higher education & training

Department:
Higher Education and Training
REPUBLIC OF SOUTH AFRICA

MARKING GUIDELINE

NATIONAL CERTIFICATE (VOCATIONAL)

MATHEMATICAL LITERACY
(Second paper)
NQF LEVEL 3

23 November 2022

This question paper consists of 6 pages.

SYMBOL	EXPLANATION
M	Method
MA	Method with accuracy
CA	Consistent accuracy
A	Accuracy
C	Conversion
S	Simplification
RT/RG/RD/RM	Reading from table/graph/drawing/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

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QUESTION 1					
Question		**Solution**			**Explanation**
1.1	1.1.1	North-West✓✓			2A (2)
	1.1.2	Scale = 25mm : 10km Straight line = 78mm distance = 78×10÷25✓ = 31.2km✓ *(Allow 28km – 34km)* Markers to redo the answer after final printing			1M 1A (2)
	1.1.3	Average Estimated Speed = 50,5 km ÷ (37/60) ✓ Average Estimated Speed = 50,5 km ÷ 0,62hours✓ Average Estimated Speed = 81,45 km/h✓			1SF 1 Conversion 1 A (3)
1.2		1: 25 000 000 $3(25\ 000\ 000) = 1(x)$ $x = 3(25\ 000\ 000)$✓ $x = 75\ \ 000\ 000$✓ $x = \frac{75\ 000\ 000}{1\ 000\ 000}$✓ $x = 75$ km✓			1M 1A 1M divide 1CA (4)
1.3	1.3.1	V = 45 ✓× 25✓× 15✓ V = 16 875 cm^3✓ V = 16 875 ÷ 1 000 000✓ V = 0,017 ≈ 0,02m^3 ✓	V = 0,45 ✓× 0,25 ✓× 0,15✓✓ V = 0,016 875 ✓ V = 0,017 ≈ 0,02m^3 ✓		3SF 2M 1 A (6)
	1. 3.2	V- block = 16 875 cm^3 V- Candle $= \pi(1{,}5)^2$✓$\times$ 14 = 965,55 cm^3✓ No. Candles = $\frac{16\ 875}{965{,}55}$ ✓✓ No. candles = 17,47✓ No. candles = 17✓	V- block = 0,016 875 m^3 V- Candle $= \pi(0.015)^2$✓$\times$ 0,14 = 0,0097cm^3✓ No. Candles = $\frac{0{,}016\ 875}{0{,}00097}$ ✓✓ No. candles = 17,47✓ No. candles = 17✓		1SF 1A 1M 1A 1 rounding (6)
	1..3.3	Area-Plastic wrap = Surface Area + 20% of the Area			
	(a)	$= 2[(45)(25$✓$) + (25)(15)$ ✓ $+ (15)(45)]$✓ $= 2(1\ 125$✓ $+ 375$✓ $+ 675$✓$)$ $= 4\ 350$✓ cm^2 Area-Plastic wrap = 4 350 × 120%✓ Area-Plastic wrap = 5 220 cm^2✓ or			3SF 3M addition 1A 1M 1A (9)

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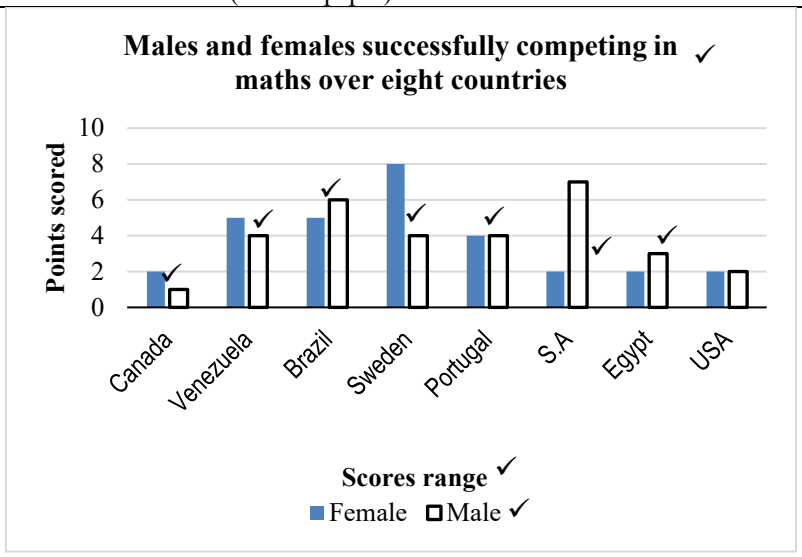
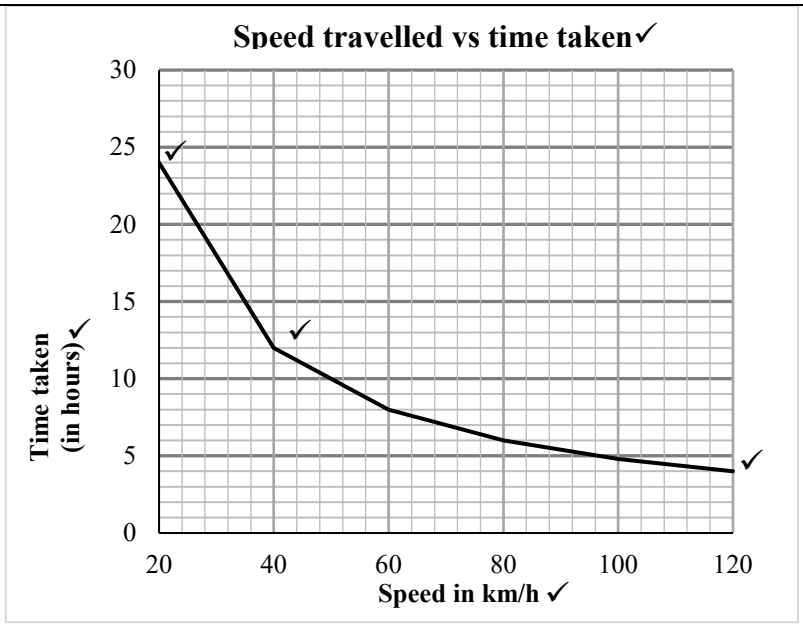
		Area-Plastic wrap $= 0{,}5220\ m^2$		
	(b)	Area of Plastic wrap $= 0{,}5220\ m^2$ Cost of plastic = R1,20/m^2 ✓× $0{,}5220\ m^2$✓ Cost of plastic = R0, 63 = 63^c✓		2M 1A (3)
	1.3.4	Area-Candle cover paper A= $2\pi(1{,}5)14$✓ $+ \pi(1{,}5)^2$ ✓ A = 87,92✓ + 7,065✓ A = 94,99 cm^2✓		1SF 2M addition 1A (5)
				[40]

QUESTION 2				
Question		**Solution**		**Explanation**
2.1	2.1.1	Female mean $= \frac{2+2+2+2+4+5+5+8}{8}$✓ $= \frac{30}{8}$✓ $= 3{,}75$✓ Male Mean $= \frac{1+2+3+4+4+4+6+7}{8}$✓ $= \frac{31}{8}$✓ $= 3{,}88$✓ Difference = 3,88 – 3,75✓ = 0,13✓		1 SF 1M 1 CA 1 SF 1M 1 CA 1 M , 1 A (8)
	2.1.2	1 2 3 4 4 4 6 7✓ Median of male $= \frac{4+4}{2}$✓ $= 4$✓		1M ascending order 1M 1A (3)
	2.1.3	2 2 2 2 5 5 4 8 Female mode = 2✓✓		2 CA (2)

	2.1.4			1 title 1 for *y* and *x*-axes 7 double-bar graph (1 mark for each correct double bar) 1 Legend (10)
	2.1.5	Female range = 8 – 2✓ = 6✓ Male range = 7 – 1✓ = 6✓		1M subtraction 1A 1M subtraction 1A (4)
2.2	Total successful = 30 + 31✓ = 61✓			1M 1A (2)
2.3	P (Brazil female) = $\frac{5\checkmark}{30\checkmark} \times 100$ = 16,67%✓			1A numerator 1A denominator 1CA (3)
2.4	P (male SA) = $\frac{7\checkmark}{61\checkmark}$ = 0,11 **OR** 11,47%✓			1A numerator 1A denominator 1A (3)
				[35]

QUESTION 3				
Question		**Solution**		**Explanation**
3.1	3.1.1	Income = 150✓ × N✓ Expenditure = 1 200✓ + 105✓ N✓		2A Income 3A Expense (5)
	3.1.2	A = 3 300✓ B = 6 000✓ C = 18 000✓ D = 320✓ E = 640✓ (5 × 1)		5A (5)

3.2	3.2.1	$= R500 + 100(30)$✓✓ $= R500 + 3000$✓ $= R3\ 500$✓		1A for 500 2A (3)
	3.2.2	= R3 500 ✓– $[R500 + 100(22)]$✓ $= R3\ 500 - R2\ 700$✓ = R800 = (30✓ – 22✓) × 100✓ = R800✓		2SF 1M Addition 1A (4)
	3.2.3	A full bus : 30 passengers No. of buses : 102 passengers No. of buses = 102 ÷ 30✓ No. of buses = 3,4✓ No. of buses = 4✓		 1M 1A 1Rounding up (4)
3.3	3.3.1	When the speed increases,✓ the tame taken to cover the distance decreases.✓		2A (2)
	3.3.2			1 Title 2 Axis labels 3 Correct points (6)
	3.3.2	Inverse proportion		2A (2)
	3.3.4	Distance = speed × time $= 20$✓ $\times\ 24$✓ $= 480$ km✓		2SF 1A (3)
	3.3.5	Time = 4 hours✓		1RG (1)
				[35]

QUESTION 4					
Question		**Solution**			**Explanation**
4.1	A = R 49 870 B = R 1 310 740 C = R 30 230 D = R -1 000 E = R 9 130 F = R 39 550 G = 10 (Line-item Number) H = R 1 005 230 I = R 941 620 *Full marks for answers only*				1A 2A 1A 1A 2A 2A 1A 2A 2A (14)
4.2	= 450 kWh × 125,85✓ = 566 325 c✓ = R566,33✓ = R566,33 × 15%✓ = R84,95✓ = R566,33 + R84,95✓ = R651,28✓				1M 1A 1A 1M 1A 1CA 1M (7)
4.3	4.3.1	Loan = R900 000✓ × 90%✓✓ Loan = R810 000 Proved	Deposit = R900 000 × 0,1✓ Deposit =R90 000✓ Loan = 900 000 – R90 000✓ Loan = R810 000 Proved		3M (3)
	4.3.2	Monthly Repayment = R9, 65✓ × 1000✓ Monthly Repayment = R9 650✓ (Excluding hidden costs) Monthly Repayment = R9 650✓ + R71✓ Monthly Repayment = R9 721 Proved			2RT 1A 2M (5)
	4.3.3	Total Cost of Loan = R9 721✓ ×240✓✓ months =R2 333 040✓			3M 1A (4)
	4.3.4	Total Interest = R2 333 040✓ – R810 000✓ Total Interest = R1 523 040✓			2M 1A (3)
	4.3.5	= R1 523 040✓÷ R810 000✓×100%✓ = 188%✓			3M 1A (4)
					[40]
				TOTAL:	**150**