



Province of the
EASTERN CAPE
EDUCATION

NATIONAL SENIOR CERTIFICATE

GRADE 12

SEPTEMBER 2012

MATHEMATICAL LITERACY P2 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
F	Choosing the correct formula
SF	Substitution in a formula
J	Justification
P	Penalty, e.g. for no units, incorrect rounding off, etc.
R	Rounding Off/Reason

This memorandum consists of 9 pages.

QUESTION 1

LO 1 AS 12.1.1	1.1	1.1.1	Amount for deposit = $0,15 \times 5\,989 \checkmark$ = R 898,35 \checkmark	1:M 1:A
LO 1 AS 12.1.1		1.1.2	Monthly payments = $\frac{7\,508,70}{30} \checkmark$ = R 250,29 \checkmark	1:M 1:A
LO 1 AS 12.1.1		1.1.3	Total Amount = Deposit + Total of 30 months = R 898,35 + (R250,29 x 30) \checkmark = R 898,35 + R 7 508,70 = R 8 407,05 \checkmark	1: M 1: CA
LO 1 AS 12.1.1		1.1.4	$A = R\,7\,508,70$ $P = R\,5\,989 - R\,898,35$ = R 5 090,65 \checkmark $n = 30 \text{ months} = 2,5 \text{ years} \checkmark$ $i = ?$ $1+ni = \frac{A}{P}$ $1 + 2,5i = \frac{7\,508,70}{5\,090,65} \checkmark$ $1 + 2,5i = 1,474998281 \checkmark$ $2,5i = 0,474998281 \checkmark$ $i = 0,1899993125 \checkmark$ $i = 19\% \checkmark$	1:CA: Calculating P- value 1:A 2,5 years 1:SF 1:S ($\frac{A}{P}$) 1:S (-1) 1:S (/2.5) 1:CA (x100)
LO 1 AS 12.1.1		1.1.5	$A = ?$ $P = R5\,989$ $n = 2,5 \times 2$ = 5 \checkmark $i = 11,25 / 100$ = 0,1125 / 2 = 0,05625 \checkmark $A = P(1+i)^n$ = $5\,989(1+0,05625)^5 \checkmark$ = $5\,989(1,05625)^5$ = $5\,989(1,31472103) \checkmark$ = R 7 873,86 \checkmark	1:A Calculating n 1:A Calculating i 1:SF 1:CA for Simplifying 1:CA
LO 1 AS 12.1.2		1.1.6	Option 2: \checkmark It will cost R 533,19 \checkmark less than Option 1	1:J (Option) 1:R

LO 3 AS 12.3.3	1.2	1.2.1	Actual length in cm = $40 \times 2,5$ cm ✓ = 100 cm ✓	1:M (x2,5) 1:A
LO 3 AS 12.3.1		1.2.2	Area of television in m ² = 97 cm x $58,7$ cm ✓ <u>$5\,693,9$ cm²</u> ✓ = $10\,000$ ✓ = $0,57$ m ² ✓ OR = $\frac{97}{100}$ cm x $\frac{58,7}{100}$ cm ✓ = $0,97$ m ✓ x $0,587$ m ✓ = $0,57$ m ² ✓	1:SF (Correct values) 1:A 1:C 1:A
LO 3 AS 12.3.1		1.2.3	Length = 97 cm + 10 cm + 10 cm = 117 cm ✓ Width = $58,7$ cm + 10 cm + 10 cm = $78,7$ cm ✓ Area for mounting = 117 cm x $78,7$ cm <u>$9\,207,9$ cm²</u> ✓ = $10\,000$ = $0,92$ m ² ✓ OR = $\frac{117}{100}$ cm x $\frac{78,7}{100}$ cm ✓ = $1,17$ m x $0,787$ m = $0,92$ m ² ✓ Area of wall = $0,8$ m ² Area on the wall will be too small for the television to be mounted. ✓	1:A (Calculating length) 1:A (Calculating width) 1:C 1:CA 1:C 1:A 1:J
LO 3 AS 12.3.2	1.3	Isidingo	= 30 minutes – (45 seconds x 5) = 30 – ($0,75$ minutes ✓ x 5) = 30 – $3,75$ ✓ = $26,25$ minutes viewing time OR 26 min 15 sec ✓	1:C (convert 45s to min) 1:M 1:A
		“Sewende Laan”	= 30 minutes – ($0,5$ x 4) = 30 – 2 ✓ = 28 minutes viewing time ✓	1:M 1:A
		“Sewende Laan” will give maximum viewing time. ✓		1:CA

QUESTION 2

LO 4 AS 12.4.1	2.1	2.1.1	Number of learners interviewed = $6+10+8+14+2$ ✓ = 40 learners ✓	1:RG 1:A
LO 4 AS 12.4.3		2.1.2	% learners interviewed = $\frac{40}{1030} \times 100$ ✓ = 3,88 % ✓ = 3,9 % ✓	1:M 1:A 1:CA (1dec. place)
LO 4 AS 12.4.4		2.1.3	No ✓ He only conducted the survey in his class ✓ OR It is not representative of the whole school	1:A 1:R
LO 4 AS 12.4.4		2.1.4	No ✓ Favourite chocolate in my class ✓	1:A 1:A (subs. school with class)
LO 4 AS 12.4.4		2.1.5	It must be representative of all the learners in the school across the different grades, race, age, gender. ✓✓	2:R
LO 4 AS 12.4.3		2.1.6	40% learners interviewed = $\frac{40}{100} \times 1030$ ✓ OR = $0,4 \times 1030$ ✓ = 412 learners ✓	1:M 1:A
LO 2 AS 12.2.1	2.2	2.2.1	2008 ✓ The graph from 2007 to 2008 is decreasing ✓	1:RG 1:R
LO 2 AS 12.2.1		2.2.2	2010 – 2011 ✓ The gradient is the steepest ✓	1:RG 1:R
LO 2 AS 12.2.3		2.2.3	Price in 2008 = $\frac{R3,70}{1,057}$ ✓✓ = R3,50 ✓ OR Price in 2008 = $\frac{R3,70}{105,7} \times 100$ ✓✓ = R3,50 ✓	1: RG (correct %) 1:M 1:A
LO 2 AS 12.2.1		2.2.4	% change in 2011 = $\frac{R 4,50 - R3,99}{R3,99} \times 100$ ✓ = $\frac{0,51}{3,99} \times 100$ ✓ = 12,8% ✓	2:MA 1:A

LO 3
AS
12.3.2

2.3 2.3.1 $128 \text{ mm} = 12,8 \text{ cm} \checkmark$
 $\text{Volume} = l \times b \times h$
 $= 12,8 \text{ cm} \times 2,5 \text{ cm} \times 1,5 \text{ cm} \checkmark$
 $= 48 \text{ cm}^3 \checkmark$

1:C (convert
mm to cm)
1:SF(correct
values)
1:A (in cm^3)

OR

$2,5 \text{ cm} = 25 \text{ mm}$; $1,5 \text{ cm} = 15 \text{ mm}$
 $\text{Volume} = l \times b \times h$
 $= 128 \text{ mm} \times 25 \text{ mm} \times 15 \text{ mm} \checkmark$
 $= 48\,000 \text{ mm}^3 / 1\,000 \checkmark$
 $= 48 \text{ cm}^3 \checkmark$

1:SF (correct
values)
1:C(convert
 mm^3 to cm^3)
1:A(in cm^3)

LO 3
AS
12.3.1

2.3.2 $\text{Surface area} = 2 \times \text{Area of base} + \text{perimeter of base} \times \text{height}$
 $= 2(12,8 \text{ cm} \times 2,5 \text{ cm}) + 2(12,8 \text{ cm} + 2,5 \text{ cm}) \times 1,5 \text{ cm} \checkmark$
 $= 64 \text{ cm}^2 \checkmark + 30,6 \text{ cm} \checkmark \times 1,5 \text{ cm}$
 $= 64 \text{ cm}^2 + 45,9 \text{ cm}^2 \checkmark$
 $= 109,9 \text{ cm}^2 \checkmark$

1:SF(correct
values)
2:S (area of
base and
perimeter)
1:A (x 30,6
and 45,9)
1:CA

LO 3
AS
12.3.1

2.3.3 $\text{Surface Area of wrapping} = \text{SA of bar} + (12,5\% \text{ of bar})$
 $= 109,9 \text{ cm}^2 + (0,125 \times 109,9 \text{ cm}^2 \checkmark)$
 $= 109,9 \text{ cm}^2 + 13,7375 \text{ cm}^2 \checkmark$
 $= 123,6375 \text{ cm}^2 \checkmark$
 $= 123,64 \text{ cm}^2 \checkmark$

OR

$= 1,125 \checkmark \times 109,9 \text{ cm}^2 \checkmark$
 $= 123,6375 \text{ cm}^2 \checkmark$
 $= 123,64 \text{ cm}^2 \checkmark$

1:M (12,5%
of 109,9) CA
1:A (13,7375)
1:MA (add)
1:R (round to
123,64)

[35]

QUESTION 3

- LO 1
AS
12.1.1 3.1 3.1.1 (a) R 600 000 ✓
1:RT
- LO 1
AS
12.1.1 (b) Transfer Duty
= R 12 000 + 5% of the amount above R 1 000 000 ✓
= 12 000 + 0,05 x 200 000 ✓✓
= 12 000 + 10 000 ✓
= R 22 000 ✓
1:F(correct formula)
1:A(amount > 1 mil)
1:A(5%)
1:M(add)
1:A
- LO 1
AS
12.1.1 3.1.2 (a) Monthly repayments
= Bond amount in 1 000 x factor
= 1 200 ✓ x 9 ✓✓
= R 10 800 ✓
OR
Monthly repayments = $\frac{\text{Bond Amount}}{1\,000} \times \text{factor}$
= $\frac{1\,200\,000}{1\,000} \times 9$
= 1 200 ✓ x 9 ✓✓
= R 10 800 ✓
1:A(amount in 1 000)
2:RT(correct factor)
1:CA
- LO 1
AS
12.1.3 (b) Monthly salary = $\frac{R\,450\,000}{12}$ ✓
= R 37 500 ✓
30% of monthly salary = 37 500 x 0,3 ✓
R 11 250 ✓
OR
30% of salary = 450 000 x 0,3 ✓
= $\frac{135\,000}{12}$ ✓
= R 11 250 ✓
Yes she will qualify ✓
1:M (/12)
1:A
2:MA (0,3)
1:J
- LO 1
AS
12.1.1 (c) Monthly repayments
= Bond amount in 1 000 x factor
= 1 200 ✓ x 8,39 ✓✓
= R 10 068 ✓
OR
Monthly repayments = $\frac{\text{Bond Amount}}{1\,000} \times \text{factor}$
= $\frac{1\,200\,000}{1\,000} \times 8,39$
= 1 200 ✓ x 8,39 ✓✓
= R 10 068 ✓
The monthly repayment is R 732 (R 10 800 – R 10 068) less than the 20 year period ✓
OR
The longer the period, the less the monthly repayment ✓
1:A(amount in 1 000)
2:RT(correct factor)
1:A
1:R

LO 1 AS 12.1.1		(d) Final Amount = monthly repayment x number of payments $= 10\,800 \times 240 \checkmark\checkmark$ $= R\,2\,592\,000 \checkmark$	1:SF 1:C (convert 20yrs to months) 1:CA
LO 1 AS 12.1.1		(e) Interest = Final Amount – Loan Amount $= R\,2\,592\,000 - R\,1\,200\,000 \checkmark$ $= R\,1\,392\,000 \checkmark$	1:M 1:A
LO 2 AS 12.2.3	3.2	3.2.1 Interest \checkmark Interest is calculated on a new principal amount every month $\checkmark\checkmark$ OR Interest is compounded monthly $\checkmark\checkmark$ (Accept any other logical explanation)	1:A 2:R
LO 2 AS 12.2.3		3.2.2 Loan \checkmark Loan amount is decreasing $\checkmark\checkmark$ OR Interest is calculated on a smaller amount $\checkmark\checkmark$ (Accept any other logical explanation)	1:A 2:R
LO 2 AS 12.2.1		3.2.3 Accept 2022 – 2023 $\checkmark\checkmark$	2:A
LO 2 AS 12.2.3		3.2.4 With a home loan compounded interest (monthly) apply, while with vehicle finance simple interest apply $\checkmark\checkmark$	2:A

QUESTION 4

LO 2
AS
12.2.1

4.1 4.1.1 R 3 000 ✓✓

OR

$$\text{Total Cost} = 300 \times 10 = \text{R } 3\,000 \quad \checkmark\checkmark$$

OR

$$= 150 \times 20 = \text{R } 3\,000 \quad \checkmark\checkmark$$

OR

$$= 100 \times 30 = \text{R } 3\,000 \quad \checkmark\checkmark$$

OR

$$= 75 \times 40 = \text{R } 3\,000 \quad \checkmark\checkmark$$

OR

$$= 60 \times 50 = \text{R } 3\,000 \quad \checkmark\checkmark$$

2:A

LO 2
AS
12.2.14.1.2 $A \checkmark = p \checkmark n \checkmark$ OR

$$A \checkmark = p \checkmark \times n \checkmark \quad \text{OR}$$

$$3000 \checkmark = p \checkmark n \checkmark \quad \text{OR}$$

$$n \checkmark = A \checkmark / p \checkmark \quad \text{OR}$$

$$p \checkmark = A \checkmark / n \checkmark$$

3:F

LO 2
AS
12.2.1

4.1.3 A:

$$A = pn$$

$$3000 = p \times 20$$

$$p = \frac{3000}{20} \quad \checkmark$$

$$= \text{R } 150 \quad \checkmark$$

1:M

1:A

B:

$$A = pn$$

$$3000 = 75n$$

$$n = \frac{3000}{75} \quad \checkmark$$

$$= 40 \text{ children} \quad \checkmark$$

1:M

1:A

LO 2
AS
12.2.14.1.4 $3\,000 = pn$

$$3\,000 = p \times 45$$

$$p = \frac{3\,000}{45} \quad \checkmark$$

$$= \text{R } 66,67 \quad \checkmark$$

1:M

1:A

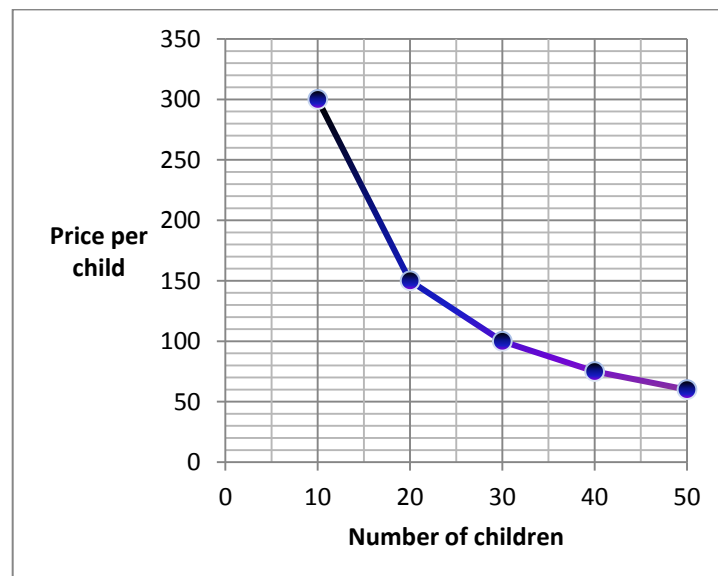
LO 2
AS
12.2.3

4.1.5 As the number of children increase, ✓ the price per child decrease ✓

2:A

LO 2
AS
12.2.2

4.1.6

5: 1 mark for
each point
plotted
correctly

LO 3
AS
12.3.1

4.2 4.2.1 Diameter = 2,7 cm x 2
 = 5,4 cm ✓
 Length of toy = 5,4 cm – 0,2 cm ✓✓
 = 5,2 cm ✓

1:A(diameter)
1:A(2mm to cm)
1:M
1:A

LO 3
AS
12.3.1

4.2.2 Volume of inner ball = $(\frac{4}{3})\pi r^3$
 = $(\frac{4}{3}) \times 3,14 \times (2,7 \text{ cm})^3$ ✓
 = $(\frac{4}{3}) \times 3,14 \times 19,683 \text{ cm}^3$ ✓
 = 82,41 cm³ ✓

1:SF(correct values)
1:S(2,7³)
1:A(in cm³)

LO 4
AS
12.4.5

4.3 4.3.1

	2 years	3 years	4 years	5 years	Total
Boys	5	3	6✓	8✓	22
Girls	4✓	8	5	6	23✓
Total	9	11✓	11	14	45

5:A
1 mark for each missing value

LO 4
AS
12.4.1

4.3.2 Average age of children
 = $\frac{(9 \times 2) + (11 \times 3) + (11 \times 4) + (14 \times 5)}{45}$ ✓✓
 = $\frac{18 + 33 + 44 + 70}{45}$
 = $\frac{165}{45}$ ✓
 = 3,67 years ✓

2:M
1:S
1:A

LO 4
AS
12.4.6

4.3.3 (a) P(girl aged 5 years) = $\frac{6}{45}$ ✓
 = 0,133 ✓ **OR** 13,3% ✓

1:A
(numerator)
1:A
(denominator)
1:A

LO 4
AS
12.4.6

(b) P(boy be invited) = $\frac{22}{45}$ ✓
 = 0,489 ✓ **OR** 48,9% ✓

1:A
(numerator)
1:A
(denominator)
1:A

LO 4
AS
12.4.6

(c) P(boy or girl aged 2 years be invited)
 = $\frac{9}{45}$ ✓
 = 0,2 ✓ **OR** 20% ✓

1:A
(numerator)
1:A
(denominator)
1:A

[43]

TOTAL:

150