higher education & training

Department:
Higher Education and Training
REPUBLIC OF SOUTH AFRICA

MARKING GUIDELINE

NATIONAL CERTIFICATE (VOCATIONAL)

NOVEMBER EXAMINATION 2013

MATHEMATICAL LITERACY
(Second Paper)
NQF LEVEL 3

5 NOVEMBER 2013

Symbol	Explanation
M	Method
MA	Method with accuracy
CA	Consistent accuracy
A	Accuracy
C	Conversion
S	Simplification
RT/RG/RD/RM	Reading from a table/graph/drawing/document/map
F	Choosing correct formula
SF	Substitution in formula
R/J	Reasoning/Justification
P	Penalty, e.g. formants, incorrect rounding off etc.
R	Rounding off
E	Explanation
U	Unit

This marking guideline consists of 11 pages.

QUESTION 1
No marks deducted if the 'R' sign is omitted.

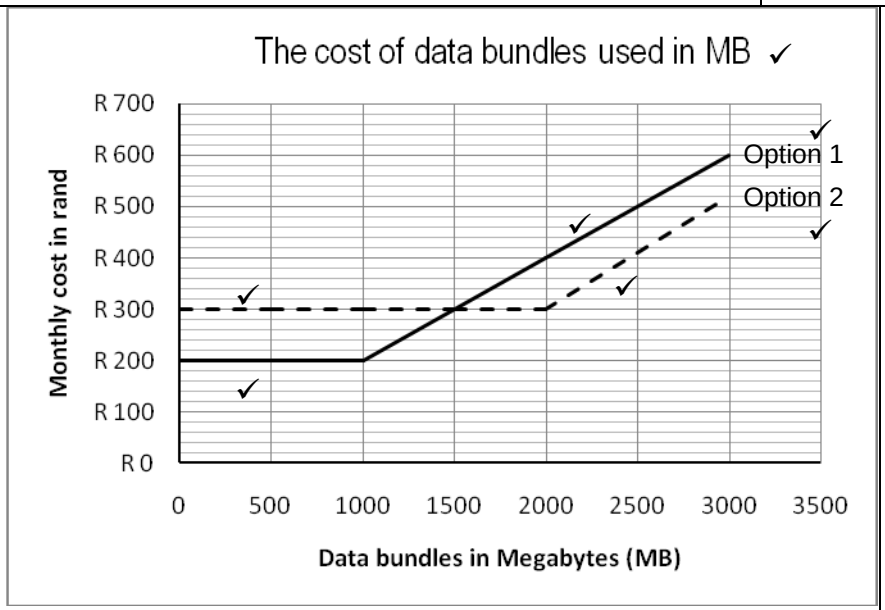
Question	Solution	Explanation
1.1		
1.1.1	500✓✓mℓ	2 A solution (2)
1.1.2	500 : Total Sodium 100 : 2 ✓ Total Sodium = (500 × 2)÷100 ✓ Total Sodium = 10mg✓ OR ✓ ✓ ✓ 2 × 5 = 10mg	2 M method 1 A solution Correct answer only: full marks (3)
1.1.3	Carbohydrates = 60✓× 2✓ or 30 × 4 Carbohydrates = 120✓g OR 2*l* = 2000*ml* 2000 ÷ 500 ✓ = 4 4 × 30✓ = 120✓g	1RT correct value 1 M method 1 A solution Correct answer only: full marks (3)
1.1.4	0,5 : 580 1,2 : Energy ✓ ✓ Energy = $\frac{1{,}2 \times 580}{0{,}5}$ ✓ Energy = 1 392✓kJ OR 1,2*l* = 1200*ml*✓ 1200 ÷ 100✓ = 12 12 × 116✓ = 1 392✓kJ 1 : 1 160 1,2 : Energy ✓ ✓ Energy = $\frac{1{,}2 \times 1160}{1}$ ✓ Energy = 1 392✓kJ	3 M method 1 A solution Correct answer only : Full marks (4)
1.2		
1.2.1	Compound interest✓✓	2 A solution (2)

1.2.2	2014✓✓ OR 2013 to 2014✓✓		2 A solution (2)
1.2.3	R56 500✓✓ (Answer should be greater than 56 000 and less than 57 000)		2 A solution (2)
1.2.4	✓ ✓✓ $i = 100\left(\sqrt[1]{\frac{50400}{45000}} - 1\right)$ $i = 100(1{,}12 - 1)$ ✓ $i = 12\%$✓	✓ ✓ ✓ $50400 = 45000\left(1 + \frac{i}{100}\right)^1$ $1{,}12 = 1 + \frac{i}{100}$ $i = (1{,}12 - 1)100$ ✓ $i = 12\%$✓	3 SF substitution (1 mark - 1 ; 1 mark – 50 400 ; 1 mark– 45 000) 1 M 1 A solution
	OR ✓ ✓✓ $i = 100\left(\sqrt[1]{\frac{50400}{45000}} - 1\right)$ $i = 12\%$✓✓		3 SF substitution (1 mark - 1 ; 1 mark – 50 400 ; 1 mark– 45 000) 2 A solution
	OR 50 400 – 45 000 =5 400✓ ✓ $= \frac{5400}{45000} \times 100$ = 12% ✓		Minus 2 marks for NOT using formula 1 Calculating interest 1 M – Calculating % 1 A
	OR $A = P\left(1 + \frac{i}{100}\right)^n$ ✓ ✓ ✓ = R45 000(1 + 12%)^1 = R45 000(1 + 0,12)^1✓ = R45 000(1,12)^1 = R50 400 ✓		3 SF substitution 1 M 1 A (5)

1.2.5	Interest = R79 305,38✓ - R45 000✓ Interest = R34 305,38✓	1 A values 1 M subtraction 1 A solution Correct answer only: full marks (3)
1.3		
1.3.1	29 of May✓✓	2 A solution (2)
1.3.2	=R13 265,00✓ - R12 280,00✓ = R985,00✓	2 M method 1 A solution Correct answer only: full marks (3)
1.3.3	April ✓ 7 times ✓	1 A solution 1 A solution (2)
1.3.4	No✓ High season dates: 01 September - 15 November✓✓ OR No✓ Low season dates: 16 November – 31 December✓✓	1 A correct answer 2 R reason (3)
1.3.5	R16 505,00✓✓ (during high season)	2 A solution (2)
1.4		
1.4.1	= 32✓ – 6 ✓ = 26✓	2RG correct values 1 A difference Correct answer only: full marks (3)
1.4.2	Property related✓& Other serious crimes✓ Or Contact related crimes	2 A correct answer (Any two correct) (2)
1.4.3 (a)	Increasing ✓✓	2 A correct answer (2)

(b)	Stays the same / No change✓✓	2 A correct answer (2)
	Stays the same / No change✓✓	2 A correct answer (2)
1.4.4	26%✓✓ Accept: $\frac{26}{100};\frac{13}{15};0,26$	2 A correct answer (2)
1.4.5	= 31%✓ of 16 567 = 0,31 × 16 567✓ = 5135,77✓ = 5 135 or 5136✓ cases (No fraction of a case) (If the % used is incorrect, give the next 3 marks if calculations are correct, therefore CA)	1 RG correct value CA incorrect % 1 M method 1 CA solution 1 R rounding (4) **[55]**

QUESTION 2 **No marks deducted if the 'R' sign is omitted.**		
Question	**Solution**	**Explanation**
2.1		
2.1.1	Cost =(R 0,20 × MB used after 1000MB was reached) ✓ + R 200✓	2 A correct answer (2)
2.1.2	R200,00✓✓	2 A correct answer (2)
2.1.3	= (R0,20 × 200✓) + R300 = R40 + R300✓ =R340,00✓	1 SF substitution in formula 1 M method 1 A solution Correct answer only: full marks (3)

2.2		
2.2.1	A = (0,2 × 2000✓) + R200 = R400 + R200✓ = R600,00✓	CA with 2.1.1 1 SF substitution in formula 1 M method 1 A solution Correct answer only: full marks (3)
2.2.2	✓ ✓ 300 = (0,2 × (B-1000)+200 100 = 0,2 × (B-1000) ✓ B-1000 = 500✓ B =1500✓ OR ✓ ✓ 300 = (0,20 × MB) + 200 300 – 200 = 0,20MB✓ $\frac{100}{0,20} = \frac{0,20MB}{0,20}$ ✓ 500 = MB ∴ B = 1 000 + 500 = 1 500 MB ✓	CA with 2.1.1 2 SF 2 M 1 A Correct answer only : 2 marks (5)
2.3		
		CA values of 2.2 (A and B) 2 Labels: graphs 1 Title **Correctness of graph:** 2 correct horizontal lines and 1 correct line starting from (2000;300) ending at (3000;520) 1 correct line starting from (1000;200) ending at CA (3000;600) (7)
2.4	Option 2✓ Noko gets 500✓ more✓data bundles in Option 2 than in Option 1 for R400.	1 A correct answer 2 A key words

	or Noko gets 500✓ less✓data bundles in Option 1 than in Option 2 for R400.	(3) **[25]**

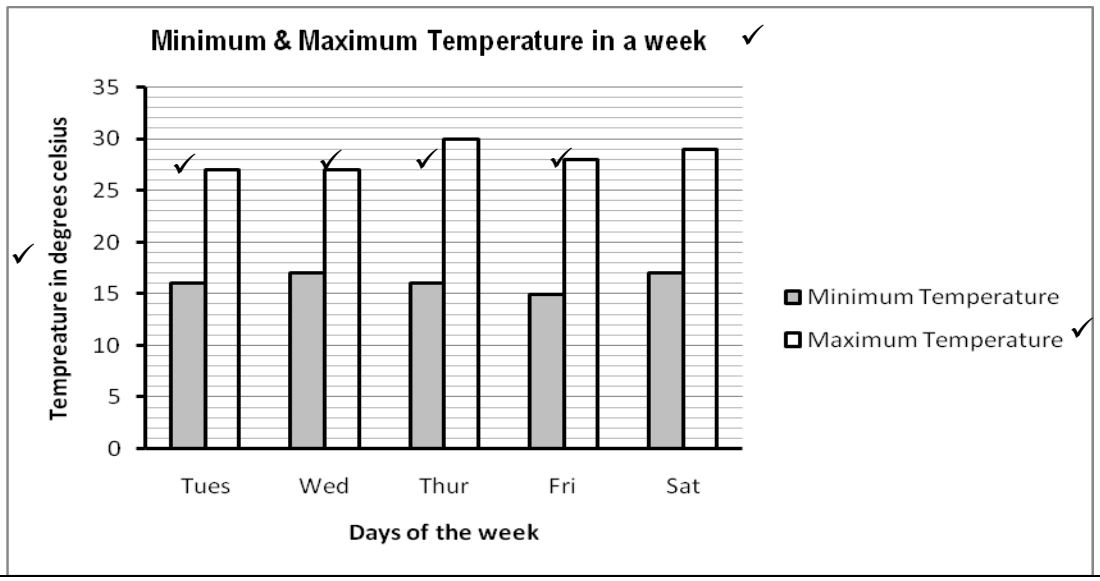
QUESTION 3		
3.1 3.1.1		
(a)	= 32 ÷ 2 ✓ =16 rooms✓	1 M method 1 A solution Correct answer only: full marks (2)
(b)	= 24 ÷ 2 ✓ =12 rooms✓	1 M method 1 A solution Correct answer only: full marks (2)
3.1.2	<u>Projected income by girls</u> = 32✓girls[(R1 450×11)✓ + (R1 450)✓+ (R100×4)✓] = R510 400 + R46 400 + R12 800✓ = R 569600✓	4 M method 1 Simplify 1 A solution (6)
3.1.3	Boys are more untidy.✓✓ Any other suitable reason	2R reason (2)
3.2		
3.2.1	Yes✓ A pair means two therefore one boy is without a room mate✓ Any other suitable reason	1 A correct answer 1 R reason (2)
3.2.2	A = R983 200 – (R26 200 +R79 750)✓ A = R877 250✓ B = R877 250 - R893 200 ✓ B = -15 950✓ or B = -R18 400 - (-R1 000 - R1 450) B = -R18 400 + R2 450 B = -R15 950	2 M method 2 A correct answer CA with 'A' Correct answers only: full marks (4)

3.2.3	See Annexure B	6 A correct answers (6)
3.2.4	Less than projected✓✓ or More than realised✓✓	2R reason (2) **[26]**

QUESTION 4		
Question	**Solution**	**Explanation**
4.1	Volume in litres =(1m × 0,6m)✓ × 0,5m✓ = 0,3✓m^3 = 0,3 × 1 000✓ = 300✓ litres	2 SF substitution in formula 2 M method 1 A solution (5)
4.2	Time taken = 300 ÷ 16✓ = 18,75 min✓ But (0,75min × 60 = 45 sec)✓ =18 min 45 sec✓	CA from 4.1 3 M method 1 A solution (4)
4.3	= 0,5m + 0,1m✓ = 0,6m✓	1 M method 1 A solution Correct answer only: full marks (2)
4.4	Area = (1 × 0,6)✓ + 2(1 × 0,6) ✓+ 2(0,6 × 0,6)✓ Area = 0,6 + 1,2 + 0,72✓ Area = 2,52✓m^2 Cost of glass = R61,50 × 2,52✓ = R154,98✓	3 SF substitution in formula 1S 1 CA solution 1 M multiply 1 CA cost (7)
4.5	Yes ✓ It will alert you when the tank is full.✓✓ Help to avoid over filling the tank Any other suitable reason	1 A correct answer 2 R reason (3) **[21]**

QUESTION 5
Do not subtract marks if ^{0}C is omitted.

Question	Solution	Explanation
5.1		
5.1.1	16✓✓ ^{0}C	2 A correct answer (2)
5.1.2	28✓✓ ^{0}C	2 A correct answer (2)
5.2		
5.2.1	= (16 + 17 + 16 + 15 + 17) ✓÷ 5✓ = 16,2✓ ^{0}C OR ✓ $\frac{81}{5}$ = 16,2✓ ^{0}C ✓	2M method 1 A Correct answer only: full marks (3)
5.2.2	= (27 + 27 + 30 + 28 + 29)✓ ÷ 5✓ = 28,2 ✓^{0}C OR ✓ $\frac{141}{5}$ = 28,2✓ ^{0}C ✓	2M method 1 A Correct answer only: full marks (3)
5.3	**Either** the **median** or the **mean** ✓ can represent the minimum temperatures. (they are close to each other) The temperatures are nearly the same and there are no outliers.✓✓	1 A correct answer 2 R reason (3)
5.4	Probability = ✓ $\frac{2}{5}$ ✓or 40% or 0,4 ✓	1 A 2 1 A 5 1 M fraction / % / decimal (3)

5.5	1 Title 1 Label : Y - Axis 1 Legend 4 Correctness: graph – penalize with 1 mark for each day wrong (7) 

ANNEXURE B

NOKO'S ACCOMMODATION: INCOME AND EXPENDITURE STATEMENT YEAR 2012				
	Item No:	Budget (projected)	Actual (realised)	Variance
INCOME:		**Rand**	**Rand**	**Rand**
Deposit	1	81 200	79 750	- 1 450
Rent	2	893 200	**A**	**B**
Levy	3	27 200	26 200	- 1 000
TOTAL INCOME	4	**1 001 600**	**983 200**	**- 18 400**
EXPENSES:		**Rand**	**Rand**	**Rand**
Water and electricity	5	200 400	**200 000**	**- 400**
Maintenance	6	52 000	**51 050**	**- 950**
Recreational facilities and events	7	61 900	**60 000**	-1 900✓
Salaries	8	300 000	**309 000**	**9 000**
Insurance	9	60 000	**59 000**	**- 1 000**
Telephone and fax	10	24150	25000✓✓	**850**
Administration	11	14 000	**13 650**	**- 350**
Other	12	45 000✓✓	**43 000**	**-2 000**
TOTAL EXPENSES	12	**757 450**	**760700**	**3250**
SURPLUS/DEFICIT	13	244 150✓	**222 500**	**- 21 650**

TOTAL: 150