higher education & training

Department:
Higher Education and Training
REPUBLIC OF SOUTH AFRICA

MARKING GUIDELINE

NATIONAL CERTIFICATE (VOCATIONAL)

MATHEMATICAL LITERACY
(First paper)
NQF LEVEL 2

21 February 2020

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
MF	Manipulation of 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' sign is omitted.			
QUESTION	**SOLUTION**	**EXPLANATION**	
1.1 1.1.1	10 + 2 × 12 = 10 + 24✓ = 34✓ **(Answer only 0 marks)**	1S + 24 1A	(2)
1.1.2	$\sqrt{100} - (3^2 + 1)$ = 10✓ – (9✓ + 1) = 10 – 10 = 0✓ **(Answer only 0 marks)**	2S 10 and 9 1A	(3)
1.2	125/100✓ = 1,25✓ **(Answer only full marks)**	1M 1A	(2)
1.3	1,84 m × 100 = 184 cm✓ 184 cm + 7 cm ✓ = 191 cm✓ **(Answer only full marks)**	1C 1M 1A	(3)
1.4 1.4.1	31 days✓	1RT	(1)
1.4.2	Tuesdays✓ and Thursdays✓	2RT	(2)
1.4.3	7.30✓ pm✓ (Accept 7:30 pm)	2A	(2)
1.4.4	23:35 - 19:30 04:05✓ She studied for 4 hours ✓and 5 minutes. ✓ **(Answer only full marks)**	 1MA 2A	(3)
1.5 1.5.1	White : Red 2 : 3✓ 6 ℓ : x ℓ ∴ 2x = 18✓ x = 9✓ Therefore, you would need 9 ℓ of red paint. OR x = 3/2 ✓× 6 ℓ ✓ = 9 ℓ ✓ **(Answer only full marks)**	1M 1MA 1A 2M 1A	(3)

1.5.2	6 + 9 ✓ = 15 ℓ ✓ of paint **(Answer only full marks)**	1 M adding 1 CA (Q1.5.1)	(2)
1.6	18/40 × 100✓ = 45%✓ **(Answer only full marks)**	1M 1A	(2)
1.7	Price per litre = 650/45✓ = R14,44/ℓ✓ **(Answer only full marks)**	1M 1A	(2)
1.8	<u>2,5 kg bag:</u> Price per kg = R36,75/2,5✓ = R14,70✓ (no accuracy mark for R14,7) <u>1 kg bag:</u> Price per kg: R15,98 Therefore, the 2,5 kg bag of sugar is more economical. ✓ Or R15,98 × 2,5 kg✓ = R39,95✓ Therefore, it is more economical to 2,5 kg for R36,75✓	1M 1A 1R/J	(3)

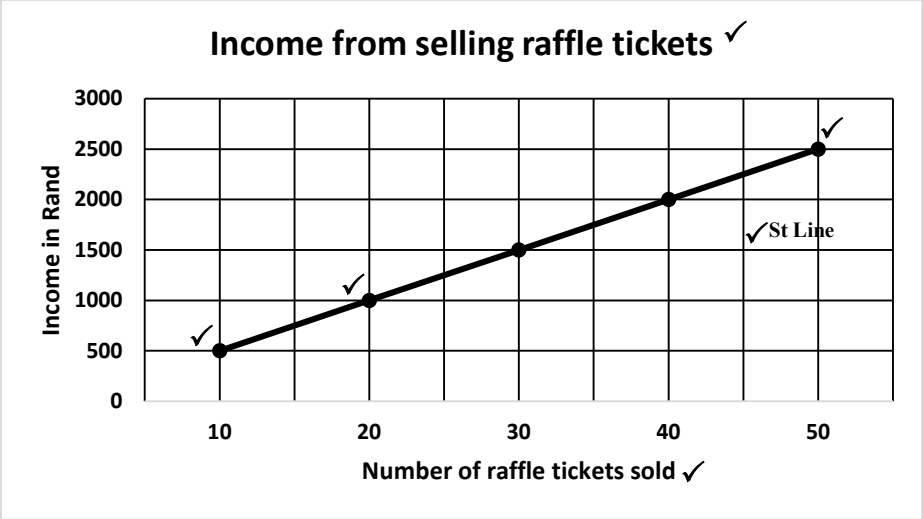
QUESTION 2 [30] *Do not deduct marks for incorrect units unless indicated.			
QUESTION	**SOLUTION**	**EXPLANATION**	
2.1 2.1.1	Right angled triangle ✓ (no mark for triangle)	1A	(1)
2.1.2	$c^2 = a^2 + b^2$ $= 12^2$✓ $+ 16^2$✓ $= 144 + 256$ $= 400$✓ $c = \sqrt{400}$ $= 20$ cm✓	2SF 1A 400 1CA	(4)
2.1.3	Area of main sail = ½ × base × height = ½ × 12✓ × 16✓ = 96✓ cm² Area of head sail = ½ × area of main sail = ½ ×96✓ = 48✓ cm²✓	2SF 1A 1 SF 1 CA and 1U	(6)
2.2 2.2.1	Right into Lukin Road✓ Left into Gately Street✓ Second right into Botha Road✓ (Do not accept terminology such as turning up or down.)	1RG Direction and road 1RG Direction and road 1RG Direction and road	(3)
2.2.2	700 m✓ About 8 minutes✓	2RG	(2)
2.2.3	Selbourne Lodge, ✓ or Palm Tree Manor, or Shiraz (Any one of the above answers) (Accept Blue Ribbon Guest House although it is indicated as a place of learning or student accommodation.)	1RG	(1)
2.2.4	6 000✓ × 20✓ = 120 000✓ cm 120 000 ÷ 1000 ÷ 100✓ = 1,2✓ km Or 6 000✓ × 20✓ = 120 000 cm✓ 120 000 ÷ 100 000✓ = 1,2 km✓	2M 1A 2C	(5)

2.2.5	Northeast✓✓	2RG	(2)
2.3 2.3.1	3 mirrors✓	1RD	(1)
2.3.2	4 times✓	1RD	(1)
2.3.3	Rectangle✓or rectangular shape	1RD	(1)
2.3.4	Area = length × breadth = 2,2 ✓× 0,9✓ = 1,98 ✓m² **(Answer only full marks)**	2SF 1A	(3) **[30]**

QUESTION 3 [30] * Do not deduct marks if the 'R' sign is omitted.			
QUESTION	**SOLUTION**	**EXPLANATION**	
3.1 3.1.1 3.1.2 3.1.3 3.1.4 3.1.5 3.1.6	 F C G B A D	 1A 1A 1A 1A 1A 1A	 (6)
3.2 3.2.1	 R20 + (R7 × 1 km) ✓ = R20 + R7 = R27✓ **(Answer only full marks)**	 1M 1A	 (2)
3.2.2	UBER: R20+ (R7 × 10 km) ✓ = R20 + R70 = R90✓ Baleka: R13,50 + (R9,60 × 10 km) ✓ = R13,50 + R96 = R109,50✓ Therefore, it will be cheaper for her to travel with UBER	 1M 1A 1M 1A 1CA	 (5)
3.3 3.3.1	 Monthly✓	 1A	 (1)
3.3.2	25 March 2018✓	1RT	(1)
3.3.3	654128✓	1RT	(1)
3.3.4	Percentage of medical aid = 1 500/R35 000✓ ×100✓ = 4,2857✓ = 4,286✓	2M 1A 1R	 (4)

3.3.5	Net Salary = R35 000 – R13 105,83✓ = R21 894,17✓ **(Answer only full marks)**	1M 1A	(2)
3.4 3.4.1	R3,95✓	1RT	(1)
3.4.2	R4,50 – R3,95 ✓ = R0,55✓ **(Answer only full marks)**	1M 1A	(2)
3.4.3	R4,50✓ + (R1,40 × 10) ✓ = R4,50 + R14 = R18,50✓	1R choosing correct formula 1SF × 10 1A	(3)
3.4.4	Withdrawal (POS) ✓ R4,50✓	1RT 1RT	(2)

QUESTION 4 [30] * Do not deduct marks if the 'R' sign is omitted.			
QUESTION	**SOLUTION**	**EXPLANATION**	
4.1 4.1.1	R500✓	1RT	(1)
4.1.2	50 tickets✓	1RT	(1)
4.1.3	A: R1 500 ÷ R50✓ = 30 tickets✓ **(Answer only full marks)** B: 40 tickets × R50✓ = R2 000✓ **(Answer only full marks)**	1M 1A 1M 1A	(4)

<table>
<tr><td>4.1.4</td><td colspan="2"> 

1 labelling title

1 labelling both axes (no mark if one is omitted)

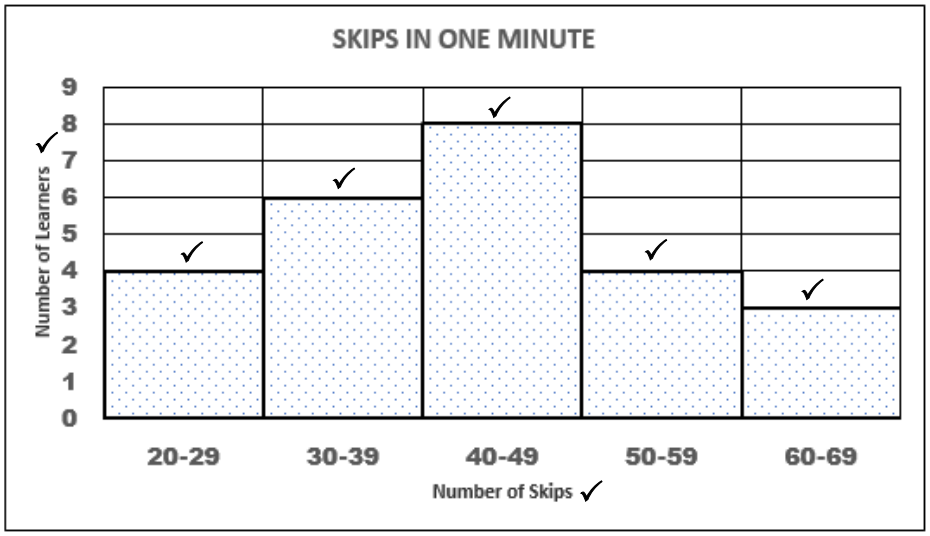
1 straight line

3A plotting 3 points correctly: (10;50), (20; 1 000), (500;2 500)</td><td>(6)</td></tr>
<tr><td>4.1.5</td><td>Dependent = Income✓ in Rands
Independent = Number of raffle tickets sold ✓</td><td>1A</td><td>(2)</td></tr>
<tr><td>4.1.6</td><td>Direct✓ relationship
As the numbers of tickets increase,✓the income also increases in the same proportion✓.</td><td>1A

2R/J</td><td>(3)</td></tr>
<tr><td>4.2
4.2.1</td><td><table>
<tr><td>Speed in km/h</td><td>30✓</td><td>60</td><td>90✓</td><td>120</td></tr>
<tr><td>Time in minutes</td><td>75</td><td>60✓</td><td>45</td><td>30✓</td></tr>
</table></td><td>4RG</td><td>(4)</td></tr>
<tr><td>4.2.2</td><td>Decreasing✓
As the speed increases✓ the time to complete the distance decreases. ✓</td><td>1A

2R/J</td><td>(3)</td></tr>
<tr><td>4.3
4.3.1</td><td>243✓ ; 729✓</td><td>2A</td><td>(2)</td></tr>
<tr><td>4.3.2</td><td>18✓; 21✓</td><td>2A</td><td>(2)</td></tr>
<tr><td>4.3.3</td><td>Constant ratio✓
Each number must be multiplied by 3✓ to get the next number.</td><td>1A
1R/J</td><td>(2)</td></tr>
</table>

QUESTION 5 [30]

QUESTION	SOLUTION	EXPLANATION	
5.1 5.1.1	<table><tr><th>INTERVAL</th><th>TALLY</th><th>FREQUENCY</th></tr><tr><td>20–29</td><td>||||</td><td>4</td></tr><tr><td>30–39</td><td>~~||||~~ | ✓</td><td>6✓</td></tr><tr><td>40–49</td><td>~~||||~~ ||| ✓</td><td>8✓</td></tr><tr><td>50–59</td><td>||||</td><td>4</td></tr><tr><td>60–69</td><td>|||✓</td><td>3✓</td></tr><tr><td></td><td>TOTAL:</td><td>25</td></tr></table> Each tally and corresponding frequency must be correct for 2 marks per line	2 RT 2 RT 2RT	(6)
5.1.2	 1 labelling horizontal axis 1 labelling vertical axis 5A (1 per correct bar) Note: If a bar graph is drawn, then award 2 marks for labelling only.		(7)
5.1.3	Sum = 1061✓ Mean = 1061 ÷ 25✓ = 42,44✓ skips per minute (Accept 42 skips)	1 A 1 M 1 CA	(3)
5.1.4	Mode = 28✓	1RT	(1)
5.1.5	Range = 67 ✓– 21 ✓ = 46✓ (**Answer only full marks**)	2M 1A	(3)

5.2 5.2.1	60 + 40 + 35 + 70✓ = 205✓ (**Answer only full marks**)	1M 1A	(2)
5.2.2	Jazz✓	1RG	(1)
5.2.3	Rock✓	1RG	(1)
5.2.4	The minimum value of the vertical axis is 10✓ instead of 0.✓	2R/J	(2)
5.2.5	$\frac{40}{205}$ ✓× 100✓ = 19,51%✓	2M 1CA (Q5.2.1)	(3)
5.2.6	Bar graph✓ (No mark for histogram)	1A	(1)
		TOTAL:	**150**