higher education & training

Department:
Higher Education and Training
REPUBLIC OF SOUTH AFRICA

MARKING GUIDELINE

NATIONAL CERTIFICATE (VOCATIONAL)

MATHEMATICAL LITERACY
(Second Paper)
NQF LEVEL 2

4 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. for no units, incorrect rounding off etc.
R	Rounding off
E/O	Explanation/Opinion
U	Unit

This marking guideline consists of 9 pages.

QUESTION 1
NOTE: Do not subtract marks if R or % omitted in question 1.

Question		Solution	Explanation	Marks
1.1	1.1.1	Commission : $= \frac{5}{100} \times$ R43 100✓ = R2 155✓ Total Income = R4 250 + R2 155✓ = R6 405✓ (2 marks for R6 405 if R4 250 + R2 155 not shown) Total Expenditure = 1 050 + 300 + 800 + 260 + 120 + 100 + 350 = R2 980✓ Left-over amount = Total Income - Total Expenditure = R6 405 - R2 980✓ = R3 425✓	1 M % 1 S 1 M adding (at income or expenditure) CA (R2155) 1 S total income 1 S total expenditure 1 M subtract 1 CA left-over amount	(7)
	1.1.2	$= \frac{800}{2\,980}$ % ✓✓ OR $\frac{800}{2\,980} \times 100$ = 26,85% ✓ (Accept 27%; 26,9; 26,846)	CA (1.1.1 – total exp) 1 Amounts 1 M convert to % 1 CA solution rounding (3 Answer only)	(3)
	1.1.3	• To have structured outlay of one's finances ✓✓ • To manage your money properly to avoid Overspending	2 E	(2)
	1.1.4	Disagree.✓ Commission✓ is a variable income✓ and is dependent on the sales for the month.	1 A 2 E	(3)
	1.1.5	Monthly sales amount = $\frac{1\,050}{\frac{5}{100}}$ ✓ or 1 050 ÷ 0,05 ✓ = R21 000✓✓	2 SF 2 A (4 Answer only)	(4)
1.2	1.2.1	Total monthly income = R4 250 + R1 500✓ = R5 750✓	1 M 1 A (2 Answer only)	(2)
	1.2.2	R100✓✓	2 A	(2)
	1.2.3	decrease✓	1 A	(1)
	1.2.4	800 – (3% of 800) ✓ OR 97% of 800 800 – 24✓ 0,97 × 800 R776✓	1 M 1 S 1 A amount (3 Answer only)	(3)

	1.2.5	= 5,3% of R260 OR $\frac{5,3}{100} \times 260$✓ = R13,78✓ = R260 + R13,78 = R273,78✓ **OR** = 260 × 1,053 = R273,78	1 M percentage 1 S 1 A increased amount (3 Answer only)	(3)
	1.2.6	✓ ✓ = 5% - 3% + 5,3% - 2,5% = 4,8%✓ Also accept: R2 976,03 - R 2 980 = (-) R3,97 ✓ $\frac{R3,97}{R2980} \times 100$ ✓ = 0,13% (or 0,133%)✓	2 MA 1 A in percentage CA with 1.1.1 (R 2 980) CA with incorrect 3,97 (3 Answer only)	(3)
	1.2.7	Variable✓ – It depends on how much / kind of food you eat for the month / Food prices vary. ✓✓	1 O 2 R reasoning	(3)
				[36]

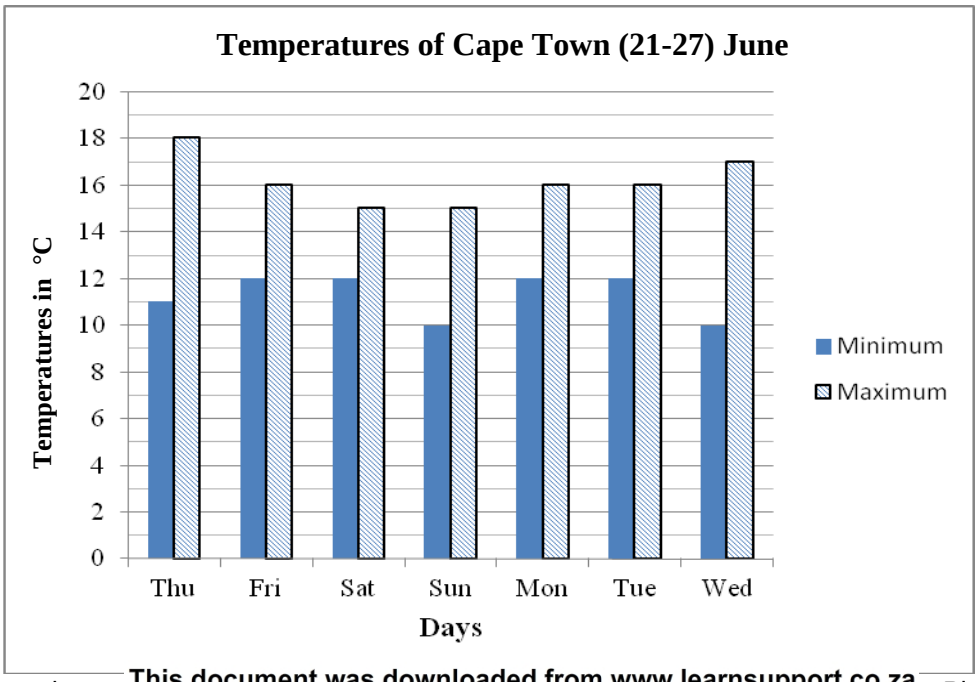
QUESTION 2
NOTE: Do not subtract marks if R omitted in question 2.

Question	**Solution**	**Explanation**	**Marks**
2.1	4✓	1 A	(1)
2.2	2✓	1 A	(1)
2.3	A = $l \times b$✓ = 3 × (6 - 2)✓ = 3 × 4✓ = 12 ✓m^2	1 F used 1 A breadth 1 SF (3 marks to be given if only 3×4 given) 1 A (4 Answer only)	(4)

2.4	Area (bedroom) = 12 m^2 $\mathbf{m^2}$ Cost to laminate = 12 m^2 $\mathbf{m^2}$ × R149✓ = R1 788✓ Vat inclusive price = $\frac{14}{100}$ × R1 788✓ = R250,32✓ = R1 788 + R250,32 = R2 038,32✓ OR $\frac{14}{100}$ × R149✓ = R20,86✓ R20,86 + R149 =R 169,86✓ R169,86 × 12✓ = R2 038,32✓ OR Area (bedroom) = 12 m^2 $\mathbf{m^2}$ Cost to laminate = 12 m^2 $\mathbf{m^2}$ × R149✓ = R1 788✓ ✓ Vat inclusive price = $\frac{114}{100}$ × R1 788✓ = R2 038,32✓	CA (2.3) 1M multiply 1 S 1 M percentage 1 S 1 CA Vat inclusive price (5 Answer only)	(5)
2.5	Area of flat = $l \times b$ = 7 × 6✓ = 42✓ m^2 Cost of flat = 42 m^2 × R13 000/m^2✓ = R546 000✓	1 SF 1 S area 1 M multiply 1 CA cost	(4)
2.6	Salary = 3 800 ÷ $\frac{1}{5}$✓ (or 3 800 ÷ 0,2) = 3 800 × 5✓ = R19 000✓	1 MA divided by $\frac{1}{5}$ 1 M multiply 1 A solution (3 Answer only)	(3) **[18]**

QUESTION 3

Question	Solution	Explanation	Marks
3.1	12°C✓✓ (Do nor subtract a mark for °C omitted)	2 RT	(2)
3.2	15 15 16 16 16 17 18 ✓✓ Median = 16°C✓ (Do not subtract a mark for °C omitted)	1 A correct data 1 A order 1 A median (3 Answer only)	(3)
3.3	Range = 18 – 15✓ = 3✓	1 M method 1 A solution (2 Answer only)	(2)
3.4	Mean = (9+28+19+37)✓ ÷ 4✓ = 93 ✓÷ 4 = 23,25 ✓ km/h OR Mean = 93✓ ✓÷ 4✓ = 23,25 ✓ km/h	1 MA adding NW winds 1 MA dividing by 4 1 S sum 1 A mean (4 Answer only)	(4)
3.5	Wednesday.✓ Sunny day or no rain and wind speed is moderate✓✓ OR Friday No rain and wind speed is moderate OR Thursday No rain and wind speed is moderate	1 A 2 RJ	(3)
3.6		1 A per double bar (Friday to Tuesday) 1 A key/legend	(6)



3.7		N1✓✓	2 RM	(2)
3.8		West ✓✓	2 RM	(2)
3.9		✓✓ $110 = \frac{388}{\text{time}}$ ✓✓✓ (Manipulation not required in the L2 subject guidelines) Student must show substitution in order to be rewarded 5 marks. OR ✓ $110 = \frac{388}{\text{time}}$ ✓ Time = $\frac{388}{110}$ = 3,52 hours✓ 10:30 + 3 h 31 = 14:01✓ Before 15:00✓	5 SF 1 S 1 A time 1 R/J	(5)
3.10	3.10.1	50 mm ✓✓ (Allow for a range of ± 2 mm)	2 M measurement	(2)
	3.10.2	1 : 3 440 000 50 mm : 172 000 000 ✓✓mm 50 mm represents 172 ✓km OR ✓ ✓ $50 \times \frac{3\,440\,000}{1\,000\,000}$ = 172 ✓km (Refer to QP for actual measurement) OR 1 : 3 440 000 55 mm : 189 200 000✓✓ mm 55 mm represents 189,2 ✓km (Allow for a range of ± 2 mm)	2 C conversion to mm 2 MA **to actual distance**	(3)
				[34]

QUESTION 4
NOTE: Do not subtract marks if R or % omitted in question 4.

Question		Solution	Explanation	Marks
4.1		A = 49, 89 × 4✓ = R199, 56✓	1 M 1 A (2 Answer only)	(2)
4.2		B = 399,12 ÷ 49, 89✓ = 8✓ kg OR ✓✓ (Accept: 49,89 × 8 = 399,12)	1 M 1 A (2 Answer only)	(2)
4.3		1 kg of mince serves 3 people 8 people will be served by: 8 ÷ 3✓ = 2,67 kg✓ 3 kg = R149, 67✓ Total cost = R149,67 + R25, 99 = R175,66✓ OR 3 kg = R149, 67✓✓✓ (Table used) Total cost = R149,67 + R25, 99 = R175,66✓	1 M method 1 A solution 1 A cost of mince 1 CA total cost of 2 ingredients	(4)
4.4		1 kg costs R49,89 1 000 g costs R49,89✓ ÷ 10 ✓ = 100 g costs R4,989 = R4,99✓	1 C 1 M divided by 10 1 A rounded off amount	(3)
4.5		It creates the impression that the cost is not expensive.✓✓ (Accept any reasonable answer)	2 R/J	(2)
4.6	4.6.1	Graph 1✓✓	2 A	(2)
	4.6.2	Graph 1✓✓	2 A	(2)
	4.6.3	The scale ✓ on the vertical axis (y-axis) ✓ differs.	2 R reasoning	(2)
	4.6.4	= (15÷25) ✓ × 100✓ = 60%✓	1 A mark 1 M 1 A (3 Answer only)	(3)
	4.6.5	= (12÷25) × 100✓ = 48%✓ = (48+60) ÷2✓ = 54%✓ OR ✓✓ (48+60) ÷2✓ = 54%✓	1MA 1 S 1M 1 CA	(4)
				[26]

QUESTION 5
NOTE: Do not subtract marks if R omitted in question 5.

Question	Solution	Explanation	Marks
5.1	R6 482,70✓✓	2 RT	(2)
5.2	3rd Year = (5% of 5 880) ✓+ 5880✓ = R6 174✓ OR 5 880 × 1,05✓✓ = R6 174✓	1 RT reading from the table 1 M percentage 1 A salary (3 Answer only)	(3)
5.3	7 147,18 ÷ 105% ✓= 6 806,84 = 5th year✓ 6 806,84 ÷ 105% = 6 482,70 = 4th year✓ B = 7 147,18 = Year 6✓ **OR** 6 482,70 + 5% of 6 482,70 ✓= 6 806,84 = 5th year✓ = 6 806,84 + 5% of 6 806,84 ✓ B = 7 147,18 = Year 6✓	1 M method 1 S 1 S 4th year 1 A (4 Answer only)	(4)
5.4	= 99 285,05 ÷ 12 = 8 273,75 monthly salary✓ 7 147,18 = Year 6✓ 7 147,18× 1,05 = 7 504,54 = Year 7✓ 7 504,54×1,05 = 7 879,77 = Year 8✓ 7 879,77 × 1,05 = 8 273,76 = Year 9 8 273,76 × 12 = 9 years✓ (accept 8 273,75)	1 A monthly salary 2 M 1 S 1 A	(5)
5.5	Graph A.✓It starts at R5 600. ✓✓ (Accept any reasonable answer)	1 O 2 R reasoning	(3)
			[17]

QUESTION 6

Question		Solution	Explanation	Marks
6.1		B = 1st place ✓ A = 2nd place ✓ C = 3rd place ✓ Reason: They are arranged according to their heights.	3 A categorisation 2 R/J any two acceptable reasons	(5)
6.2		Diameter = 180 cm = 1,8 m✓ Radius = 0,9 m ✓ Area $= \pi \times r^2$ $= 3,14 \times 0,9^2$✓ $= 2,54$ ✓m^2 $\mathbf{m^2}$ (If diameter was used, no marks to be allocated)	1 C 1 A radius 1 SF 1 CA area	(4)
6.3	6.3.1	1 : 1,4 1,4 × 45✓ = 63✓cm 63 ÷ 100 = 0,63 ✓m	1 M method 1 A solution 1 C to m	(3)
	6.3.2	1 : 1,4 1,4 × 180✓ = 252✓ cm Radius = 252 ÷ 2 = 126✓ cm = 1,26✓ m Volume = $\pi \times r^2 \times$ *height* = 3,14 × 1,26² ✓× 0,63✓ = 3,14 ✓m^3 $\mathbf{m^2}$ OR 1,4×90✓ = 126 ✓✓ cm = 1,26 ✓ m Volume = $\pi \times r^2 \times$ *height* = 3,14 × 1,26² ✓× 0,63✓ = 3,14 ✓m^3	1 M method 1 A solution CA (252) 1 A radius 1 C to m CA with 6.3.1 2 SF 1 CA volume rounded off to TWO decimals	(7)
				[19]

TOTAL: 150