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.

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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 × 3,14 ✓× 6✓ = 37,68✓ m ∴Perimeter of semi-circle = 18,84 ✓m Perimeter of the garden = 18,84 + 16 + 9 ✓+ 15 + 16✓ = 74,84 ✓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 × 6^2 ✓ = 113,04✓ m^2 ∴ Area of semi-circle = 56,52 ✓m^2 Area of rectangle = 16✓ × 12✓ = 192 ✓m^2 Area of trianlge = ½ × 9 × 12✓ = 54 ✓m^2 ∴ Area of the garden = 56,52 + 192 + 54✓ = 302,52 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 ÷ 15✓ = 20,17✓ (20,168) = 21✓	1M 1A 1R	(3)
1.1.5	Total cost = 21✓ × 110,50✓ = R2 320,50✓	2M 1CA (Q1.1.4)	(3)
1.2 1.2.1	Volume of cylindrical holes = 10(π × r^2 × height) = 10(3,1,4 × $2,5^2$✓ × 10)✓ = 1 962,5✓ cm^3✓	2SF 1A and 1U	(4)
1.2.2	Volume of brick = = 25✓ × 15✓ × 10✓ − 1 962,5✓ = 1 787,5✓ cm^3	4SF 1CA (1.2.1)	(5)
1.2.3	Number of bricks = 2 000 000✓ ÷ 1 787,5✓ = 1 118,88✓ = 1 118✓	2M 1CA (Q1.2.2) 1R (rounding down)	(4)
1.2.4	Revenue = 11,50✓ × 1 118✓ = R12 857✓	2M 1CA (Q1.2.3)	(3)

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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 = $\frac{1}{100} \times 29\ 600$✓ = R296✓ B = 29 600 + 7 330✓ = R36 930✓ C = 25 174 − 36 930 = R11 756✓✓	2MA 2MA 2MA	(6)
2.1.3	Annual tax = 12✓ × 5 200✓ = R 62 400✓	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	 DEPOSIT SLIP/DEPOSITO-STROKIE S A Bank Date/Datum Exam date✓ Credit Krediteer Mrs Nicole Michaels✓ Acc no/ Rek no 7 9 5 6 2 3 5 6 0 2✓ R C Notes/Note 740 00✓ Nickel/Nikkel 10 00✓ Bronze/Brons MO/PO and/en PO Subtotal/Subtotaal 750 00 Teller's date stamp and signature / Kassier se datumstempel en handtekening Drawer's name / Trekker se naam Bank 1 2 3 Details of depositor/Besonderhede van deponeerder Name(Print) / Naam(Drukskrif) Name and Surname✓ Signature / Handtekening Your signature✓ Tel ( ) Total / Totaal R 750·00✓ Dep reference / Dep verwysing Examination number✓ 9 Accuracy marks		(9)
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✓ × $\frac{115}{100}$✓ = 5 000 × 1,15 = R5 750✓	2M 1A	(3)
2.3.3	Credit amount = 5 750✓ − 1 250✓ = R4 500✓	2M 1A	(3)

2.3.4	Payment $= 24✓ \times 270✓ + 1\,250✓$ $= R7\,730✓$	3M 1A	(4)
2.3.5	Interest amount $= 7\,730✓ - 5\,750✓$ $= R1\,980✓$ Or Interest amount $= 6\,480✓ - 4\,500✓$ $= R1\,980✓$	2M 1CA (Q2.3.5)	(3)
2.3.6	Interest rate $= \frac{1\,980}{4\,500}✓ \times 100✓$ $= 0{,}44 \times 100$ $= 44\%✓$	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	Relative cost per trip = R1 347,00 ÷ 44✓ = R30,61✓ (Answer only full marks)	1SF 1A	(2)
3.1.2	Number of trips = R1 347,00 ✓ ÷ R44,90✓ = 30 trips✓	2M 1A	(3)
3.1.3	 1 labelling title 1 labelling vertical axis 1 labelling horizontal axis 5A plotting 5 points correctly 1CA curved line		(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 = $\frac{38}{100}$✓ $\times 360°$✓ = $136{,}8°$✓ = $137°$✓	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

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