



higher education & training

Department:
Higher Education and Training
REPUBLIC OF SOUTH AFRICA

MARKING GUIDELINE

NATIONAL CERTIFICATE (VOCATIONAL)

MATHEMATICAL LITERACY

(Second Paper)

NQF LEVEL 2

25 February 2020

SYMBOLS	EXPLANATIONS
M	Method
MA	Method with accuracy
CA	Consistent accuracy
A	Accuracy
C	Conversion
S	Simplification
RT/RG/RD/RM	Reading from table/graph/drawing/document/map
F	Choosing correct formula
SF	Substitution in formula
MF	Manipulation of formula
R/J	Reasoning/Justification
P	Penalty, for example no units, incorrect rounding, etc.
R	Rounding off
E	Explanation

This marking guideline consists of 6 pages.

QUESTION 1 [40] * Do not deduct marks for incorrect units unless indicated.			
QUESTION	SOLUTION	EXPLANATION	
1.1 1.1.1	Land A = Semi-circle✓✓	2RD	(2)
1.1.2	Perimeter of circle = $2 \times 3,14 \checkmark \times 6 \checkmark$ $= 37,68 \checkmark \text{ m}$ \therefore Perimeter of semi-circle = $18,84 \checkmark \text{ m}$ Perimeter of the garden = $18,84 + 16 + 9 \checkmark + 15 + 16 \checkmark$ $= 74,84 \checkmark \text{ m}$	2SF (3,14 and 6) 1A (37,68) 1A (18,84) 2M (adding all) 1 CA	(7)
1.1.3	Area of circle = $3,14 \times 6^2 \checkmark$ $= 113,04 \checkmark \text{ m}^2$ \therefore Area of semi-circle = $56,52 \checkmark \text{ m}^2$ Area of rectangle = $16 \checkmark \times 12 \checkmark$ $= 192 \checkmark \text{ m}^2$ Area of trianlge = $\frac{1}{2} \times 9 \times 12 \checkmark$ $= 54 \checkmark \text{ m}^2$ \therefore Area of the garden = $56,52 + 192 + 54 \checkmark$ $= 302,52 \text{ m}^2$	1SF (r = 6) 1 A 1A 2SF 1A 1SF (9 and 12) 1A 1M	(9)
1.1.4	Number of bags = $302,52 \div 15 \checkmark$ $= 20,17 \checkmark$ (20,168) $= 21 \checkmark$	1M 1A 1R	(3)
1.1.5	Total cost = $21 \checkmark \times 110,50 \checkmark$ $= \text{R}2\,320,50 \checkmark$	2M 1CA (Q1.1.4)	(3)
1.2 1.2.1	Volume of cylindrical holes = $10(\pi \times r^2 \times \text{height})$ $= 10(3,14 \times 2,5^2 \checkmark \times 10) \checkmark$ $= 1\,962,5 \checkmark \text{ cm}^3 \checkmark$	2SF 1A and 1U	(4)
1.2.2	Volume of brick = $25 \checkmark \times 15 \checkmark \times 10 \checkmark - 1\,962,5 \checkmark$ $= 1\,787,5 \checkmark \text{ cm}^3$	4SF 1CA (1.2.1)	(5)
1.2.3	Number of bricks = $2\,000\,000 \checkmark \div 1\,787,5 \checkmark$ $= 1\,118,88 \checkmark$ $= 1\,118 \checkmark$	2M 1CA (Q1.2.2) 1R (rounding down)	(4)
1.2.4	Revenue = $11,50 \checkmark \times 1\,118 \checkmark$ $= \text{R}12\,857 \checkmark$	2M 1CA (Q1.2.3)	(3)

QUESTION 2 [40] * Do not deduct marks if the 'R' sign is omitted.			
QUESTION	SOLUTION	EXPLANATION	
2.1			
2.1.1	(a) Pay as you earn✓ (b) Unemployment Insurance Fund✓	1A 1A	(2)
2.1.2	$A = \frac{1}{100} \times 29\,600 \checkmark = R296 \checkmark$ $B = 29\,600 + 7\,330 \checkmark = R36\,930 \checkmark$ $C = 25\,174 - 36\,930 = R11\,756 \checkmark \checkmark$	2MA 2MA 2MA	(6)
2.1.3	Annual tax = $12 \checkmark \times 5\,200 \checkmark$ = $R\,62\,400 \checkmark$	1RT and 1M 1A	(3)
2.1.4	Variable income✓ It changes according to the number of overtime hours worked✓	1A 1E	(2)
2.2			(9)
	9 Accuracy marks		
2.3.1	A method of buying and using an item by making a deposit ✓ and paying regular instalments. ✓ (Accept buying on account/credit)	2E	(2)
2.3.2	Cash price = $5\,000 \checkmark \times \frac{115}{100} \checkmark$ = $5\,000 \times 1,15$ = $R5\,750 \checkmark$	2M 1A	(3)
2.3.3	Credit amount = $5\,750 \checkmark - 1\,250 \checkmark$ = $R4\,500 \checkmark$	2M 1A	(3)

2.3.4	$\text{Payment} = 24 \checkmark \times 270 \checkmark + 1\,250 \checkmark$ $= R7\,730 \checkmark$	3M 1A	(4)
2.3.5	$\text{Interest amount} = 7\,730 \checkmark - 5\,750 \checkmark$ $= R1\,980 \checkmark$ <p>Or</p> $\text{Interest amount} = 6\,480 \checkmark - 4\,500 \checkmark$ $= R1\,980 \checkmark$	2M 1CA (Q2.3.5)	(3)
2.3.6	$\text{Interest rate} = \frac{1\,980}{4\,500} \checkmark \times 100 \checkmark$ $= 0,44 \times 100$ $= 44\% \checkmark$	2M 1CA (Q2.3.4 and Q2.3.5)	(3)

QUESTION 3 [35] * Do not deduct marks if the 'R' sign is omitted.

QUESTION	SOLUTION	EXPLANATION	
3.1 3.1.1	$\text{Relative cost per trip} = R1\,347,00 \div 44 \checkmark$ $= R30,61 \checkmark$ <p>(Answer only full marks)</p>	1SF 1A	(2)
3.1.2	$\text{Number of trips} = R1\,347,00 \checkmark \div R44,90 \checkmark$ $= 30 \text{ trips} \checkmark$	2M 1A	(3)
3.1.3	<p style="text-align: center;">Relative Cost per Trip ✓</p> <p>1 labelling title 1 labelling vertical axis 1 labelling horizontal axis 5A plotting 5 points correctly 1CA curved line</p>		(9)

3.1.4	Indirect/Inverse proportion✓ There is a constant product✓ between the number of trips and the relative cost per trip. ✓ Or As the number of trips increase✓ the relative cost per trip decreases by the same factor✓	1A 2R/J	(3)
3.1.5 (a)	Total cost = R36 ✓ × 44✓ = R1 584✓	2MA 1A	(3)
3.1.5 (b)	Amount Merlin will save = R1 584✓ – R1 347✓ = R237✓	2MA 1CA	(3)
3.2 3.2.1	A = 1 500 + 350 × 0 = R1 500✓✓ B = (5 000 – 1 500) ÷ 350 = 10✓✓ C = 1 500 + 350 × 20 = R8 500✓✓ (Answer only full marks)	2MA 2MA 2MA	(6)
3.2.2	(a) Salary✓, Mary’s salary depends on the number policies she sells. ✓ (b) The graph does not start at zero✓ As Mary sells more policies her salary increases but not in the same proportion✓ (c) 4 ✓ policies	1RG (Salary) 1R/J 1RG R/J 2RG	(6)

QUESTION 4 [35] * Do not deduct marks if the '%' sign is omitted.			
QUESTION	SOLUTION	EXPLANATION	
4.1 4.1.1	Total = 37 + 55 + 78 + 12 + 22✓ = 204✓	1RG 1A	(2)
4.1.2	% of Polo GTi sold = 100 ✓ – (18 + 38 + 11 + 27) ✓ = 6%✓ (No mark if % is worked out from the table)	2RG 1A	(3)
4.1.3	Angle of Polo Vivo = $\frac{38}{100}$ ✓ × 360°✓ = 136,8°✓ = 137°✓	1RG and 1M 1A 1R	(4)
4.1.4	Percentage increase = $\frac{257✓ - 204✓}{204✓} \times 100$ = 25,98✓% (accept 26%)	3SF 1CA (Q4.1.1)	(4)

4.2			
4.2.1	Double/compound✓ bar ✓graph (1 mark for bar graph only)	2RG	(2)
4.2.2	Upington ✓	1RG	(1)
4.2.3	Discrete data✓	1A	(1)
4.2.4	Difference = $31✓ - 15✓$ = $16°C✓$ (Answer only full marks)	2RG 1A	(3)
4.2.5	Range = $36✓ - 15✓$ = $21°C ✓$	2RG 1A	(3)
4.2.6	15 15 16 18 21 22 ✓ ascending — ✓ Median = $\frac{22+25}{2} ✓ = 23,5°C✓$ 25 26 26 28 31 36 ✓ ascending	2A ascending order 1A Position of median 1M 1A 23,5	(5)
4.2.7	(a) line✓ graph	1RG	(1)
	(b) Title✓✓ horizontal axis✓✓ (Also accept legend and name of each line)	2RG 2RG	(4)
	(c) The units on the vertical axis begins at 12 instead of 0. ✓✓		(2)

TOTAL: 150