higher education & training

Department:
Higher Education and Training
REPUBLIC OF SOUTH AFRICA

MARKING GUIDELINE

NATIONAL CERTIFICATE (VOCATIONAL)

NOVEMBER 2011

MATHEMATICAL LITERACY
(First Paper)

NQF LEVEL 4

7 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 8 pages.

QUESTION 1 [36]

Question	Solution	Explanation	
1.1.1	$\frac{-6}{6} = -1$ ✓✓	1 A solution	(1)
1.1.2	1+2 = 3✓	1 A solution	(1)
1.1.3	$3\frac{1}{4}$ ✓	1 A solution	(1)
1.1.4	196 ✓	1 A solution	(1)
1.1.5	26,867 ✓	1 A solution	(1)
1.1.6	2 ✓	1 A solution	(1)
1.1.7	9 – 8 = 1✓	1 A solution	(1)
1.2	21✓ : 7✓ : 2✓	3 A	(3)
1.3	10:04✓	1 A	(1)
1.4	Cost of bus tickets = 5 ×R 120, 50✓ = R602,50✓	1 SF 1 A	(2)
1.5	Cost of petrol = 45 × R 9, 30✓ = R418,50✓	1 M 1 A	(2)
1.6	Discounted price = 465 - 465× 0,12✓ = R465 - R55,80 = R409,20✓ OR = 465 × 0,88 = R409,20	1 M 1 A	(2)
1.7	Journey time = 24 hours +7 hours 35 minutes✓ = 31 hours and 35 minutes✓	1 M 1 A Give one mark if answer is 7 hours 35 minutes.	(2)
1.8	$Decrease = 770 - 545 = 225$ $\therefore \%Decrease = \frac{225}{770} \times 100$ ✓✓✓ = 29,22%	1 A calculating decrease 1 M percentage 1 CA	(3)
1.9			
1.9.1	R13, 68 = £ 1 Amount in R = £ 6 = 13,68 × 6✓ = R82, 08✓	1 M 1 A	(2)

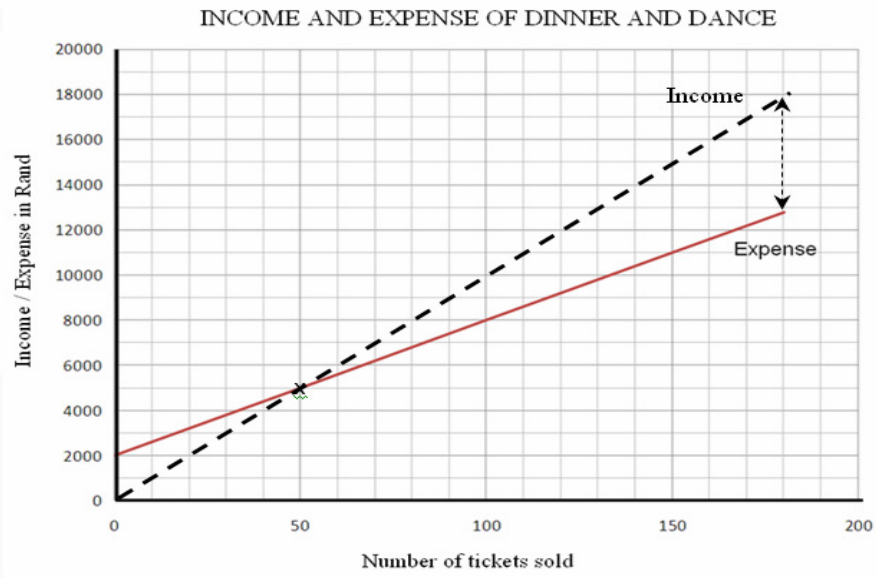
1.9.2	R13, 68 = £ 1 R8 000 = Amount in £ $\therefore$ Amount in £ = $\frac{8\,000}{13{,}68}$ ✓ = £ 584,80✓	1M 1 A	(2)

1.10	107,5% = R 7432 100% = Original amount ✓ $\therefore$ Amount in R = $\frac{7\,432\times100}{107{,}5}$ ✓ = R6913, 49 Therefore Megan's original salary was R6913, 49✓		1 M ratio 1 manipulation 1 CA	(3)
1.11	$r=\frac{80}{2}$ ✓ $= 40\ cm$ $V=3{,}14\times(40)^2\times70$ ✓ $=351\ 680\ cm^3$ ✓		2 SF 1 A volume	(3)
1.12	1.12.1	38 + 122 ✓= 160 students✓	1 M 1 A sample size	(2)
	1.12.2	Probability = $\frac{122}{160}$ OR 76,25% ✓✓	1 M 1 A	(2)

QUESTION 2 [15]

	Question	**Solution**	**Explanation**	
2.1	2.1.1	$A=60\times50+R\,2000$ ✓✓ $=5\ 000$	1 SF 1 A	(2)
	2.1.2	$B=60\times150+R\,2000$ ✓✓ $=11000$	1 SF 1 A	(2)
2.2	2.2.1	$C=R100\times150$ ✓✓ $=15\,000$	1 SF 1 A	(2)

2.2.2	Graph	1 A Starting point 1 A Ending point 1 A Break even point 1 A Labelling 1 Shape Straight line	(5)

			
2.3.1	50 tickets✓✓	2 RG	(2)
2.3.2	Profit = Ticket sales – Cost = 18 000 – 12 800✓ = R5 200✓	1 M 1 CA	(2)

QUESTION 3 [14]

Question	**Solution**	**Explanation**	
3.1	4 km✓✓	2 RG	(2)
3.2	9:30 and 10:30✓✓	2 RG	(2)
3.3	15 minutes✓✓	2 RG	(2)
3.4	11.06 -11.08 (in range) ✓✓	2 RG	(2)
3.5	6,7-6,9 km(in range) ✓✓	2 RG	(2)

3.6	4 hours✓ ✓	2 RG	(2)
3.7	06:00✓✓	2 A	(2)

QUESTION 4 [10]

Question	Solution	Explanation	
4.1	A8 ✓✓	2 RM	(2)
4.2	1 : 300 000 ∴ 1 mm = 0,3 km✓ ∴ Actual distance = 160 × 0,3 km✓ = 48 km ✓	1 M ratio 1 M 1 A	(3)
4.3	Time = $\frac{48}{60}$ ✓ ∴ time = 0,8 × 60✓ = 48 minutes✓	1 SF 1 CA 1 C solution	(3)
4.4	South West ✓✓	2 direction	(2)

QUESTION 5 [17]

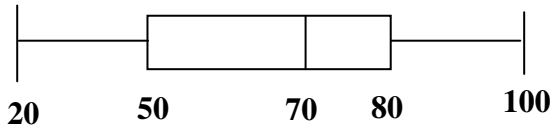
Question	Solution	Explanation	
5.1.1	Support = $\sqrt{400^2 + 300^2}$ ✓✓ = $\sqrt{250000}$ ✓ = 500 mm	1 SF 1 manipulation 1 A	(3)
5.1.2	Amount of angle iron = 40 + 400 + 300 + 500✓ = 1 240 mm✓ = 1,24 m✓	1 M 1 CA 1 C	(3)
5.2.1	C = $2 \times \pi \times r$ = 2 ×3,14 × 2,5✓ = 15,7 m✓	1 SF 1 A	(2)

5.2.2	P = 2($l+b$) = 2(11 + 5) ✓ = 32 m✓	1 SF 1 A	(2)

5.2.3	1 m = 3,25 feet 32 m = Perimeter ∴ length in feet = 3, 25 × 32 ✓ 104 feet✓	1M 1 A	(2)

5.2.4	A = $\pi\times(2{,}5)^2$ = 3,14 × (2,5)^2 ✓ = 19, 625 m^2 ✓	1 SF 1 A	(2)
5.2.5	Area of lawn = area of lawn – area of circle Area of lawn = 11× 5 = 55 m^2 ✓ ∴ Area left = 55 – 19, 625 ✓ = 35, 375 m^2 ✓	 1 SF 1 M 1 CA solution	(3)

QUESTION 6 [16]

Question	**Solution**	**Explanation**	
6.1	Mean = $\frac{840}{14}$ ✓✓ = 60✓	1 M Sum 1 M divide by 14 1 CA mean	(3)
6.2.1	Ascending order ✓ 20; 27; 34; 50; 54; 59; 67; 73;78; 79; 80; 87; 97;100 Median = $\frac{67+73}{2}$ ✓= 70 ✓	1 A ascending order 1 M 1 CA	(3)
6.2.2	Lower quartile = 50 ✓✓	2 MA	(2)
6.2.3	Upper quartile = 80 ✓✓	2 MA	(2)
6.3		1 A lower limit 1 CA Q_1 1 CA Q_2 1 CA Q_3 1 A upper limit 1 A Shape	(6)

QUESTION 7 [14]

	Question	Solution	Explanation	
7.1	7.1.1	A = 15 000[1 + 0,18(3)] ✓✓ = R 23 100✓	1 A i=0,18 1 SF 1 CA solution	(3)
	7.1.2	B = 15 000[1 + 0,15]^3 ✓✓ = R 22 813, 13✓	1 A i =0,15 1 SF 1 CA	(3)
	7.1.3	OPTION B: Saving = R23 100 – R22 813, 13 ✓ = R 286, 88 ✓	1 M 1 CA	(2)
7.2	7.2.1	Original price = R 2 699 + 600✓ = R 3 299✓	1 M 1 A	(2)
	7.2.2	Total repayment = R 140, 22 ×36✓ = R 5 047, 92✓	1 M 1 A	(2)
	7.2.3	Saving = R 5 047, 92 - R 2 699✓ = R 2 348, 92✓	1 M 1 CA	(2)

QUESTION 8 [16]

Question	Solution	Explanation	
8.1	Expense (A): Sum of all expenses = R 1 550✓✓	1 M 1 A	(2)
8.2	B = R 1 800 – R 1 600✓ = R 200✓ Surplus✓	1 M 1 A 1 CA surplus/deficit	(3)
8.3	C = R 1 800 – R 1 550✓ = R 250✓ Surplus✓	1 M 1 A 1 CA surplus/deficit	(3)
8.4	D = 100✓ E = -50 ✓ F = 100✓ G = -50✓	4 MA	(4)

8.5	H = 50✓✓	1 M 1 CA	(2)
8.6	I = 50✓✓	1 M 1 CA	(2)

QUESTION 9 [12]

Question	**Solution**	**Explanation**	
9.1	8 months✓✓	2 RG	(2)
9.2	42 + 20 + 26 +40 +40 + 50 + 44 + 54✓✓ = 316 hundred bottles/31 600 bottles✓	1 RG all values correct 1 M 1 CA	(3)
9.3	Month 4 & 5✓✓	2 A	(2)
9.4	Range : = ✓5400 – 2000 ✓ = 3400 bottles ✓	1 A Highest no of bottles 1 A Lowest no of bottles 1 A range	(3)
9.5	increase✓✓	2 A	(2)

TOTAL: 150