higher education & training

Department:
Higher Education and Training
REPUBLIC OF SOUTH AFRICA

MARKING GUIDELINE

NATIONAL CERTIFICATE (VOCATIONAL)

MATHEMATICAL LITERACY
NQF LEVEL 3
(First paper)

14 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 9 pages.

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QUESTION 1 [30]

Question	**Solution**		**Explanation**	**Marks**
1.1	1.1.1	$= 18 - 6 + 4$ $= 18 - 10$ ✓ $= 8$ ✓	1 A Calculation 1 A Answer	(2)
	1.1.2	$= \sqrt[3]{9-8} - 1$ ✓ $= \sqrt[3]{1} - 1$ $= 1 - 1$ ✓ $= 0$ ✓	1 SR Answer 1 A Calculation 1 A Answer	(3)
	1.1.3	$= \dfrac{\frac{26}{5} \times \frac{25}{8}}{\frac{51}{10} - \frac{13}{5}}$ ✓ $= \dfrac{\frac{65}{4}}{\frac{51-26}{10}}$ ✓ $= \frac{65}{4} \times \frac{10}{25}$ $= \frac{13}{2}$ or $6\frac{1}{2}$ or 6,5 ✓	1 A Calculation 1 LCM Answer 1 A Answer	(3)
1.2	$\therefore 5476 + 3789 + x = 11287$ $\therefore \quad 9265 + x = 11287$ ✓ $\therefore \quad x = 11287 - 9365$ $= 2022$ ✓		1 A Calculations 1 A Answers	(2)
1.3	1.3.1	$= \dfrac{12{,}6}{3} \times 600$ ✓ $= 2500\text{g}$ ✓	1 A Calculations 1 A Answers	(2)
	1.3.2	$= (5412\text{g} \div 600) \times 3\text{ml}$ ✓ $= 9{,}02 \times 3\text{ml}$ $= 27{,}06\text{ml}$ ✓	1 M Method 1 A Answer	(2)

Question		Solution	Explanation	Marks
	1.3.3	= 27,06ml ÷ 20ml ✓ = 1,353 = 2 tubes ✓	1 MA Answer 1 R Rounding up	(2)
1.4		= 7,25 kg – 5 kg = 2,25 kg ✓ ∴ 2,25 kg x 1000 = 2 250 g / 250 g = 9 ✓ = R3,50 × 9 = R31,50 ∴ Total cost = R250 + R31,50 ✓ = R281,50 ✓	1 MA Answer 2 A Calculation 1 A Answer	(4)
1.5		∴ 20% x = 2200 ∴ $\frac{20}{100}$ x = 2200 ✓ ∴ $\frac{x}{5}$ = 2200 ✓ ∴ x = R11000 ✓	1 MA Answer 1 A Calculation 1 A Answer	(3)
1.6		3 : 36 = 12 : x ✓ 1 : 12 = 12 : x $x = \frac{12 \times 12}{1}$ ✓ x =144 ✓ OR 3 : R36 ✓ 12 : x $x = \frac{R36 \times 12}{3}$ ✓ x =144 ✓	1 MA Answer 1 SC Answer 1 A Answer	(3)
1.7	1.7.1	t = $\frac{d}{s}$ = $\frac{668}{100}$ ✓ = 6,68 = 7 hrs ✓	1 SF Answer 1 A Answer	(2)
	1.7.2	s = $\frac{d}{t}$ = $\frac{668}{9}$ ✓ = 74,22km/h ✓	1 SF Answer 1 A Answer	(2)

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QUESTION 2 [30]

Question		Solution	Explanation	Marks
2.1	2.1.1	F✓	1 A Answer	(1)
	2.1.2	A✓	1 A Answer	(1)
	2.1.3	G✓	1 A Answer	(1)
	2.1.4	B✓	1 A Answer	(1)
	2.1.5	C✓	1 A Answer	(1)
2.2		$\therefore 12\text{mm} : 300\text{m}$ $\therefore 12\text{mm} : 300000\text{mm}$✓ $\therefore 1 : 25000$ ✓	1 C Answer 1 A Answers	(2)
2.3	2.3.1	$A = \frac{\pi r^2}{4}$ ✓ $= \frac{3.14 \times 100\text{m}^2}{4}$ ✓ $= \frac{314\text{m}^2}{4}$ ✓ $= 78{,}5\text{m}^2$ ✓	1 F Answer 1 SF Answer 1 A Calculations 1 A Answers	(4)
	2.3.2	Subtract the area of the small circle from the area of the big circle. $\because A = (3{,}14 \times 12\text{m}) - (3{,}14 \times 10\text{m})$ ✓ $= (3{,}14 \times 124\text{m}^2) - (3{,}14 \times 100\text{m}^2)$ ✓ $= 389{,}36\text{m}^2 - 314\text{m}^2$ ✓ $= 75{,}36\text{m}^2$ ✓	1 MA Answer 1 SF Answer 1 A Calculations 1 A Answers	(4)
	2.3.3	Area of wildflower = 78,5 × 2 ✓ = 157 m^2 ✓ Number of packets = 157 × 2 ✓ = 314✓	2 A Calculations 2 A Answers	(4)
2.4	2.4.1	$V = \frac{(215\text{mm} \times 300\text{mm} \times 52\text{mm})}{1000}$ ✓ $= \frac{3354000}{1000}$ ✓ $= 3354\text{m}^3$ ✓	1 SF Answer 1 A Calculations 1 A Answers	(3)

Question		Solution	Explanation	Marks
	2.4.2	$2{,}48\text{kg} = 3354\text{m}^3$ ✓ $x\text{kg} = 1000\text{m}^3$ ✓ $x = \frac{2{,}48 \times 1000}{3354}$ ✓ $x = 0{,}739kg$ ✓	3 M Method 1 A Answers	(4)
2.5		$a^2 = b^2 + c^2$ $(250\text{m})^2 = b^2 + (150\text{m})^2$ ✓ $b = \sqrt{(250\text{m})^2 - (150\text{m})^2}$ ✓ $= \sqrt{62500\text{m}^2 - 22500\text{m}^2}$ $= \sqrt{40000\text{m}^2}$ ✓ $= 200\text{m}$ ✓	 1 SC Answer 1 SF Answer 1 SR Answer 1 A answer	(4)

QUESTION 3 [30]

Question		Solution	Explanation	Marks
3.1	3.1.1	$= 2(1\% \text{ of } 10500)$ ✓ $= 2\left(\frac{1}{100} \times \frac{10500}{1}\right)$ ✓ $= 2 \times 105$ $= \text{R}210$ ✓	 1 MA Answer 1 A Calculation 1 A Answer	(3)
	3.1.2	$= \left(\frac{10{,}5}{100} \times \frac{10500}{1}\right) \times 12$ ✓ $= \text{R}1102{,}50 \times 12$ ✓ $= \text{R}13230$ ✓	 1 MA Answer 1 A Calculation 1 A Answer	(3)
	3.1.3	$= \text{R}1102{,}50 + \text{R}105$ ✓ $= \text{R}1207{,}50$ ✓	1 A Calculation 1 A Answer	(2)
	3.1.4	$= \text{R}10500 - \text{R}1207{,}50$ ✓ $= \text{R}9292{,}50$ ✓	1 A Calculation 1 A Answer	(2)

Question		Solution	Explanation	Marks
3.2	3.2.1	VAT= $\frac{15\% \times R6550,95}{115\%}$ ✓ ✓ VAT = R854,47✓ SARS will receive R982,64✓	2 M Method 1 A Calculation 1 A Answer	(4)
	3.2.2	VAT = R6750,85 × 0,15 = R1012,63 Price to the public = R6750,85 + R1012,63 ✓ Price to the public = R7763,48✓	1 M Method 1 A Answer	(2)
	3.2.3	SARS Amount = R982,64 + R1012,63✓ SARS Amount = R1995,27✓	1 M Method 1 A Answer	(2)
3.3	3.3.1	$I = \Pr t$ $= 15000 \times 11\% \times 5$ ✓ $= \frac{15000 \times 11 \times 5}{100}$ ✓ $= R8\,250$ ✓	1 SF Answer 1 A Calculation 1 A answer	(3)
	3.3.2	$= R15000 + R8250$ ✓ $= R23250$ ✓	1 MA Answer 1 A Answer	(2)
	3.3.3	$= \frac{R23250}{60}$ ✓ $= R387,50$ ✓	1 MA Answer 1 A Answer	(2)
3.4	3.4.1	= R10,50 x 2 ✓ = R21 ✓	1 MA Answer 1 A Answer	(2)
	3.4.2	$= 1\frac{1}{4} \times \frac{10,50}{1}$ ✓ $= 1,25 \times R10,50$ ✓ $= R13,13$ ✓	1 MA Answer 1 A Calculation 1 A Answer	(3)

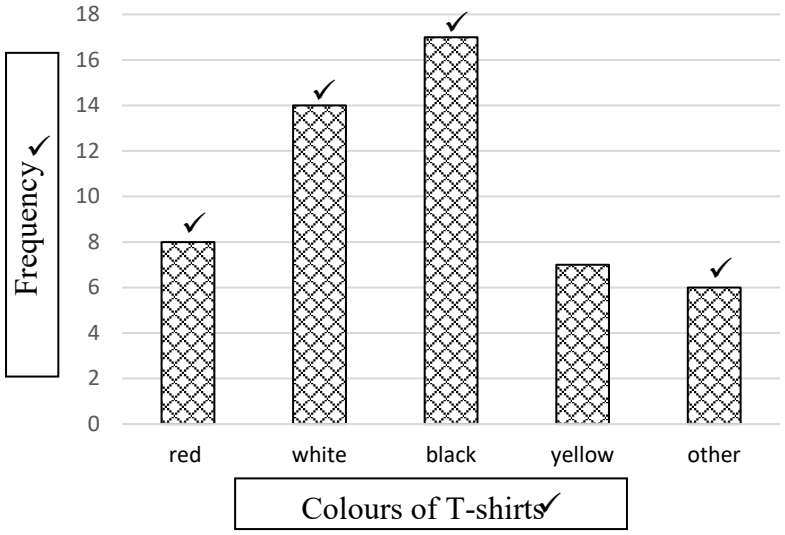
QUESTION 4 [30]

Question		Solution	Explanation	Marks
4.1	4.1.1	11:00✓	1 RG Answer	(1)
	4.1.2	12:30✓✓	2 RG Answer	(2)
	4.1.3	2 times OR twice✓	1 RG Answer	(1)
	4.1.4	60 minutes OR 1 hour✓✓	2 RG Answer	(2)
	4.1.5	11:00 ─12:30 and 15:30 ─16:00✓✓	2 RG Answer	(2)
	4.1.6	$= \frac{20\text{km}}{0{,}5\text{h}}$ ✓ $= 40$✓ km/h✓ [Penalise if units are wrong or omitted]	1 SF Answer 1 A Answer 1 A Units	(3)
4.2		$\therefore \frac{30}{200} = \frac{x}{900}$ ✓ $\therefore 200x = 27000$ $\therefore \quad x = 135$ convert 135 to hour by dividing by 60 $\therefore \quad x = \frac{136}{60} = 2\frac{1}{4}$ ✓ = 2 hours 15 minutes ✓	1 MA Answer 1 A Calculation 1 A Answer	(3)
4.3		$= (9{,}85\text{kl} - 5\text{kl}) \times \text{R}5{,}34$ ✓ $= 4{,}85 \times \text{R}5{,}34$✓ $= \text{R}25{,}899$ $= \text{R}25{,}90$ ✓	1 MA Answer 1 A Calculation 1 A Answer	(3)
4.4	4.4.1	16 ; 28 ; 40 (when x starts from 0) OR 28✓ ; 40✓ ; 52✓ (when x starts from 1)	1 A Answer each	(3)
	4.4.2	12 ✓	1 A Answer	(1)
	4.4.3	When the value of x increases, the value of y also increases. ✓✓	2 J Answer	(2)

Question		Solution	Explanation	Marks
4.5	4.5.1	Money deposited = Months × Amount deposited ✓ Let months = x ✓ and money = y ✓ ∴ The equation is: $y = 3845x$ ✓	2 MA Answer 2 A Answer	(4)
	4.5.2	y = R3845✓ ×12✓ = R46140 ✓	2 A Calculation 1 A Answer	(3)

QUESTION 5 [30]

Question		Solution	Explanation	Marks
5.1	5.1.1	191✓	1 RT Answer	(1)
	5.1.2	176✓✓	2 RT answer	(2)
	5.1.3	175✓✓	2 RT Answer	(2)
	5.1.4	∴ 191 – 168 ✓ = 23 ✓	1 A Calculation 1 A Answer	(2)
	5.1.5	$= \frac{168+169+169+175+175+175+176+176+176+176+191}{11}$ ✓ $= \frac{1926}{11}$ ✓ = 175 ✓	1 MA Answer 1 A Calculation 1 A Answer	(3)
5.2	5.2.1	$= \frac{27}{100} \times 52$ ✓ = 14 ✓	1 MA Answer 1 A Answer	(2)
	5.2.2	Black ✓	1 A Answer	(1)
	5.2.3	**Colour of T-shirts** / **Frequency**: Red 8✓, White 14✓, Black 17✓, Yellow 7, Other 6✓	1 A answer each	(4)

Question	Solution	Explanation	Marks
	5.2.4 	1 A Answer each	(6)
	5.2.5 $= \frac{8+14}{52}$ ✓ $= \frac{22}{52}$ ✓ $= \frac{11}{26}$ ✓ OR $\because 15\% + 27\% = 42\%$ ✓ $= \frac{42}{100}$ ✓ $= \frac{21}{50}$ ✓ Note: If % is used, the answer is as above.	1 MA Answer 1 S Answer 1 A Answer	(3)
5.3	a) 0,25✓ b) $\frac{25}{100}$ or $\frac{1}{4}$ ✓	1 A answer each	(2)
5.4	$\frac{1}{25}$ ✓✓	2 A Answer	(2)

TOTAL: 150

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