higher education & training

Department:
Higher Education and Training
REPUBLIC OF SOUTH AFRICA

MARKING GUIDELINE

NATIONAL CERTIFICATE (VOCATIONAL)

NOVEMBER EXAMINATION 2011

MATHEMATICAL LITERACY
(Second Paper)

NQF LEVEL 4

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
E	Explanation

This marking guideline consists of 7 pages.

QUESTION 1.1 [12]

Question	Solution	Explanation	
1.1.1	A = 10✓ B = 1✓ C = 1✓	3 × 1 A correct answer	(3)
1.1.2	P(white Toyota) = $\frac{8}{20}$ ✓ = $\frac{2}{5}$ ✓= 0,4✓	2 M method. 1 A correct answer	(3)
1.1.3	P(Corolla 1.3) = $\frac{4}{20}$ ✓ = $\frac{1}{5}$ ✓= 20%✓	2 M method. 1 A correct answer	(3)
1.1.4	P(Metallic blue Verso) = $\frac{2}{4}$ ✓✓ = $\frac{1}{2}$ ✓	2 M method. 1 A correct answer	(3)

QUESTION 1.2 [10]

Question	Solution	Explanation	
1.2.1	Percentage of deposit $= \frac{21840}{182000} \times 100\%$ ✓✓✓ $= 12\%$	1 RT 1 M 1 A - solution	(3)
1.2.2	Total repayment: = 24 440 + (60 × 3 325) ✓ + 85 540✓ = 24 440 + 199 500 ✓+ 85 540 = R 309 480	1 RT dep & fin balloon 1 M installments 2 A – solution installment	(4)
1.2.3	Amount Mr Smith would have saved = R309 480 – R 244 400✓ = R 65 080✓	1 M 1 CA	(2)
1.2.4	Pay too much of interest✓ Take approx. 5years to settle debt or Any other acceptable reasons.	2 E	(1)

QUESTION 1.3 [13]

Question	Solution	Explanation	
1.3.1	Colesburg to Touws River = 837 ✓– 232✓ = 605 km✓	2 RM 1 MA	(3)
1.3.2	14 litres : 100 km ∴ Litres of Petrol : 1004 km✓ Litres of petrol for journey $=\frac{14\times1004}{100}$ ✓✓ $=140{,}56\,litres$ ∴ Cost of petrol = 140,56× R9, 15 ✓= R1 286,12✓	1 M – rate 2 CA 2 MA	(5)
1.3.3	Distance: Bloemfontein-Beaufort West = 568km✓ $Time=\frac{568km}{90km/h}$ $=6{,}31\,hours$ ✓✓✓✓ $\approx 6\,hours$	1RM 1M 1 SF 1 A 1 R	(5)

QUESTION 1.4 [14]

Question	Solution	Explanation	
1.4.1	Amount borrowed = 0,7 ✓of R290 000✓ = R203 000✓ **Alternate method:** Deposit = 0,3 of R290 000 = R87 000 ∴ Amount borrowed = R290 000 – R87 000 = R203 000 Number of R1000 = 203 ∴ Monthly repayment = 203✓× R10,15✓ = R2 060,45	2 M method 1 A correct answer 2 M method.	(5)
1.4.2	Total monthly instalments = R2060,45 × 12✓ × 20✓ = R494 508✓ Total cost = R494 508 + R87 000✓ = R 581 508✓	3 MA 1 SF 1 A correct answer	(5)

1.4.3	Total interest = Total instalments – loan amount✓ = R494 508✓ – R203 000✓ = R 291 508✓ Or R 581 508 - R290 000 = R 291 508	1 M – correct formula 2 SF 1 CA	(4)

QUESTION 2 [29]

Question	Solution	Explanation	
2.1	1kW = 1 000W Total kW = 15W × 4 = 60 W✓ $= \frac{60}{1000}$ ✓ = 0,06 kW ✓	 1 M 1 C 1 A conversion	(3)
2.2	Running cost = 0,015 × 65,35c✓ = 0,98025cents✓ $= \frac{0,98025}{100}$ ✓ = R0,0098✓ ≈ R0,01	1 SF 1 A 1M - conversion 1R – correct to 4 decimal places	(4)
2.3	A = R17,95✓✓ B = R9,99✓✓	2 MA – using table values 2 MA – using table values	(4)
2.4	Total cost = 16,95 + 0,01 × no hours used ✓✓	2 MA – correct formula	(2)
2.5.1	R16, 95✓ and R3, 99✓ represents the fixed cost of each light bulb.	2E – fixed cost	(2)
2.5.2	Accept any answer between 400 and 450 hours✓✓ (440/441)	2 RG	(2)
2.5.3	R27,99✓ – R22,95 ✓= R5,05 ✓ Accept any answer between R3 and R 6	1 RG (26 -29) (22-24) 1 M - subtracting 1 A - answer	(3)
2.5.4	Saving = R53 ✓✓ – 23✓✓ = R 20✓	2 M + 2 A 1 A	(5)
2.6.1	No. It is only 1 or 2 cents difference	2 Statement only valid with R/J	(2)
2.6.2	Yes. Dependent on the number of consumers it will increase the income significantly	2 Statement only valid with R/J	(2)

QUESTION 3 [23]

Question	Solution	Explanation	
3.1.1	Net income = R17 827,68 ✓ – R3 497,58✓ = R14 330,10✓	1 RT 1M 1 A	(3)
3.1.2	Basic Salary= R15 771, 93✓× 1,12✓= R17 664,56✓ Alternate solution: Increase = R15 771, 93 × 12% = R1 892, 63✓ ∴ Basic salary = R15 771,93 + R1 892, 63✓ = R17 664,56✓	3 MA	(3)
3.1.3	UIF % = $\frac{88,36}{15771,93}$ ✓✓ = 0,56%✓	1 RT 1 M 1 CA	(3)
3.2.1	Annual taxable income = R17 827,68 × 12✓ = R213 932,16✓ Tax on taxable income: Bracket = R27 000 + 25% of amount above R150 000✓ = R27 000 + 25% of R63 932,16✓ = R27 000 + R15 983,04✓ = R 42 983,04✓ Rebate(55 yr old) = R10 755 ✓ ∴ Tax for 2010/11 = R42 983,04 – Rebate = R42 216,04 - R10 755✓ = R32 228,04✓	2 MA 1 RT 1 A – R63 932,16 1 A 1 CA 1RT 1 M 1 A	(9)
3.2.2	Income tax paid = R2 785,67 × 12✓ = R33 428,04✓ Amount owing by him/to him = R33 428,04 - R32 228,04✓ = R1 200✓ SARS owe him. ✓	2 MA 1 M 1 CA 1 choice	(5)

QUESTION 4 [26]

Question	Solution	Explanation	
4.1	12 mm : 1m✓✓	1 M 1 A	(2)
4.2	Length = 1,6 + 3 + 3,4 = 8 m✓ Breadth = 2,3 + 3 = 5,3 m✓ Area of flat = 8 × 5,3✓ = 42,4 m^2 ✓	1 A 1 A 2 MA	(4)
4.3	Length of patio: 8 m – 3,4 m = 4,6 m✓ Width = 1 m Area = 4,6 × 1 = 4,6 m^2 ✓ Total area = 42,4 m^2 + 4,6 m^2 = 47 m^2✓ Amount per square metre $= \frac{R290000}{47}$ ✓✓✓ $= R6170,21\ per\ m^2$	1 A patio 1 A Total area 2 M 1 CA	(6)
4.4.1	Conversions: Length = $\frac{1200}{1000}$ = 1,2 m✓ Breadth = $\frac{800}{1000}$ = 0,8 m✓ Area of wardrobe = 1,2 m ×0,8 m = 0,96 m^2 ✓ Area of bed = 1,9 m × 1,1 m = 2,09 m^2 ✓ Area of bedroom = 3 m × 3,4 m = 10,2 m^2 ✓ Area of floor space = 10,2 m^2 - 0,96 m^2 - 2,09 m^2 = 7,15 m^2 ✓	1MA 1 MA 1 M/CA 1 MA 1 MA 1 CA	(6)
4.4.2	Cost of carpet = 10,2 × R165 ✓= R1 683✓ Total cost = R1 683 + R400 ✓= R2 083✓	1 M 1 A 2 MA	(4)
4.5	Area of bathroom = 1,6 m × 2,3 m = 3,68 m^2✓ Area of kitchen = 3 m × 1,3 m = 3,9 m^2✓ Total area = 7,58 m^2✓ Cost = 7,58 m^2 × R140 = R 1061.20✓	1A 1A 1 A 1 CA	(4)

QUESTION 5 [23]

Question	Solution	Explanation	
5.1	Water consumed for first six months of 2009 = 54 kl +55 kl +47 kl + 54 kl + 34 kl + 34 kl✓ = 278 kl✓✓	1 RG 2MA	(3)
5.2	Water consumption in July 2009 = 26kl✓ 6 kl – Free 6 × R2,12 – R12,72✓ 8 × R5,15 – R41,20✓ 6 × R10,20 – R61,20✓ R115,12✓✓	1 RG 3 × 1 A correct answer 2 A	(6)
5.3	Water consumed in July 2010 = 59kl✓ 6 kl – Free 6 × R2,12 – R12,72✓ 8 × R5,15 – R41,20✓ 20 × R10,20 – R204✓ 19 × R13,34 – R253,46✓ R511,38✓ % increase = 105,5% x 511,38✓ = R539,51✓	1 RG 5 × 1 A correct answer 2 CA	(8)
5.4	Winter months: less water is used. Swimming pool is rarely used. ✓✓ Watering of plants also went down or Any other two appropriate explanations.	2 E	(2)
5.5	There is a decrease in water consumption✓✓ The family may have been on holiday. ✓✓ The family began to conserve or use water sparingly. or Any other two appropriate explanations.	2 – describing the trend 2 E	(4)

TOTAL: 150