basic education

Department:
Basic Education
REPUBLIC OF SOUTH AFRICA

NATIONAL SENIOR CERTIFICATE

GRADE 11

MATHEMATICAL LITERACY P2

EXEMPLAR 2013

MEMORANDUM

MARKS: 100

SYMBOL	EXPLANATION
M	Method
M/A	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
J	Justification

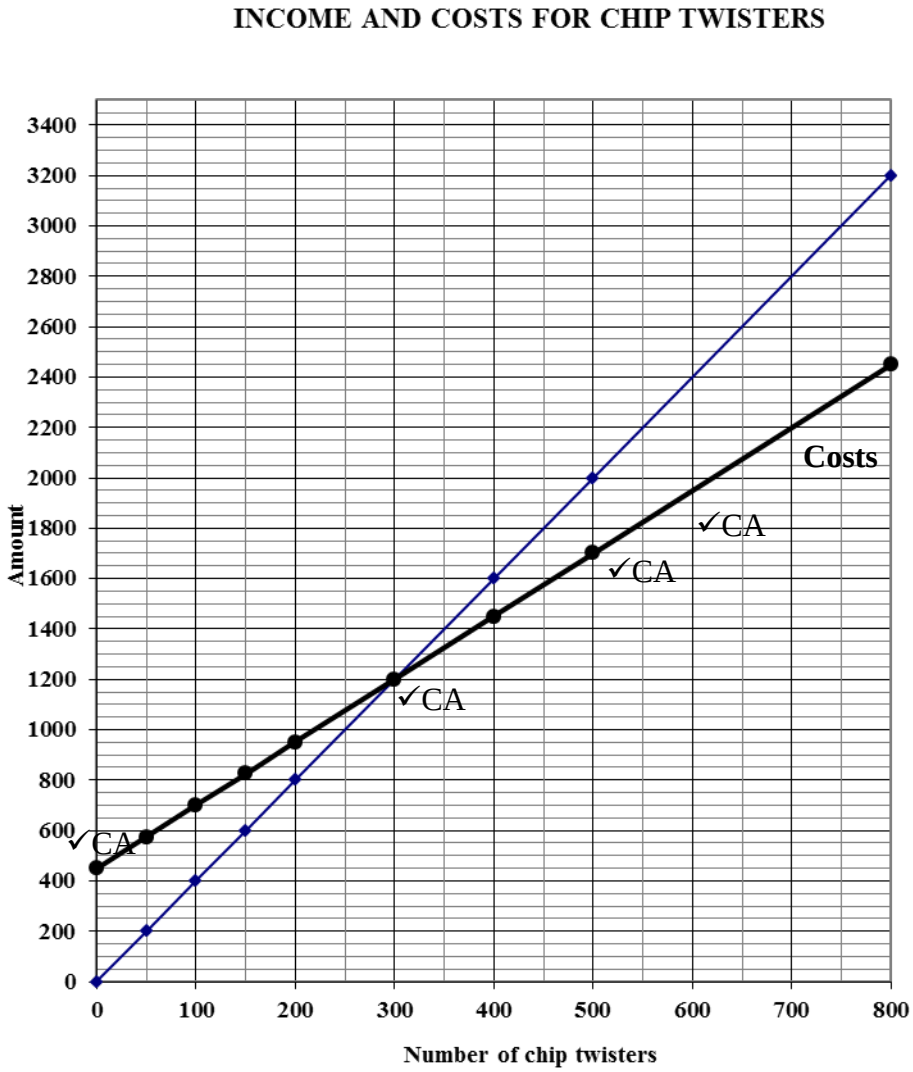
NOTE:

1. If a candidate deletes a solution to a question without providing another solution, then the deleted solution must be marked.
2. If a candidate provides more than one solution to a question, then only the first solution must be marked and a line drawn through any other solutions to the question.

This memorandum consists of 8 pages.

QUESTION 1 [35 MARKS]			
Ques	**Solution**	**Explanation**	**Topic**
1.1	Amount, end of 1 year = R1 730 × 1,075 ✓M ✓A = R1 859,75 ✓CA ✓A Amount after 2 years = R1 859,75 × 1,075 = R1 999,23 ✓CA **OR** Interest end 1st year = R1 730 × $\frac{7,5}{100}$ ✓M = R129,75 ✓A Accumulated amount = R1 730 + R 129,75 = R1 859,75 ✓CA Interest end of 2nd year = R1 859,75 × $\frac{7,5}{100}$ = R139,48 ✓CA Accumulated amount = R1 859,75 + R139,48 = R1 999,23 ✓CA **OR** ✓A ✓A Amount accummulated = R1 730$(1 + 0,075)^2$ ✓M = R1 999,2312 ✓CA = R1 999,23 ✓CA	1M multiplying 1A % increase 1CA 1st year's amount 1A 1st year's amount increased by % 1CA final amount **OR** 1M multiplying 1A 1 years interest 1CA final amount 1 year 1C A interest 2nd year 1CA final amount 1M using formula 1A value of i 1A value of n 1S simplification 1CA final amount (5)	**Fin**
1.2.1	Cost of 1 potato = $\frac{R49,00}{48}$ ✓M = R1,02 ✓A Cost of 1 bamboo stick = $\frac{R19,99}{100}$ = R0,1999 ≈ R0,20 ✓A Cost of 1,5 g seasoning = $\frac{R8,75 \times 1,5\,g}{200\,g}$ ✓A = R0,065625 ≈ R0,07 ✓A Total cost = R1,02 + R0,20 + R0,07 ✓M = R1,29 ✓CA	1M dividing by 48 1A cost per potato 1A cost per bamboo stick 1M using ratio 1A cost of seasoning 1M adding 1CA total cost (7)	**Fin**

Ques	Solution	Explanation	Topic
1.2.2	Amount of cooking oil = $\frac{2\ell}{48}$ ✓M = 0,0416666... ℓ ≈ 41,67 mℓ ✓A 750 mℓ cost R12,50 41,67 mℓ cost = $\frac{\text{R}12{,}50 \times 41{,}67\,\text{m}\ell}{750\,\text{m}\ell}$ ✓M = R0,6945 ≈ R0,69 ✓CA Cost of gas for 500 potatoes = R259,00 Cost of gas for 1 potato = $\frac{\text{R}259{,}00}{500}$ = R0,518 ≈ R0,52 ✓A Overal cost of 1 twister = R1,29 + R0,69 + R0,52 ✓M = R2,50 ✓CA	1M dividing by 48 1A amount of cooking oil 1M using ratio 1CA cost of cooking oil 1A cost of gas 1M adding 1CA overall cost (7)	**Fin**
1.3.1	Weekly cost (in rand) = 450 + 2,50 × number of twisters ✓✓A	2A correct formula (2)	**Fin**
1.3.2	✓SF R1 700 = R450 + R2,50 × number of twisters R1 250 = R2,50 × number of twisters ✓M $\frac{\text{R}1250}{\text{R}2{,}50}$ = number of twisters 500 = number of twisters ✓CA	1SF substitution 1M subtracting 450 1CA number of twisters (3)	**Fin**

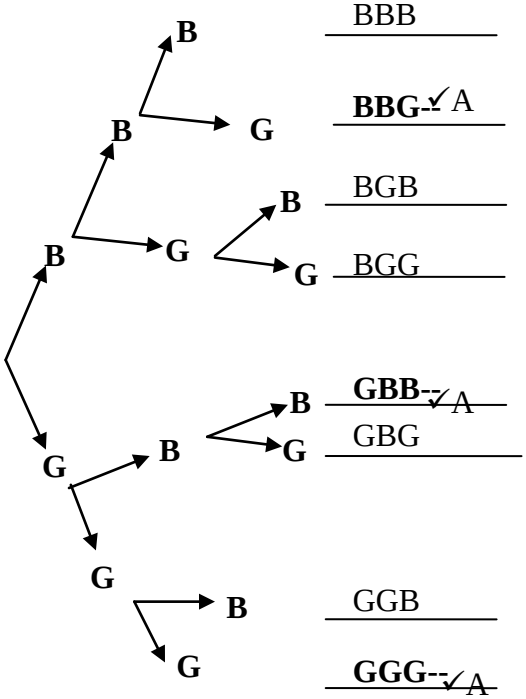
Ques	Solution	Explanation	Topic
1.4		1A (0 ; 450) 1CA break-even point 1CA any other point 1CA joining points (4)	**Fin**
1.5.1	✓RG 100 chip twisters = R400 ✓RG 1 chip twister = R4,00 ✓CA	2RG reading values from the graph 1CA price of one twister (3)	**Fin**
1.5.2	300 ✓✓RG	2RG reading from the graph (2)	**Fin**
1.6	°F = **(1,8** × **220** °C**) + 32°** ✓SF = 428 °F ✓A	1SF substitution 1A answer (2)	**Meas**

QUESTION 2 [19 MARKS]

Ques	Solution	Explanation	AS
2.1.1	V(rectangular) = 1,2 m × 45 cm × 8 cm ✓SF = 1,2 m × 0,45 m × 0,08 m ✓C = 0,0432 m^3 ✓CA	1SF substitution 1C converting to m 1CA volume (3)	**Meas**
2.1.2	radius = 9 cm ✓A V(cylindrical) = 3,14 × 9 cm × 45 cm ✓SF = 3,14 × 0,09 m × 0,45 m ✓C = 0,12717 m^3 ✓CA	1A value of radius 1SF substitution 1C converting to m 1CA volume (4)	**Meas**
2.2	Cost of foam = R400 × (0,0432 +2 × 0,12717) ✓M = R400 × (0,29754) ✓S = R119,016 ≈R119,02 ✓CA	1M multiplying total volume by R400 1S simplifying 1CA cost (3)	**Fin**
2.3	S.A. (rectangular) ✓SF = 2 × (1,2 × 0,45 + 0,45 × 0,08 + 0,08 × 1,2) m^2 = 2 × (0,672) m^2 ✓S = 1,344 m^2 ✓CA S.A. (cylindrical) ✓M ✓SF = 2 × (2 × 3,14 × $0,09^2$ + 2 × 3,14 × 0,09 × 0,45) m^2 = 2 × 0,305208 m^2 ✓S = 0,610416 m^2 ✓CA Total surface area = 1,344 m^2 + 0,610416 m^2 ✓M = 1,954416 m^2 ✓S ≈ 2 m^2 ∴ Rocco's calculation was correct. ✓O	1SF substitution 1S simplification 1CA rectangular surface area 1M multiplying by 2 1SF substitution 1S simplification 1CA cylindrical surface area 1M adding the surface areas 1S simplification 1O verification of statement (9)	**Meas**

QUESTION 3 [25 MARKS]			
Ques	**Solution**	**Explanation**	**AS**
3.1	15 : 80 ✓RT = 3 : 16 ✓CA	1RT reading from the table 1CA ratio in simplest form (2)	**Data**
3.2	✓M ✓RT A = 1 150 – (943 + 16 + 19 + 18 + 15 + 19 + 13 + 14 + 15 + 20 + 25 + 18) = 1 150 – 1 135 = 15 ✓CA B = 18% - (1,57% + 8,26% + 5,08%) ✓RG = 3,09% ✓CA	1M subtracting from 1 150 1RT reading from the table 1CA value of A 1RG reading from the graph 1CA value of B (5)	**Data**
3.3	Number of females = 1 150 – 943 = 207 ✓A Number of white females = 8,26% of 207 ✓M = 17,0982 ≈ 17 ✓CA P(white female) = $\frac{17}{1150}$ ✓CA ✓A = 0,01478...	1A number of females 1M using percentage white females 1CA number of white females 1CA numerator 1A denominator (5)	**Data**
3.4.1	Mean = $\frac{943}{12}$ ✓M ✓A = 78,58 ≈ 79 ✓CA	1M sum of all scores 1A number of scores 1CA mean (3)	**Data**
3.4.2	Mode = 15 ✓✓CA	2A correct mode (depends on value of A) (2)	**Data**
3.4.3	The order is 52; 60; 63; 71; 76; 79; 80; 80; 82; 85; 96; 119 ✓A Median = $\frac{79+80}{2}$ ✓M = 79,5 ≈ 80 ✓CA	1A arranging in ascending order 1M finding median 1CA median (3)	**Data**
3.4.4	Range = 25 – 13 = 12 ✓A ✓M	1M finding range 1A range (2)	**Data**

Ques	Solution	Explanation	AS
3.5	Each of the values gives a fair representation of the data values as they are all equal to 80.✓✓✓CA	3CA correct description (3)	**Data**

QUESTION 4 [21 MARKS]			
Ques	**Solution**	**Explanation**	**AS**
4.1.1	Length= 3,45 cm ✓A Breadth = 3,45 cm ✓A Scale is 3,45 cm : 3,45 m ✓M 3,45 cm : 345 cm ✓C 1 : 100 ✓CA	1A correct measurement 1A correct measurement 1M writing as a ratio 1C converting to cm 1CA simplified ratio (5)	**Plans**
4.1.2	1 (one) ✓✓A	2A correct number of windows (2)	**Plans**
4.2.1	✓A ✓A ✓A C – one window and one door	1A correct elevation 1A window 1A door (3)	**Plans**
4.2.2	✓A ✓A Lounge and Bedroom 1	1A lounge 1A bedroom 1 (2)	**Plans**
4.3.1		1A result BBG 1A result GBB 1A result GGG (3)	**Prob**
4.3.2	P(at least two girls) = $\frac{4}{8}$ ✓A = $\frac{1}{2}$ ✓A ✓S	1A numerator 1A denominator 1S simplify (3)	**Prob**
4.3.3	✓A ✓A ✓A BBG; BGB; GBB	1A BBG 1A BGB 1A GBB (3)	**Prob**

TOTAL: 100