higher education & training

Department:
Higher Education and Training
REPUBLIC OF SOUTH AFRICA

MARKING GUIDELINE

NATIONAL CERTIFICATE (VOCATIONAL)

MATHEMATICAL LITERACY
NQF LEVEL 3
(Second paper)

11 November 2024

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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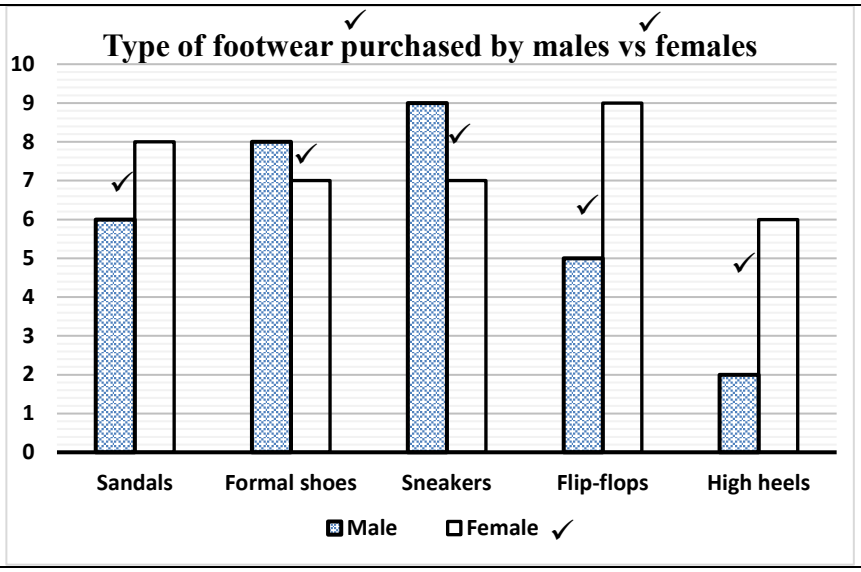
QUESTION 1

1.1	1.1.1	55 55 57 59 62 64 66 68 69 71 73 74 76 78 78 78 79 85 87 88 90 92 93 95 $\text{Mean} = \frac{55 + 55 + 57 + \cdots + 92 + 93 + 95}{24}$✓ $= \frac{1\,792}{24}$✓ $= 74{,}67$✓	2M 1MA 1A	(4)
	1.1.2	$\text{Median} = \frac{74 + 76}{2}$✓ $= 75$✓	1M 1A	(2)
	1.1.3	$\text{Range} = 95 - 55$✓ $= 40$✓	1M 1A	(2)
	1.1.4	Mode is 78✓	1RT	(1)
	1.1.5	Mean✓ Although they are nearly equal, the mean is more accurate because we use all the data obtained whereas with the median, we only calculate the central point.✓✓	1A 2R	(3)
	1.1.6	FREQUENCY / TALLY / TOTAL 51 – 60 / 𝍸 / 4✓ 61 – 70 / 𝍸 / 5✓ 71 – 80 / 𝍸 𝍸 / 8✓✓ 81 – 90 / 𝍸 / 3✓ 91 – 100 / 𝍸 / 4✓ **TOTAL** / / 24✓	In each row tally and frequency needs to be correct for 1 mark. 1A total	(7)

1.2	1.2.1	Sneakers ✓	1RT	(1)
	1.2.2	67✓	1A	(1)

	1.2.3		2A heading 1 mark for any 5 correct compound bars drawn 1 mark Legend	(8)

	1.2.4	$\text{Probability} = \frac{14 + 16}{67}$ $= 44{,}78\%$	1RT numerator 1A denominator 1CA percentage	(3)
	1.2.5	$\text{Probability} = \frac{6}{37}$ $= 16{,}22\%$	1RT numerator 1A denominator 1CA percentage	(3)
				[35]

QUESTION 2

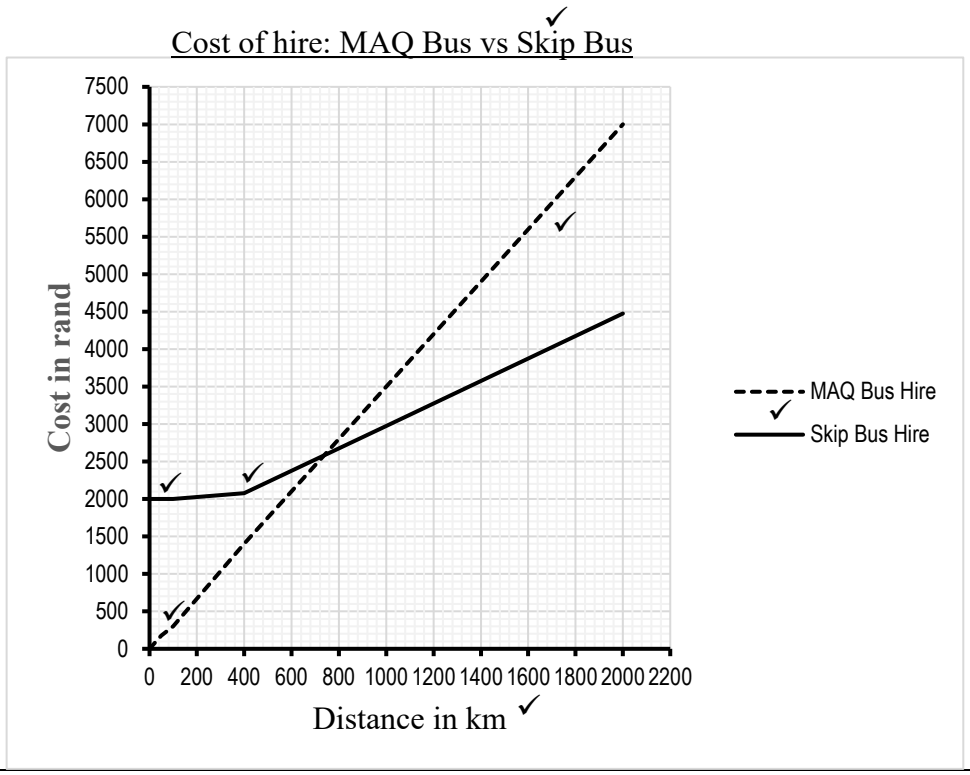
2.1	2.1.1	Old monthly salary = R456 000 ÷ 12 = R38 000✓ Old monthly UIF = 1% of 38 000 = 380✓ New monthly salary = R750 000 ÷ 12 = R62 500✓ New monthly UIF = 1% of 62 500 = 625✓ Difference = 625 – 380 = R245✓ **OR** Difference in salaries = 750 000 – 456 000✓ = 294 000✓ Difference in UIF = 1% of 294 000✓ = 2 940✓ Monthly UIF difference = 2 940 ÷ 12 = 245✓	1 MA 1A 1MA 1A 1CA 1MA 1A 1M 1CA 1CA	(5)
	2.1.2	Old net = R456 000 – (456 000 × 30%)✓ = 456 000 – 136 800✓ = 319 200✓ New net = 750 000 – (750 000 × 35%)✓ = 750 000 – 262 500✓ = 487 500✓ $\%\ \text{increase} = \frac{487\,500 - 319\,200}{319\,200} \times 100\%$✓ $= 52{,}73\%$✓	1MA 1S 1A 1MA 1 MA 1A 1SF 1CA	(8)
2.2	2.2.1	A = R55 000 – R60 000✓ = –R5 000✓ B $= \frac{\text{R10 000}}{\text{R140 000}} \times 100\%$ ✓= 7,14%✓ C = R37 000 – R3 000✓= R34 000✓ D = R19 000 + (– R4 000)✓= R15 000✓ E = R26 000 – R29 000✓ = R3 000✓ F = R150 000 – R99 000✓ = R51 000✓ (2 × 6)	1SF 1A 1SF 1A 1SF 1A 1SF 1A 1SF 1A 1SF 1A	(12)
	2.2.2	Profit✓= Total Income✓– Total Expenses✓	3A	(3)

	2.2.3	Initial Amount = R18 000✓ × $\frac{100}{115}$✓✓ Initial Amount = R15 652,17✓				3M 1A	(4)
	2.2.4	a)	Eggs	**Positive**✓	Actual income is higher than that of the planned budget✓	1A 1RJ	(2)
		b)	Chicken	**Adverse/ Negative**✓	Actual income is less than that of the planned budget✓	1A 1RJ	(2)
		c)	Input Costs	**Adverse/ Negative**✓	Actual expenses are higher than that of the planned budget✓	1A 1RJ	(2)
		d)	Marketing	**Positive**✓ **OR** **Adverse**✓	Expenditure is within budget✓ Under expenditure✓– Actual expenses are far less than that of the planned budget – It might be that some of planned activities were not implemented.	1A 1RJ	(2)
							[40]

QUESTION 3

3.1	3.1.1	Monthly cost = R2 500 + R200 + R300✓ = R3 000✓	1M adding 1A	(2)
	3.1.2	1 dozen = 12 muffins Income = R6✓× 24✓ = R144,00✓	1C 1M multiply 1CA	(3)
	3.1.3	a) Total monthly cost = R3 000✓+ (R50 × number of dozens)✓	2A formula	(2)
		b) Monthly income = R72✓ × number of dozens sold✓	2A formula	(2)
	3.1.4	Total income = 72 × 252✓ = R18 144,00✓ Total cost = R3 000 + 50 × 252✓ = R15 600✓ Profit = 18 144,00 – 15 600✓ = R2 544,00 Siyanda's mother will make a profit of R2 544,00. ✓	1M multiply 1A 1M cost 1CA 1M subtracting 1CA	(6)

3.2	3.2.1	MAQ bus hire = 3,50 × distance (A) 1 400✓ = 3,50 × distance✓ A = 400✓ B = 3,50 × distance = 3,50✓× 1 000✓ = 3 500✓	2S 1CA 2S 1CA	(6)

	3.2.2		2 Starting points 2 Correct straight lines 1 suitable heading 1 for axes 1 Legend	(7)

	3.2.3	Approximately 750 km✓ (Accept 700 – 750)	1RG	(1)
	3.2.4	MAQ Bus Hire✓ is cheaper as the graph is lower. Even though you are given free kilometres at Skip Bus Hire, there is still a fixed cost to be paid.✓✓	1RT 2R	(3)
	3.2.5	Direct relationship✓ When the distance increases, the amount also increases.✓✓	1A 2R	(3)
				[35]

QUESTION 4

4.1	4.1.1	$V_{Cylinder} = (3,14)(30)^2 \times 80$ ✓ $V_{Cylinder} = 226\,285,71 cm^3$ ✓	$V_{Cylinder} = 3,14\,(0,3)^2 \times 0,8$ ✓ $V_{Cylinder} = 0,22628571 m^3$ ✓	2SF 1A	
		$V_{Cone} = \frac{1}{3}(3,14)(30)^2 \times 60$ ✓ $V_{Cone} = 5657143 m^3$ ✓	$V_{Cone} = \frac{1}{3}(3,14)(0,3)^2 \times 0,6$ ✓ $V_{Cone} = 0,5657143 m^3$ ✓	2SF 1A	
		$V_{Total} = 226\,285,71 + 56\,571,43$ ✓ ✓ $V_{Total} = 282\,857,14 cm^3$ ✓	$V_{Total} = 0,22628571 + 0,5657143$ ✓ ✓ $V_{Total} = 0,28285714 m^3$ ✓	2M 1A	
		$V_{Litres} = 282\,857,14$ ✓ $\div 1000$ ✓ $V_{Litres} = 282,86$ litres ✓	$V_{Litres} = 282\,857,14$ ✓ $\times 1000$ ✓ $V_{Litres} = 282,86$ litres ✓	2M 1A	(12)
	4.1.2	$V_{Spillage} = 282,86 \times 0,05$ ✓ $V_{Spillage} = 14,14$litres ✓ $V_{Youghurt} = V_{Total} - V_{Spillage}$ $V_{Youghurt} = 282,86 - 14,14$ ✓ $V_{Youghurt} = 268,72$ ✓ Number of bottles = 268,72 litres ✓ $\div$ 0,5 litres ✓ = 537,44 ✓ = 537 ✓ bottles	$V_{Youghurt} = V_{Total} \times 95\%$ $V_{Youghurt} = 282,86 \times \frac{95}{100}$ ✓ ✓ ✓ $V_{Youghurt} = 268,72$ ✓ Number of bottles = 268,72 litres ✓ $\div$ 0,5 litres ✓ = 537,44 ✓ = 537 ✓ bottles	3M 1A 2M 1A 1 Rounding down	(8)
	4.1.3	Number of boxes = 537 ✓ $\div$ 12 ✓ = 44,75 ✓ = 45 ✓ boxes		2M 1A 1 Rounding up	(4)
4.2	4.2.1	Southwest ✓ ✓		2A J	(2)
	4.2.2	Warning of falling objects due to overhead works ✓		1J	(1)
	4.2.3	Toolroom ✓/Canteen ✓/Lunchroom ✓/Admin ✓/Drawing Office ✓/First Aid ✓/Toilets ✓, etc.		1A	(1)

	4.2.4	Site Area = 600 × 350✓ Site Area = 210 000m^2✓ Site Area = 210 000 ÷ 10 000✓ Site Area = 21ha✓	1SF 1A 1M 1A	(4)
	4.2.5	Building Area = 200 × 400✓ Building Area = 80 000m^2✓ Parking Area = Site Area – Building Area Parking Area = 210 000 - 80 000✓ Parking Area = 130 000m^2✓ Cost = Parking Area × R160/m^2 Cost = 130 000m^2 ✓× R160/m^2✓ Cost = R20 800 000✓ Cost = R23 million✓	1SF 1A 1M 1A 2M 1A 1 Rounding	(8)
				[40]

	TOTAL:	**150**

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