higher education & training

Department:
Higher Education and Training
REPUBLIC OF SOUTH AFRICA

MARKING GUIDELINE

NATIONAL CERTIFICATE (VOCATIONAL)

MATHEMATICAL LITERACY
NQF LEVEL 3
(Second paper)

17 February 2025

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	Substitute into formula
R/J	Reasoning/Justification
P	Penalty – no units, incorrect rounding off
R	Rounding off
E	Explanation
U	Unit
MF	Manipulation of formula

This marking guideline consists of 8 pages.

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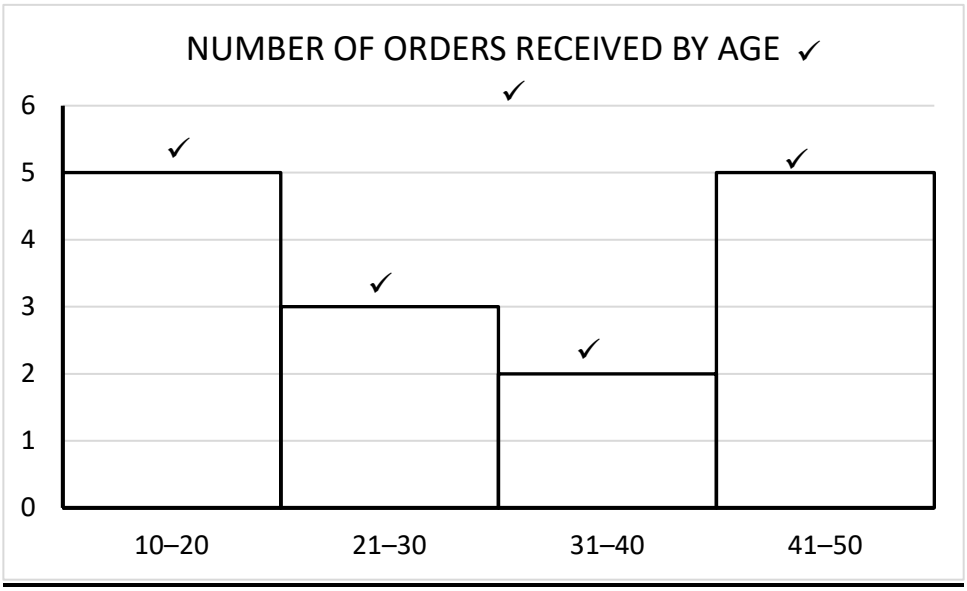
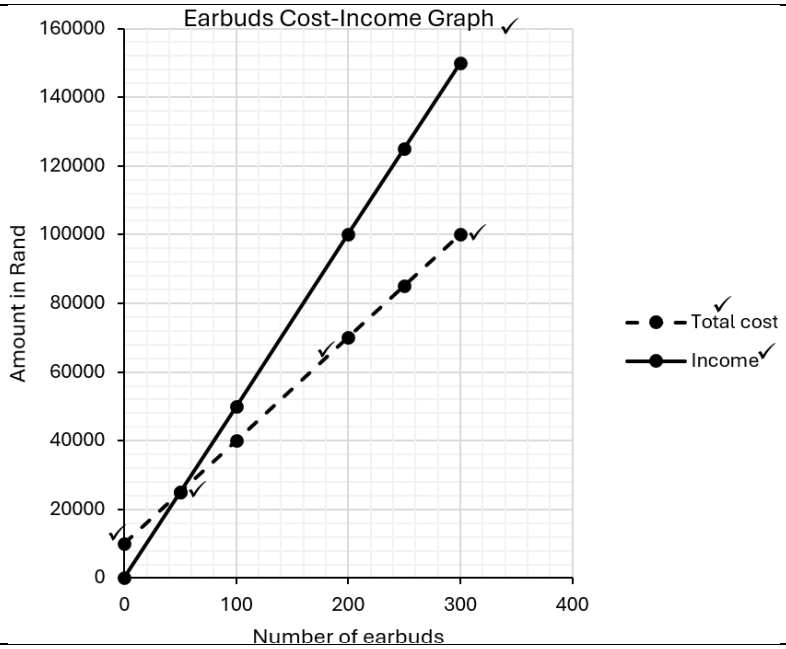
QUESTION 1

1.1	1.1.1	Mean Female = $\frac{524}{14}$✓ Mean Female = 37,43✓	Mean Male = $\frac{504}{14}$✓ Mean Male = 36✓	2 M method 2 A (4)
	1.1.2	Median Female = $\frac{30+34}{2}$✓ Median Female = 32✓	Median Male = $\frac{33+36}{2}$✓ Median Male = 34,5✓	2 M method 2 A (4)
	1.1.3	• The mean for female is higher than the male customers✓ • The median for female is less than the male customers✓ • The median in both data sets is less than the mean indicating a possible skew (Outliers in the data set)✓		1 Comparison 1 Comparison 1 Skew / Outliers (3)
1.2	1.2.1	A = 60✓ B = 27✓ C = 57✓ D = 55✓		1 mark each (4 × 1) (4)
	1.2.2	112✓		1A (1)
	1.2.3	P = $\frac{60}{112}$✓✓ P = $\frac{15}{28}$✓✓	ALTERNATIVE P = $\frac{60}{112}$✓✓ P = 0,5357✓ P = $\frac{5357}{10000}$✓	1M numerator 1M denominator 1A 1 fraction (4)
	1.2.4	P = $\frac{25}{57}$✓✓ = 0,4386 × 100✓ = 43,86%✓		1M numerator 1M denominator 1 multiply 1A (4)

1.3	1.3.1		
	<table><tr><th>Frequency</th><th>Tally</th><th>Total</th></tr><tr><td>10–20</td><td>𝍸</td><td>5✓</td></tr><tr><td>21–30</td><td>𝍸 |</td><td>3✓</td></tr><tr><td>31–40</td><td>||</td><td>2✓</td></tr><tr><td>41–50</td><td>𝍸</td><td>5✓</td></tr><tr><td>**TOTAL**</td><td></td><td>**15**</td></tr></table>	In each row tally and frequency need to be correct for 1 mark 1 for total	(5)

	1.3.2 	1A heading 1 A (1 mark for the overall correct histogram) 4 A (1 mark for each correct item)	(6)
			[35]

QUESTION 2

2.1	2.1.1		10 000✓✓	2A	(2)
	2.1.2		50 earbuds cost 25 000 Amount on earbuds only = 25 000✓ – 10 000✓ = 15 000✓ Cost of 1 earbud = 15 000 ÷ 50 ✓ = 300✓ **Accept any other method**	2M 1A 1M divide 1CA	(5)
	2.1.3		150 000✓ ÷ 300✓ = 500 per earbuds✓✓ **Accept any other method**	2M 2A	(4)
	2.1.4	a.	Total cost = 10 000✓ + 300✓ × number of earbuds✓	3A formula	(3)
		b.	Income = 500✓ × number of earbuds✓	2A formula	(2)
	2.1.5		A = 200✓✓ B = 85 000✓✓ C = 25 000✓✓ (3 × 2)	2RG 2RG 2RG	(6)
2.2	2.2. 1			1 heading 1 starting point for Cost 1 End point for total cost 1 break-even point 1 Cost line graph 2A names of graphs or legend	(7)
2.2	2.2.2		When the total costs increase, the income also increases.✓✓	2A	(2)
	2.2.3		R25 000✓✓	2RT/RG	(2)
	2.2.4		Dependent: Amount✓ Independent: Number of earbuds✓	2A	(2)
					[35]

QUESTION 3

3.1	3.1.1	$AF^2 = AE^2 + EF^2$ 600 mm = 60 cm✓ $AF^2 = 70^2 + 60^2$✓ $AF^2 = \sqrt{4\,900^2 + 3\,600^2}$✓ $\sqrt{AF^2} = \sqrt{(8\,500)^2}$✓ AF = 92,20 cm✓	 1C 1SF 1M addition 1 square both sides 1A	 (5)

	3.1.2	Area of a rectangle (F) = l × b = 90 cm × 70 cm✓✓ = 6 300 cm^2✓ Area of one triangle = $\frac{1}{2}bh$ = $\frac{1}{2} \times 60 \times 70$ ✓✓ = 2 100 cm^2✓ Total area = 6 300 cm^2 + 2 100 cm^2 + 2 100 cm^2✓ = 10 500 cm^2✓	 2SF 1A 2SF 1A 1M Addition 1A	 (8)

	3.1.3	Perimeter of the figure = 60 + 90✓+ 60 + 92,2 + 90 + 92,2✓ = 484,4 cm✓	2M 1A	(3)

3.2	3.2.1	Length = 54,8 ÷ 8,7✓ = 6,298 ≈ 6 boxes✓ Width = 42,1 ÷ 10,2✓ = 4,13 ≈ 4 boxes✓ Height = 33,5 ÷ 6,5✓ = 5,153 ≈ 5 boxes✓ Total boxes packed = number at length × number at width × number at height = 5 × 4 × 6✓ = 120 boxes✓	1M divide length 1A 1M divide 1A 1M divide 1A 1M multiply 1A	(8)
	3.2.2	Surface area = 2WL + 2LH + 2HW = 2(42,1 × 54,8) + 2(54,8 × 33,5) + 2(33,5 × 42,1)✓✓ = 4 614,16 + 3 671,6 + 2 820,70✓ = 11 106,46 cm^2✓	 2SF 1M addition 1A	(4)
	3.2.3	2 tonnes = 2 000 kg✓ Number of boxes = $\frac{2000}{9}$✓ = 222✓	 1C 1 M 1 A	(3)
3.3	3.3.1	N2✓	1RM	(1)
	3.3.2	1 : 25 000 5cm : x $25\,000 \times 5 = x$✓ $125\,000\text{ cm} = x$✓ $\frac{125\,000}{100\,000} = x$✓ 1,25km✓ = x	 1M multiply 1A in cm 1M divide by 100 000 1A in km	(4)

	3.3.3	1 : 25000 x : 15 $25\,000 \times x = 15$ $x = \frac{15}{25\,000}$✓ $= 0{,}0006$ km✓ $= 0{,}0006 \times 100\,000$✓ $= 60$ cm✓	1M divide 1A 1C 1A	(4)
				[40]

QUESTION 4

4.1	4.1.1	1 ÷ 100 × 7 200 ✓ A = R72✓	1M multiply 1A	(2)

	4.1.2	B = R22 + R250 + R72 + R680✓ = R1 024✓ C = R7 200 – R1 024✓ = R6 176✓	1M adding 1CA 1M subtract 1CA	(4)

	4.1.3	$= \frac{250}{5200} \times 100$✓ = 4,81%	1M Method 1A	(2)

4.2	4.2.1	Rate including VAT = R0,7298 × 1,15✓ = R0,8393✓	1M multiplying 1A	(2)

	4.2.2	Charge = 50 (R0,7298)✓ + 228(R0,9373)✓ = R250,19✓	2M 1CA	(3)

	4.2.3	50(R0,8393) + 300(R1,0779) + 250(R1,5351)✓ = R749,11✓ R781,96 – R749,11 = R32,85✓ Usage in block 4 = $\frac{R32,85}{R1,6055}$ ✓ = 20,46 kWh✓ Total usage = 50 + 300 + 250 + 20,46✓ = 620,46 kWh✓	1M 1A 1A 1A 1CA 1M adding 1A	(7)
4.3	4.3.1	A = R 25 000 + 9 500 + 8 200 + 120 000 = 162 700✓ R327 700 – 162 700 = 165 000✓	1M add 1A	(2)
	4.3.2	R25 000 × 7,5%✓ = R1 875✓	1M 1A	(2)
	4.3.3	It can change timeously depending on usage.✓	1A	(1)
	4.3.4	Fixed expenditure = 25 000 + 9 500 + 165 000✓✓ = R199 500✓	2M add 1CA	(3)
4.1	4.4.1	R22 598,09✓	1A	(1)
	4.4.2	9,50/500 × 100✓ = 0,019 × 100✓ = 1,9%✓	1M divide 1M multiply 1A	(3)
	4.4.3	Charges = 1,10 + 1,10 + 9,50✓ = R11,60✓ ≈ R12✓	1M addition 1A 1A no decimal	(3)
	4.4.4	A = 23 947,67✓ – 4 500✓ = 19 447,67✓	2M subtraction 1A	(3)
	4.4.5	Airtime = 110 + 55✓ = R165✓	1M add 1A	(2)
				[40]

TOTAL: 150

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