higher education & training

Department:
Higher Education and Training
REPUBLIC OF SOUTH AFRICA

MARKING GUIDELINE

NATIONAL CERTIFICATE (VOCATIONAL)

NOVEMBER 2011

MATHEMATICAL LITERACY
(Second Paper)

NQF LEVEL 2

9 NOVEMBER 2011

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. for no units, incorrect rounding off etc.
R	Rounding off

This marking guideline consists of 8 pages.

QUESTION 1 [35]

	Question	Solution	Explanation
1.1	1.1.1	Female 22 years old✓✓	2 A (2)
	1.1.2	21 years old✓✓	2 RT (2)
	1.1.3	23 years old✓✓	2 RT (2)
1.2	1.2.1	$\frac{20}{100} \times \frac{R19750}{1}$ ✓ = $\frac{R395000}{100}$ = R3 950,00✓	1 M calculation for deposit 1 A (full marks for answer only) (2)
	1.2.2	<u>Calculate instalments for 6 months:</u> R3 192,92 × 6✓ = R19 157,52✓ Total amount paid = 6 Instalments +Deposit paid: R19 157,52 + R3 950,00✓ = R23 107,52✓ Or ✓ ✓ R3 950 + (R3 192,92 × 6) = R3 950,00 + R19 157,52 ✓ = R23 107,52 ✓	<u>Calculate instalments for 6 months:</u> 1 M ×6 1 A R19 157,52 <u>Total amount paid:</u> 1 M + SF (**carry forward answer 1.2.1**) 1 CA answer R23 107,52 (4)
	1.2.3	R23 107,52 – R19 750,00✓ = R3 357,52✓	(**carry forward answer 1.2.2**) 1 M subtraction 1 CA (2)
	1.2.4	$\frac{3357,52}{19750} \times \frac{100}{1}$ ✓ = $\frac{335752}{19750}$ ✓ = 17%✓	(carry forward answer 1.2.3) 1 M 1 CA 1 A Have to work towards 17%. No marks if student works with 17%. (3)

1.3	1.3.1	Volume of rect. block = $10,5 \times 8,2 \times 0,2$ ✓ $= 17,22\ m^3$ ✓ Volume of hole = $3,14 \times 3^2 \times 0,2$ ✓ $= 5,652\ m^3$ ✓ Total volume = $17,22 - 5,652$ ✓ $= 11,568\ m^3$ $= 11,6\ m^3$ ✓	<u>Calculate volume:</u> 1 SF 1 A and unit. No mark if unit is wrong or omitted. 1 SF 1 A 1 Subtraction 1 A, approximated to first dec. (6)
	1.3.2	R 120 × 6 ✓ = R 720 ✓	1 M 1 A (2)
1.4	1.4.1	17 cents ✓	1 A (1)
	1.4.2	65 cents ✓	1 A (1)
	1.4.3	7 minutes × 17 cents / minute✓ = 119 cents (R1 = 100 cents) =R1.19✓	1 M 1 A (R or cent) (2)
	1.4.4	7 minutes × 38 cents / minute✓ = 266 cents (R1 = 100 cents) = R2.66✓	1 M 1 A (Rand or cent) (2)
	1.4.5	R 2,66 - R 1,19 ✓ = R 1,47 ✓	1 M 1 CA (Carry forward 1.4.3 and 1.4.4) (2)
	1.4.6	$\frac{147}{17}$ ✓ = 8,65 minutes ✓	1 M 1 CA (Carry forward 1.4.5) (If units are different, 1 mark for dividing by 17) (2) **[35]**

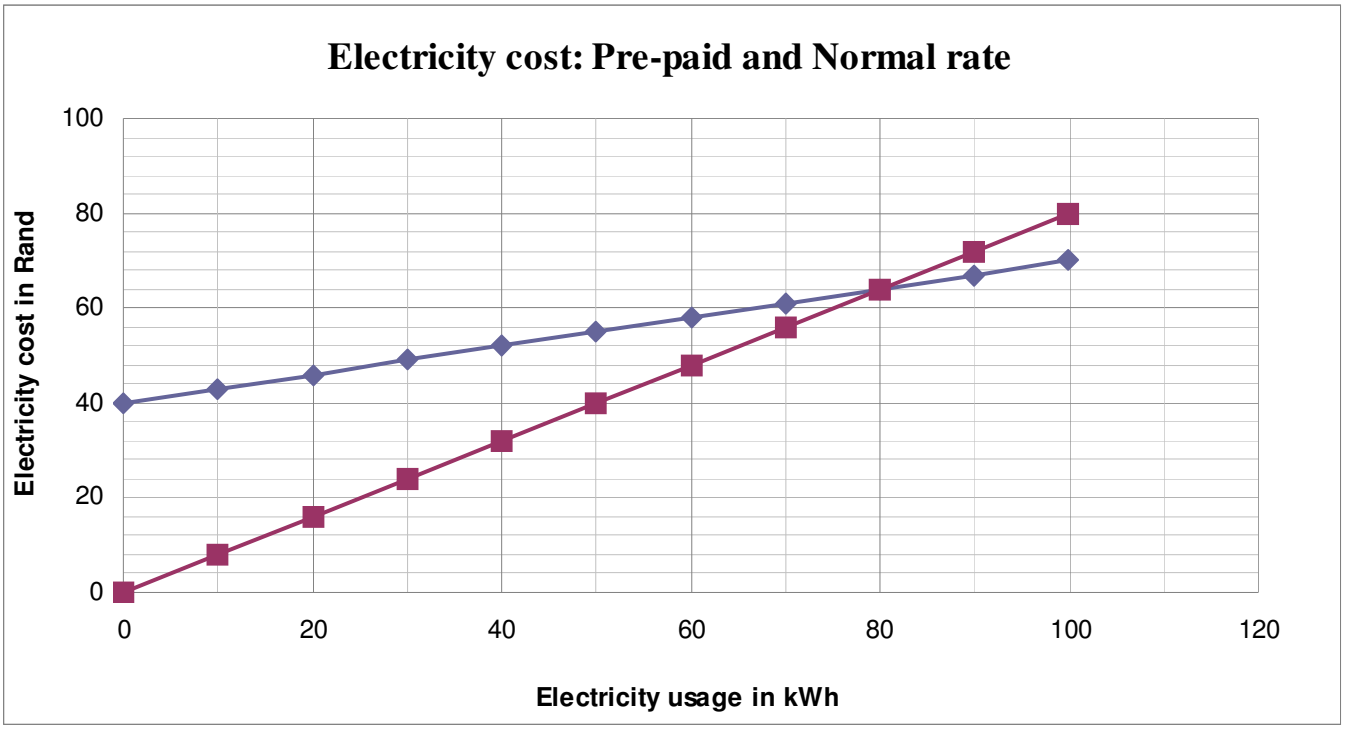
QUESTION 2 [15]

Question	Solution	Explanation
2.1.(a)	a = R40 + R0.30×10 = R43 ✓	3 A
(b)	b = R32 ÷ R0,80 = 40 ✓	
(c)	c = R0,80 × 80 = R64 ✓	(3)

2.2	2.2.1	✓ ✓ Cost = R0,80 × kWh	2 A correct formula Accept any variable instead of kWh (2)
	2.2.2	✓ ✓ ✓ Cost = R40,00 + R0,30 × kWh	3 A correct formula Accept any variable instead of kWh (3)

2.3	Cost for 257,3 kWh : Cost = R40,00 + R0,30 × 257,3✓ Cost = R40,00 + R77,19 ✓ Cost = R117,19✓	(Carry forward 2.2.2) 1 SF 1 M 1 CA correct answer (3)

2.4	1 A Plotting points and producing a straight line. 1 A beginning and (0; 0) 1 A ending point (100; 80) 2 A other points	No mark if points not plotted Construct line graph Carry forward 2.1 (5)



2.5	2.5.1	Prepaid ✓ Line beneath normal rate therefore cheaper✓	1 A choice 1 R/J The reason must refer to the graph or making use of the equation. (2)
	2.5.2	Normal Rate ✓ Line beneath prepaid rate therefore cheaper✓	1 A choice 1 R/J (2) **[20]**

QUESTION 3 [15]

Question	**Solution**	**Explanation**
3.1	R2 500.00✓✓	2 RT (2)
3.2	She deposited the income form the December /January , Christmas , New Year period. ✓✓	2 RT with R/J Any logical reason. (2)
3.3	Service Fee: Amount deposited × 0.01 = R2 250.50 × 0.01✓ = R22.51✓	1 M 1 A (2)

3.4	3.4.1	<u>Total Debits:</u> ✓ R2 500 + R1 369.50 + R4 694.21 + R 203,52 = R8767,23 ✓	1 M 1 A (2)
	3.4.2	<u>Total Credits:</u> R3 450.00 + R1 850.00 + R1 950.50 + R985.00 + R2 156.50✓ = R10 392.00✓	1 M 1 A (2)
	3.4.3	Closing Balance: = Opening Balance + Total Credits – Total Debits 12576,12 + 10392 - 8767,23 ✓ = R 14200,89 ✓	(Carry forward answers of 3.4.1 and 3.4.2) 1 SF 1 CA (2)

3.5	I disagree with the statement. ✓ Nomonde has other expenses, for example Service Fees incurred. ✓✓	1 A disagree 2 R/J If answer is "agree", no mark, but marks can be awarded to logical/appropriate reasoning. (3) **[15]**

QUESTION 4 [15]

Question	**Solution**	**Explanation**
4.1.1	Length of the court = 10,2m × 3 ✓ = 30,6m ✓ Breath of the playing court = 16,2m ∴ Area of playing court = l × b = 30,6m × 16,2m ✓ = 495,72m^2 ✓ Or ∴ Area of a third of the court = l × b = 10,2m × 16,2m ✓ = 165,24m^2 ✓ Full court = 165,24m^2 × 3 ✓ = 495,72m^2 ✓	<u>Length of the court:</u> 1 MA + RT 1 A 30,6m <u>Area of playing court:</u> 1 SF 1 CA 495,72m^2 No penalty for omitting the unit. (4)
4.1.2	Paint coverage: 4m^2 = 1 litre → 1m^2 = 1 litre ÷ 4 = 0,25 litres✓ ∴ 495,72m^2 = 485,72 × 0,25✓ = 123,93 litres = 124 full litres✓ Or $\frac{495,72}{4}$ =123,93 =124 *litres*	(Carry forward answer of 4.1.1) 1 C 0,25 litres 1 M 1 A 124 litres - rounding up 1 M Dividing by 4 1 A 1 A rounding up. (3)

4.2	Vertical lines = $4 \times 16,2 = 64,8$ m ✓ Horizontal lines = $2 \times 30,6 = 61,2$ m ✓ Semi circle $\times$ 2 = $2 \times 3,14 \times 5 = 31,4$ m ✓✓ Circle = $2 \times 3,14 \times 0,45 = 2,826$ ✓✓ Total length of straight lines = 64,8 + 61,2 + 31,4 + 2,826 ✓ = 160,226 m ✓	6 M 2 CA (8)
		[15]

QUESTION 5 [15]

Question	**Solution**	**Explanation**
5.1	$\frac{10,2}{100} \times \frac{11904}{1}$ = $\frac{121420,80}{100}$ ✓ = 1 214,208 (No fraction of a person) = 1 215 people✓	1 M 1 MA Accept both 1 215 and 1 214 (2)
5.2	✓ ✓ = $\frac{33}{100} \times \frac{11904}{1}$ = 3 928,32 = 3 928 people ✓ Or ✓ ✓ = $\frac{67}{100} \times \frac{11904}{1}$ = 7 975,68 = 11 904 - 7 975,68 = 3 928,32 = 3 928 people ✓	2 M 1 CA Also accept 3 929 (3)

5.3	5.3.1	Graph 2. ✓ A : 17%✓ B : 56%✓ C : 27%✓	1 R 1 R 1 R 1 R (4)

	5.3.2	Wanting to know: $\frac{56}{100} \times \frac{1215}{1}$ ✓ = 680,4 ≈ 680 ✓ Already know: $\frac{17}{100} \times \frac{1215}{1}$ ✓ =206,55 ≈ 207✓ Don't want to know: $\frac{27}{100} \times \frac{1215}{1}$ ✓ =328,05≈ 328✓	1 M 1 A/R 1 M 1 A/R 1 M 1 A/R (6) **[15]**

TOTAL: 100