higher education & training

Department:
Higher Education and Training
REPUBLIC OF SOUTH AFRICA

MARKING GUIDELINE

NATIONAL CERTIFICATE (VOCATIONAL)

MATHEMATICAL LITERACY
(First Paper)
NQF LEVEL 3

20 FEBRUARY 2020

SYMBOL	EXPLANATION
M	Method
MA	Method with accuracy
CA	Consistent accuracy
A	Accuracy
C	Conversion
S	Simplification
RT/RG/RD	Reading from a table/graph/drawing
F	Choosing correct formula
SF	Substitution in formula
R/J	Reasoning/Justification
P	Penalty, for example for no units, incorrect rounding off, etc.
R	Rounding off
E	Explanation

This marking guideline consists of 9 pages.

QUESTION 1 [30] *Do not deduct marks if the 'R' or the '%' sign are omitted.		
Question	**Solution**	**Explanation**
1.1 1.1.1	$180 + 23 \times 6$ BODMAS $= 180 + 138$✓ $= 318$✓ **(Answer only no marks)**	1 S + 138 1 A (2)
1.1.2	$\left(1\frac{1}{3} + \frac{2}{3}\right) \times 2^3$ $= 2$ ✓ x 8✓ $= 16$✓ **(Answer only 0 marks)**	2 S 1 A (3)
1.2 1.2.1	4:2:1✓	1 A (1)
1.2.2	$4 \div 2 = 2$ $2 \div 2 = 1$ wheelbarrow of sand✓ $1 \div 2 = ½$ wheelbarrow of cement✓ **(Answer only full marks)**	1A 1A (2)
1.3	8 oranges cost R24 1 ✓orange costs R3✓ 12 oranges cost R36✓ **OR** R24/8✓ × 12✓ = R36✓ **(Answer only full marks)**	2 M 1 A 2 M 1 A (3)
1.4	4,5 kg × 1 000✓ = 4 500 g✓ **(Answer only full marks)**	1 M 1 A (2)
1.5	Original Price = R4 699✓ $\times \frac{100✓}{87✓}$ = R5 401,15✓	3 M 1 A (4)
1.6	2 000✓	1 A (1)

1.7	Number of plastic bags = 250 ÷ 12✓
	                 = 20,83✓
	                 = 20✓ full boxes
		1M ÷12
		1 A
		1R answer in context
		 (3)

1.8	1:50 000 23,5 × 50 000✔ = 1 175 000 cm ÷ 100 000 ✔km = 11,75 km✔	1M × 50 000 1MA ÷ 100 000 1 C (correct answer only) (3)
1.9	$\qquad$ +24:00 $\qquad$ <u>04:49</u> $\qquad$ 28:49✔ Minus $\qquad$ <u>17:30</u>✔ $\qquad$ 11 hours✔ 19 minutes✔ **(If answer is given as 11:19 award 2 marks.)** **OR** 17:30 to 24:00 = 6 hours 30 min✔ 00:00 to 04:49 = <u>4 hours 49 min</u>✔ $\qquad$ 10 hours 79 min✔ = 11 hours 19 min✔	1MA add 24 hours 1M minus 17:30 2 A 1 MA 1 MA 1 adding 1 correct answer (4)
1.10	$\qquad$ 10:30 $\qquad$ <u>+10 hours</u>✔ $\qquad$ 20:30✔ Also accept 8.30 pm or 20h30 **(Answer only full marks)**	1 M 1 A (2)

QUESTION 2 [30] * Penalise only once for incorrect unit.		
Question	**Solution**	**Explanation**
2.1 2.1.1	L = 2,25✓ m and B = 0,95✓ m Area (door) = L × B $\qquad$ = 2,25 × 0,95✓ $\qquad$ = 2,1375 m² $\qquad$ = 2,14✓ m²	2C 1 SF 1 A (correct to 2 decimal places) (4)
2.1.2	Area (wall) = L × B $\qquad$ = 2,9 × 4,5✓ $\qquad$ = 13,05✓ m² Area (window) = L × B $\qquad$ = 1,6 ✓× 1,3✓ $\qquad$ = 2,08 ✓m² Area (door) = 2,14 m² Area to be painted = 13,05 –2,08✓ – 2,14✓ $\qquad$ = 8,83 m²	1 SF 1 A 2 SF (converted values) 1 A 2 MA (7)
2.1.3	Area to be covered × two layers = 8,83 × 2 $\qquad\qquad\qquad\qquad$ = 17,66✓ m² Paint needed = 17,66 ÷ 7✓ $\qquad\qquad$ = 2,52 litres $\qquad\qquad$ = 3 ✓litres	 1 MA 1 M ÷ 7 1 R (3)
2.1.4	500 ml @ R59 = R59 × 2 = R118✓ per litre 1 litre @ R110 = R110 per litre 5 litre @ R449 = R449 ÷ 5 = R89,80 ✓per litre ∴ the 5 litre paint ✓is the most economical per litre	1 MA Given 1 MA 1 R/J (3)
2.1.5	Based on 3 litres of paint: Cost of 500 ml paint = R118 × 3 = R354✓ Cost of 1 litre paint = R110 × 3 = R330✓ ∴ she should buy 3 one litre paint✓ containers	 1 MA 1 MA 1 R/J (3)
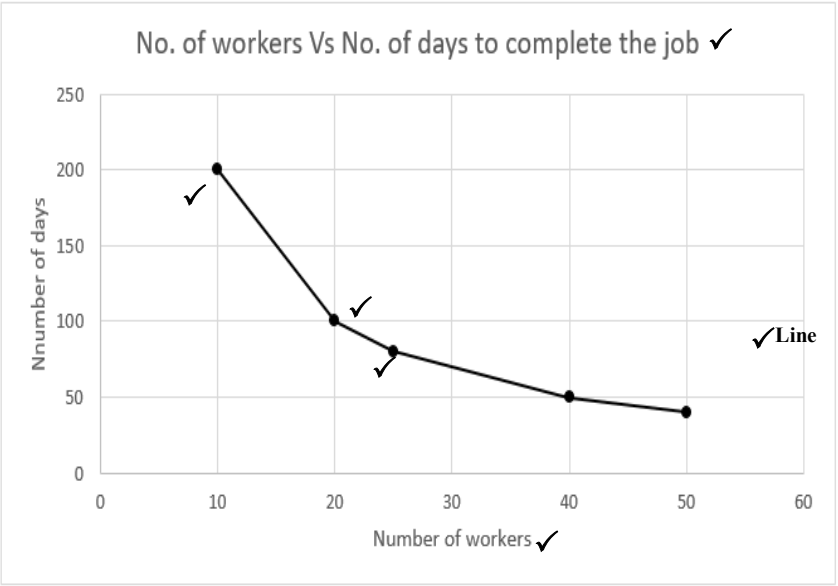
2.1.6	$L = 20 + 160 + 20$ $= 200$ cm✓ $B = 20 + 130 + 20$ $= 170$ cm✓ Perimeter $= 2(L + B)$ $= 2(200 + 170)$ ✓ $= 2 \times 370$ $= 740$ cm $= 7,4$ m✓ Bongi must buy 8 m of border✓	1MA length 1MA height (breadth) 1 SF 1 answer in m 1 R to full metre (5)
2.2 2.2.1	Right angled triangle✓ (no mark for triangle)	1 A (1)
2.2.2	$c^2 = 2^2 + 1,5^2$✓ $= 4 + 2,25$ $= 6,25$✓ $\therefore c = \sqrt{6,25}$✓ $= 2,5$ ✓ m	1 SF 1 A 1 M 1 CA (4)

QUESTION 3 [30] * Do not penalise if R is omitted.		
Question	**Solution**	**Explanation**
3.1 3.1.1 3.1.2 3.1.3 3.1.4 3.1.5	D✓ G✓ F✓ A✓ B✓	 (5)
3.2 3.2.1	02/05/2018✓ to 31/05/2018✓ or 2 May 2018✓ to 31 May 2018✓ or May 2018✓✓	 (2)
3.2.2	R50 018,98✓	(1)
3.2.3	credit✓	(1)
3.2.4	Bank balance decreased/became less	(1)
3.2.5	(a) R45 007,74✓ Minus R11,80✓ R44 995,94 ✓ **(Answer only one mark)**	1 RT 1 M subtraction 1 A (3)

3.2.6	R38 435,88✓ Minus R37 545,30✓ R890,58✓ **(Answer only one mark)**	1 RT 1 M subtraction 1 A (3)
3.2.7	R55 988,72 Minus R15 000,00 ✓ R40 988,72✓ **(Answer only one mark)**	1 RT 1 M subtraction 1 A (3)
3.2.8	R40 988,72✓	1 A (1)
3.2.9	Withdrawal from the branch✓	1 A (1)
3.3 3.3.1	R0✓ OR Nil OR Nothing	1 A (1)
3.3.2	Cost of 25 kℓ of water $= (6 \times 0)$ ✓ $+ (9 \times R21,04)$ ✓ $+ (10 \times R23,04)$ ✓ $= R419,76$✓	3 MA 1 A (4)
3.3.3	Disposal cost $= (6 \times 0)$ ✓ $+ (9 \times R14,20)$ ✓ $+ (2 \times R18,45)$ ✓ $= R164,70$✓ **(3 marks if R164,7)**	3 MA 1 A (4)

QUESTION 4 [30]		
Question	**Solution**	**Explanation**
4.1 4.1.1	- 81✓; -243✓	2 A (2)
4.1.2	18✓; 23✓	2 A (2)
4.1.3	Constant difference ✓ $= 5$✓	2 A (2)
4.2 4.2.1	The rate for the first 1000 km stays the same✓	1 R/J (1)
4.2.2	The rate changes to R3 per km after 1 000km ✓	1 RJ (1)

4.2.3	R2 000✓	1 A (1)
4.2.4	R3 500✓✓	2 RG (2)
4.2.5	1 400✓✓ km	2 RG (2)
4.2.6	Petrol bill = 1400✓ ÷ 10 ✓ x R15,80 ✓ = R2 212✓	3 SF 1 A (4)
4.2.7	Cost of travel = R2 000✓+ R3✓ × (number of km travelled – 1 000 km)✓ Or Cost of travel = R2 000✓+ R3✓ × (n – 1 000)✓	3A (3)
4.3 4.3.1	A = 200✓ ✓	2 A (2)
4.3.2	Indirect proportion✓: As the number of workers decrease, the number of days to complete the job increases such that their product is always 2 000✓	1 A 1R/J (2)
4.3.3		1 labelling title, 1 labelling both axes (no mark if one is omitted) 1 curved Line 3A plotting any 3 points correctly (6)

QUESTION 5 [30] * Do not penalise if R or % is omitted.		
Question	**Solution**	**Explanation**

5.1 5.1.1	FREQUENCY TABLE table below	1 A for each correct line x 5

5.1.1

FREQUENCY TABLE		
MEDIA	**TALLY**	**FREQUENCY**
Beef Burger	llll	4✓
King Pie	︴HHt	5✓
Chicken and Mayo sandwich	lll	3✓
Kota	HHt ll	7✓
Vetkoek	HHt l	6✓
TOTAL		**25✓**

Each tally and corresponding frequency must be correct for 1 mark per line

1 A for each correct line x 5
1 A TOTAL
(6)

5.1.2	Chicken and mayo sandwich✓	CA (1)
5.2 5.2.1	4 631✓✓	2 MA (2)
5.2.2	Car hijacking✓✓	2 RT (2)
5.2.3	16 717 ✓ + 22 343 ✓ + 20 680✓ = 59 740✓	4 A (4)
5.2.4	It means that there were three less bank robberies in 2016/2017 than in 2015/2016.✓✓	2 E (2)
5.2.5	Percentage increase = $\dfrac{4\,631✓}{56447✓} \times 100 ✓ = 8{,}2\%✓$	1 CA 5.2.1 1 M ÷ 56447 1 M × 100 1 CA % (4)
5.3 5.3.1	Sandy's time distribution per weekday✓ (any other suitable title)	1 A (1)
5.3.2	Sleeping✓	1 RG (1)

5.3.3	Time on work = 100 ✔ – 8 -38 -13 – 12✔ = 29✔%	1 M 100 – 1 RG 8; 38; 13; 12 1 A (3)
5.3.4	Sleeping and travelling = 38 + 12 = 50%✔ ∴12 hours ✔	2A (2)
5.3.5	Hours spent on social life = 13% of 24✔ hours = 3,12 ✔hours Or Hours spent on social life = 0,13 × 24✔ = 3,12 ✔hours	1 M 1 A (2)

TOTAL: **150**