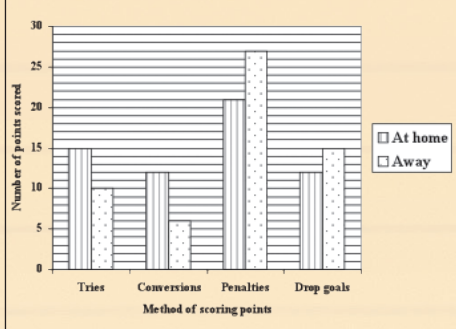
| Ques | Explanation | Mark Allocation | AS |
|---|---|---|---|
| 3.1.1 | A = 450 + 160 x 0,5 ✓M<br>= 450 + 80<br>= R530 ✓A | 1M finding the cost<br>1A cost<br>(2) | 12.2.1 |
| 3.1.2 | ✓M<br>B = 200 + (250 – 100) x 2<br>= 200 + 150 x 2<br>= 200 + 300 ✓S<br>= R500 ✓CA | 1M subtracting<br><br>1S simplification<br>1A cost<br>(3) | 12.2.1 |
| 3.2 | COST OF HIRING A CAR<br>  <br>**Option X**<br>1A point (0 ; 450)<br>1A point (400 ; 650)<br>1A correct straight line drawn<br>1A label<br><br>**Option Y**<br>1A point (0 ; 200)<br>1A point (100 ; 200)<br>1A point (400; 800)<br>1A points joined correctly<br>1A label<br>(9) | | 12.2.2 |
| 3.3.1 | 300 km ✓RT ✓RT | 2RT reading from graph or table<br>(2) | 12.2.1 |
| 3.3.2 | R600 ✓RT | 1RT reading from graph or table<br>(1) | 12.2.3 |
| 3.4 | Time = $\frac{180\text{ km}}{100\text{ km/h}}$ ✓SF<br>= 1,8 hrs ✓A<br>= 1 hr + 0,8 x 60 min<br>= 1 hr 48 min ✓C<br><br>✓M | 1SF subst<br>itution in formula<br><br>1A number of hours<br><br>1C converting to hr and min<br>(3) | 12.2.1<br><br>12.3.1 |
| 3.5 | Litres of petrol = $\frac{258,24}{8,07}$ ✓SF<br>= 32 ✓A | 1M finding number of litres<br>1SF correct substitution<br><br>1A simplifying<br>(3) | 12.1.1 |

**QUESTION 4 [21 MARKS]**

| Ques | Explanation | Mark Allocation | AS |
|---|---|---|---|
| 4.1.1 | ✓M ✓A<br>P = 2m + 8m + 1m + 3m+ 3m<br>= 17m ✓A | 1M adding the 5 sides<br>1A calculating 3m<br>1A simplifying<br>(3) | 12.3.1 |
| 4.1.2 | ✓M ✓SF<br>A = (11m x 3m) – (8m x 1m)<br>= 33m² – 8m²<br>= 25m² ✓CA ✓A<br>**OR**<br>✓M ✓S<br>A = (3m x 3m) + (8 m x 2m)<br>= 9m² + 16m²<br>= 25m² ✓CA ✓A | 1M finding area of patio<br>1SF substitution<br><br>1CA area of patio<br>1A correct unit<br>**OR**<br>1M finding area of patio<br>1SF substitution<br>1CA area of patio<br>1A correct unit<br>(4) | 12.3.1 |
| 4.2.1 (a) | A = $\frac{60\text{ hours}}{2}$ ✓M<br>= 30 hours ✓A | 1M dividing<br><br>1A number of hours<br>(2) | 12.2.3 |
| 4.2.1 (b) | B x 15 = 60<br>B = $\frac{60}{15}$ ✓M<br>= 4 workers ✓A | 1M dividing<br><br>1A simplifying<br>(2) | 12.2.3 |
| 4.2.2 | ✓A<br>Indirect/Inverse proportion | 1A type of proportion<br>(1) | 12.2.3 |
| 4.3.1 | ✓S<br>V = 3,14 x (20 cm)² x 60 cm<br>= 75 360 cm³ ✓A ✓A | 1SF substitution in formula<br>1A volume<br>1A correct unit<br>(3) | 12.3.1 |
| 4.3.2 | Lateral surface area of the pot<br>= 2 x 3,14 x 20 cm x 80 cm ✓S<br>= 10 048 cm² ✓A | SF substitution in formula<br><br>1A surface area<br>(2) | 12.3.1 |
| 4.4 | ✓M ✓M<br>Costs = (6 x R45,50) + (4 x R19,99)<br>= R273,00 + R79,96 ✓S<br>= R352,96 ✓CA | 2M finding the costs<br><br>1S simplification<br><br>1CA amount paid<br>(4) | 12.1.1 |

**QUESTION 5 [25 MARKS]**

| Ques | Explanation | Mark Allocation | AS |
|---|---|---|---|
| 5.1.1 | 21 000 ✓RT ✓RT | 2RT reading from table<br>(2) | 12.4.4 |
| 5.1.2 | 93 400 + 57 500 +117 100 + 21 000<br>✓M ✓RT<br>= 289 000 people<br>✓A | 1 RT reading from table<br>1 M addition<br>1A simplifying<br>(3) | 12.4.4<br>12.1.1 |
| 5.1.3 | ✓RT ✓RT<br>Gauteng and KwaZulu-Natal | 2RT reading from table<br>(2) | 12.4.4 |
| 5.1.4 | ✓RT ✓M ✓RT<br>117 100 – 56 400<br>= 60 700 people ✓A | 2RT reading from table<br>1M subtracting<br>1A simplifying<br>(4) | 12.4.4<br>12.1.1 |
| 5.2.1 | ✓M<br>Range = R7 250 – R4 200<br>= R3 050 ✓CA | 1M concept<br><br>1CA simplifying<br>(2) | 12.4.3 |
| 5.2.2 | Median = R4 650 ✓A ✓A | 1A arranging data<br>1A median<br>(2) | 12.4.3 |
| 5.2.3 | Average(mean) ✓M<br>= R$\frac{5\,525 + 5\,500 + 5\,980 + 6\,250 + 6\,250 + 6\,250 + 6\,300 + 7\,800 + 8\,200 + 8\,900}{10}$<br>= $\frac{\text{R } 66\,955}{10}$ ✓A<br>= R6 695,50 ✓CA | 1 M sum<br>1A dividing by 10<br><br>1CA mean salary<br>(3) | 12.4.3 |
| 5.2.4 | ✓A<br>$\frac{3}{10} \times 100\%$ ✓M<br>= 30 % ✓CA | 1M salaries greater than<br>maximum in Greytown<br>1M calculating %<br>1A simplifying<br>(3) | 12.4.4<br>12.1.1 |
| 5.3 | A = P(1 + *i*)$^n$<br>✓SF ✓A<br>= R6 350 (1 + 0,058)²<br>= R7 107,9614 ✓CA<br>R7 107,96 ✓R | 1A value of *i*<br><br>1SF substitution<br><br>1CA amount<br>1R rounding off to the nearest cent<br>(4) | 12.1.1<br>12.2.1 |

| QUESTION 6 [19 MARKS] | | | |
|---|---|---|---|
| **Ques** | **Explanation** | **Mark Allocation** | **AS** |
| 6. .1 | D2 or 2D ✓A | 1A solution<br>(1) | 12.3.4 |
| 6.1.2 | ✓A ✓A<br>Maitland; Peet Avenue; Bastion; Yoxall | 1A two streets correct<br>1A all streets correct<br>(2) | 12.3.4 |
| 6.1.3 | ✓A<br>From Luke's residence you turn right into St George's Street. ✓A<br>At the first intersection, you turn left into President Brand Street.✓A<br>Continue with the road until you reach Zastron Street. Turn right into Zastron Street.✓A<br>Immediately after crossing Aliwal Street you will find the entrance on your left-hand side.✓A<br>**OR**<br>From Luke's residence, turn left into St George's Street.✓A<br>At the intersection, turn right into Markgraaf Street. Proceed until you reach Zastron Street. Turn right into Zastron Street.✓A<br>Proceed until you cross Aliwal Street and the entrance is on the left hand side. ✓A<br>**OR**<br>Any other possible route. ✓A | 1A turning into St George's Street<br>1A correct turn at first intersection from the residence<br>1A correct turn into Zastron Street<br>1A entry into the club<br>**OR**<br>1A turning into St George's Street<br>1A turning into Markgraaf Street<br>1A turning into Zastron Street<br>1A entry into the club<br>(4) | 12.3.1 |
| 6.1.4 | 7 cm on map = 7 x 20 000 cm in real life<br>= 140 000 cm ✓M<br>$= \frac{140\ 000}{100}$ m<br>= 1 400 m ✓A<br>$= \frac{1\ 400}{1\ 000}$ km<br>= 1,4 km ✓CA | 1M multiplication<br>1A converting to m<br>1CA simplifying<br>(3) | 12.3.3<br>12.3.1 |
| 6.2.1 | Final Score = (3 x 5) + ✓A<br>(0 x 2) + (4 + 1) x 3 ✓SF<br>= 15 + 0 + 5 x 3✓CA<br>= 30✓CA | 1SF substitution<br>1A correct values used<br>1CA simplification<br>1CA simplifying<br>(4) | 12.2.1 |
| 6.2.2 |  | 5A One for each bar<br>(5) | 12.4.2 |

**TOTAL: 150**