higher education & training

Department:
Higher Education and Training
REPUBLIC OF SOUTH AFRICA

MARKING GUIDELINE

NATIONAL CERTIFICATE (VOCATIONAL)

NOVEMBER EXAMINATION 2012

MATHEMATICAL LITERACY
(First Paper)
NQF LEVEL 4

29 OCTOBER 2012

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	Substitution in formula
R/J	Reasoning/Justification
P	Penalty, e.g. for no units, incorrect rounding off etc.
R	Rounding off
E	Explanation

This marking guideline consists of 8 pages.

QUESTION 1

1.1	1.1.1	393 ✓	1 MA solution	(1)
	1.1.2	-5,75 ✓	1 MA solution	(1)
	1.1.3	1 173,900 ✓✓	1 M 1 R	(2)
	1.1.4	$= 0,5 \times 2 - 1$ ✓ $= 0$✓	1 M 1 R	(2)
1.2		77,6 kg ✓	1 MA solution	(1)
1.3		Cost of 1 muffin $= \frac{24,96}{12} = R2,08$ ✓✓	1 M 1 A - solution	(2)
1.4		55 litres × R9,30✓ = R511,50 ✓	1 M 1 A - solution	(2)
1.5		0,6 × 30✓ = 18 players✓ Or $0,4 \times 30 = 12$ ✓ $30 - 12$ = 18 players ✓	1 M 1 A - solution	(2)
1.6		18:20 – 7:35✓ = 10 hours and 45 minutes✓	1 M 1 A - solution	(2)
1.7		$V = 3,14\ (3,2✓)^2(11,5)$ ✓ $V = 369,7664\ cm^3$✓	1 SF 1 Radius 1 A	(3)
1.8		Purchase price in rand $= 86 \times R9,87$ $= R848,82$ ✓ ∴ cheaper in Greece	1 M 1A 1 answer: Greece	(3)
1.9		100% = original amount 80% = R168 ∴ original amount $= \frac{168 \times 100}{80}$ = R210	1 M 1A 1CA	(3)

1.10 1 : 9

$750 : amount\ of\ water$

$\therefore$ amount of water $= 9 \times 750$ ✓ 1 M

$= 6\,750\ ml$ ✓ 1 A

$= 6{,}75\ litres$ ✓ 1 C (3)

1.11 1.11.1 710 ✓ 1 A (1)

1.11.2 P(travels by bus) $= \frac{212}{710}$ ✓ $= \frac{106}{255}$ ✓ 1 A, 1 S (2)

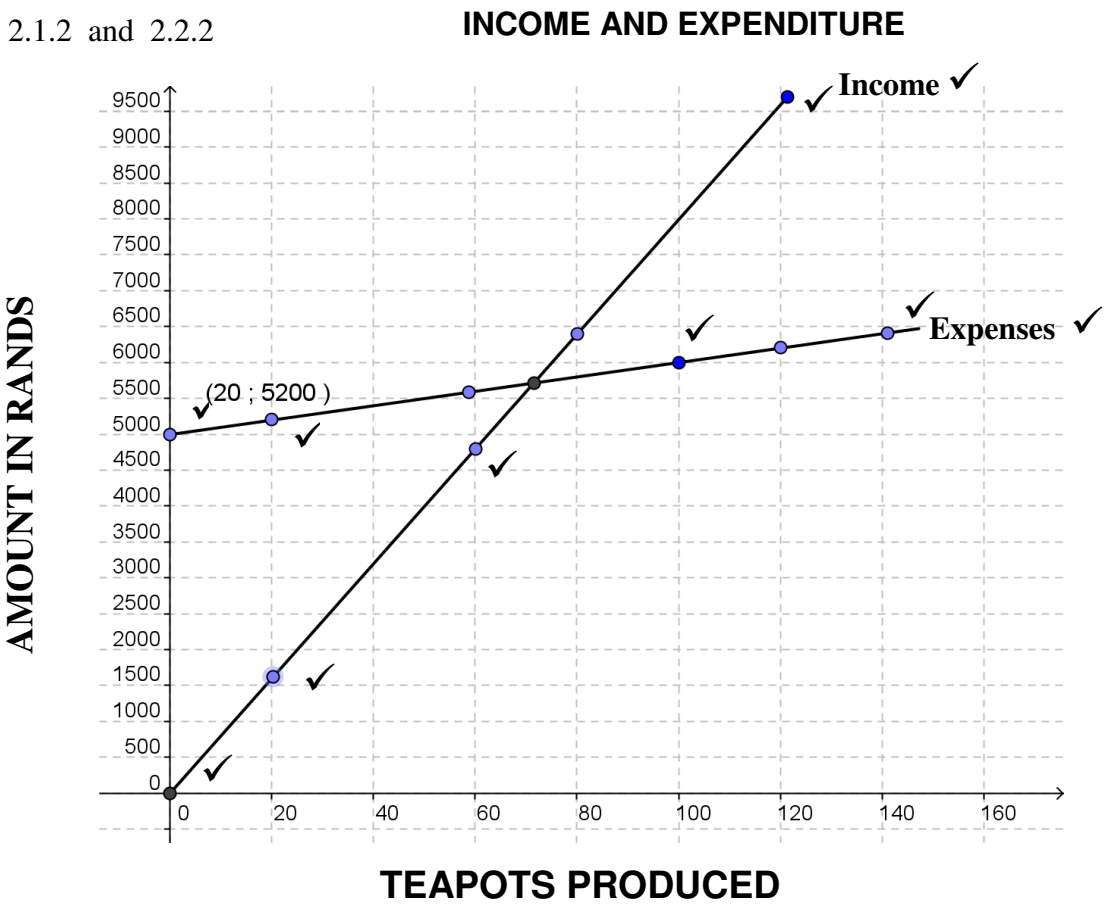
[30]

QUESTION 2

2.1 2.1.1 A = R5 200✓✓ 1 SF, 1 A

B = 120✓✓ 1 SF, 1 A (4)

2.1.2 and 2.2.2



(5)

4 A - plotting
1 label for each graph

+ (5)

2.2	2.2.1	C = R6 400✓✓	1 SF 1 A	(2)
2.3	2.3.1	Accept any answer from 71– 75✓✓	1 M 1 RG	(2)
	2.3.2	Values must be obtained from the graph = 7 200 – 5 900✓ = ± R1 300 ✓	1 M 1 RG 1 CA	(3) **[21]**

QUESTION 3

3.1	3.1.1	R50,74 – R43 = R43 = R7,74 ✓✓	1 M 1 A	(2)
	3.1.2	$\frac{7}{28} = 25\%$ ✓✓	1 M 1 A	(2)
	3.1.3	115% × R76 = R87,40 ✓✓✓	1 M – percentages 2A	(3)
	3.1.4			(4)

Lamb	1 ×R35	R35,00	✓	1 A
Chicken	0,8 ×R60	R48,00	✓	1 A
Pork	0,5 ×R50,74	R25,37	✓	1 A
	Payment	R108,37	✓	1 A

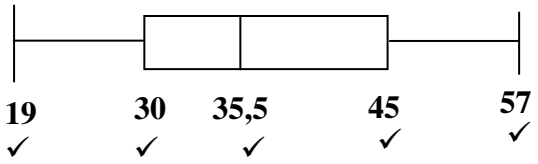
3.2	3.2.1	2,2 pounds = 1 kg 8 pounds = mass mass = $\frac{8}{2,2}$ ✓ = 3,636 kg ✓ = 4 kg ✓	1 C 1 A – answer 1 R	(3)
	3.2.2	Price = 4 × R35 ✓ = R140 ✓	1 M 1 CA	(2)
	3.2.3	$1 = R7,34 Cost price = R140 Cost price = $\frac{140}{7,34}$ ✓ = $19,07 ✓	1 C 1 CA	(2) **[18]**

QUESTION 4

4.1	8 hours: 54 minutes: 1 second ✓	1 RM	(1)
4.2	$05:30:00$ ✓ $+\,08:54:01$ --- $13:84:01$ ✓ Race completed at 14:24:01 ✓	1 M 1 A 1 C	(3)
4.3	Distance = 68,9 km – 26,9 km ✓✓ = 42 km ✓	1 RM 1 M 1 A	(3)
4.4	$6:45:23$ ✓ $-\,2:25:34$ --- $4:19:49$ ✓ ∴ Time taken = 4 hours and 20 minutes ✓	1 M 1 A 1 R	(3)
4.5	$\text{Speed} = \frac{42}{4:20}$ ✓ $= \frac{42}{4{,}33}$ ✓ $= 9{,}7 \text{ km/h}$ ✓	2 SF 1 - Converting 4 : 20 to 4,33 1 A	(4)
			[14]

QUESTION 5

5.1	Mode = 24 years ✓	1 A	(1)
5.2	$Mean = \frac{286}{10}$ ✓ $= 28{,}6$ ✓ $= 29 \text{ years}$ ✓	1MA 1 C 1 R	(3)
5.3	19; 26; 30; 34; 35; 36; 40; 45; 54; 57 ✓	1 A	(1)

5.4	5.4.1	Median = $\frac{35+36}{2} = 35,5$ ✓✓✓	2 M 1 A	(3)
	5.4.2	Lower Quartile = 30 ✓✓	2 MA	(2)
	5.4.3	Upper Quartile = 45 ✓✓	2 MA	(2)
5.5			1 A lower limit 1 CA Q_1 1 CA Q_2 1 CA Q_3 1 A upper limit	(5)
				[17]

QUESTION 6

6.1	A = 8 ✓✓		2 MA	
	B = 8 ✓✓		2 MA	(4)
6.2	6.2.1	Number of cleaners are represented by whole numbers✓	1 E	(1)
	6.2.2	Approx. 3 hours ✓✓	2 RG	(2)
	6.2.3	0,5 hours ✓✓	1 M 1 A	(2)
	6.2.4	Indirect/Inverse proportion ✓	1 R/J	(1)
				[10]

QUESTION 7

7.1	Credit balance/Positive balance/Favourable balance✓	1 R	(1)
7.2	R2 283,03 ✓	1 RT	(1)
7.3	R1 000 ✓	1 RT	(1)
7.4	2nd of each month ✓	1 RT	(1)
7.5	R250 + R1 000 = R1 250 ✓✓	1 M 1 A	(2)
7.6	Spent on calls = R269,32 – (R135 + R17) ✓✓ = R117,32 ✓	2 M 1 A	(3)

7.7	Car insurance (A) = R2 283,03 – R1 933,03 ✓ = R350 ✓	1 M 1 A	(2)
7.8	Balance (B) = R665,03 + R400 ✓ = R1 065,03 ✓	1 M 1 A	(2)
			[13]

QUESTION 8

8.1	Total Surface Area = $\frac{1}{2} \times 3{,}14 \times (0{,}5)^2$ ✓✓ = 0,393 m^2 ✓	2 SF 1 A	(3)
8.2	Total Surface Area = 1,5 × 1 ✓ = 1,5 m^2 ✓	1 F 1 A	(2)
8.3 8.3.1	Cost = 0,393 × 65 ✓ = R25,55 ✓	1 M 1 A	(2)
8.3.2	Cost = 1,5 × 45 ✓ = R67,50 ✓	1 M 1 A	(2)
8.4	0,5 × 3 = 1,5 m ✓✓	1 M 1 A	(2)
8.5	Perimeter = $\frac{1}{2}(3{,}14)\ (1) + 2(1{,}5+1)$ ✓✓ = 6,57 m ✓	2 SF 1 A	(3)
			[14]

QUESTION 9

9.1	A = 12 ✓✓	2 MA	
	B = 178 ✓✓	2 MA	(4)
9.2 9.2.1	P(over 50) = $\frac{594}{3\,054}$ ✓✓ = $\frac{297}{1\,527}$ ✓	2 SF 1 A	(3)
9.2.2	P(40 - 49 with NDSS) = $\frac{298}{883}$ ✓✓ = 33,75% ✓	2 SF 1 S	(3)

9.2.3 P(under the age of 40) 2 SF
1 S

$= \frac{314 + 126}{3\,054}$ ✓ ✓ $= \frac{1\,577}{3\,054}$ ✓ (3)

[13]

TOTAL: 150