higher education & training

Department:
Higher Education and Training
REPUBLIC OF SOUTH AFRICA

MARKING GUIDELINE

NATIONAL CERTIFICATE (VOCATIONAL)

NOVEMBER EXAMINATION 2012

MATHEMATICAL LITERACY
(Second Paper)
NQF LEVEL 2

5 NOVEMBER 2012

Symbol	Explanation
M	Method
MA	Method with accuracy
CA	Consistent accuracy
A	Accuracy
C	Conversion
S	Simplification
RT/RG/RD	Reading from a table/Reading from a graph/drawing
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

This marking guideline consists of 9 pages.

NOTE: If Rand is omitted in any one of Questions, subtract <u>ONE mark only</u> for entire question paper.

QUESTION 1

Question		**Solution**	**Explanation**
1.1	1.1.1	$\frac{Total\ membership\ fees\ paid}{Number\ of\ members}$ $= \frac{R1\,024}{4}$ ✓ OR $\left(\frac{1792}{7};\frac{3072}{12};\frac{4352}{17}\frac{4864}{19}\right)$ = R256,00 ✓	1 M dividing 1 A R256,00 (2 Answer only) (2)
	1.1.2	Total membership fee income = Number of members ✓× R256 ✓ OR $256x$ *Do not penalise for omitting 'Total membership fee income'* *(Mark with mistake in QUESTION 1.1.1)*	2 F (2)
	1.1.3	Number of members × R256 = 21 × R256 ✓ =R5 376 ✓ *(Mark with mistake in QUESTION 1.1.1)*	1 M multiply 1 A (2 Answer only) (2)
	1.1.4	Total membership fees per day = No. of members × R256 R6 400 = Number of members × R256 ✓ $\frac{R6\,400}{R256}$ = Number of members ✓ 25 = Number of members ✓ **OR** $\frac{R6\,400}{R256}$ ✓ ✓ = 25 ✓ *(Mark with mistake in QUESTION 1.1.1)*	1 SF 1 M 1 A 25 members **OR** 1 SF 1 M 1 A 25 members Answer only: 2 marks (3)
1.2	1.2.1	<u>Phone:</u> $\frac{Phone}{Total} \times \frac{100}{1}$ $= \frac{R175}{R3\,185}$ ✓ $\times \frac{100}{1}$ ✓ $= \frac{17\,500}{3\,185}$ = 5,5% ✓ *(Do not subtract a mark for % omitted)*	2 M converting to percentage 1 A (Answer only: 2 marks) (3)

	1.2.2	Calculate increase amount: $\frac{7}{100} \times \frac{R325}{1}$ ✓ = R22,75 ✓ New petrol expenditure: R325 + R22,75 = R347,75 ✓ **OR** New petrol expenditure amount: $\frac{107}{100} \times \frac{R325}{1}$ ✓ ✓ $= \frac{R34\,775}{100}$ = R347,75 ✓ **OR** ✓ $325 + (\frac{7}{100} \times 325)$ ✓ = R347,75 ✓	Calculate increase amount: 1 MA R22,75 New Petrol Expenditure: 1 MA adding R22,75 1 A R347,75 **OR** New Petrol Amount: 2 M 1 A **OR** 2 M 1 A Answer only: 2 marks (3)
	1.2.3	R2 000 × 10 = R20 000✓ R20 000 × 12% or 0,12 ✓ OR R20 000 × 1,12 ✓ ✓ = R2 400✓ ∴ R20 000 + R2 400 = R22 400✓ OR ✓ R20 000✓+12% /interest✓ (Calculator used) = R22 400✓	1 A 1 M percentage 1 S 1 CA Answer only: 4 marks (4)
	1.2.4	Financial institutions also borrow money for which they pay interest, therefore they need to charge interest in order to cover their debt as well as to make a profit *Any other appropriate reason* ✓✓	2 R/J (2)
	1.2.5	• Set and prioritise financial goals✓✓ • Build financial discipline✓✓ • Organise finances *Any other appropriate reasons*	2 R/J per reason (4)
1.3	1.3.1	Length (L) = 8,5 + 4 + 4 ✓= 16,5 m ✓ *(Do not subtract a mark for unit omitted)*	1 M 1 A (2 Answer only) (2)

	1.3.2	Area of paving bricks = Area of larger rectangle – area of smaller rectangle = (L × B) – (l × b) = (16,5 m × 12,5 m)✓ - (8,5 m × 4,5 m)✓ = 206,25 m^2 ✓ – 38,25 m^2 ✓ = 168✓ m^2 ✓ OR Area of larger rectangle = (L × B) = (16,5 m × 12,5 m)✓ = 206,25 m^2 ✓ Area of smaller rectangle = (l × b) =(8,5 m × 4,5 m)✓ =38,25 m^2 ✓ ∴ = 206,25 m^2 – 38,25 m^2 = 168✓ m^2 ✓	CA with mistake in Question 1.3.1 2 MA 2 S 1 A 1 U in m^2 (6)
	1.3.3	5 m^2 is covered by 1 litre ∴ = 168 m^2 ÷ 5 m^2 ✓ = 33,6 ℓ = 34 ℓ ✓ = 34 ℓ × 2 ✓ = 68 ℓ ✓ *Do not subtract a mark for unit omitted*	CA with mistake in 1.3.2 1 M 1 S 1 M 1 A Answer only: 2 marks (4)
1.4	1.4.1	51 ✓✓ hours	2 RG (2)
	1.4.2	Day 16 ✓ That was the day when his study time stopped increasing. We can recognise this as a horizontal line on the graph. ✓✓	1 RG 2 R/J (3)
	1.4.3	$\frac{51}{18}$ ✓ = 2,83 / 3 ✓ (hours per day) *Also accept (Graph is misleading)* $\frac{51}{20}$ ✓ = 5,55 / 5,6 / 6 ✓ (hours per day)	CA with mistake in Question 1.4.1 1 MA dividing correct values 1 A (2)
	1.4.4	On day 1 Peter studied for 8 hours✓; thereafter he studied for 2 hours per day✓ OR He studied much more on the first day than the other days.	2 R/J (2)

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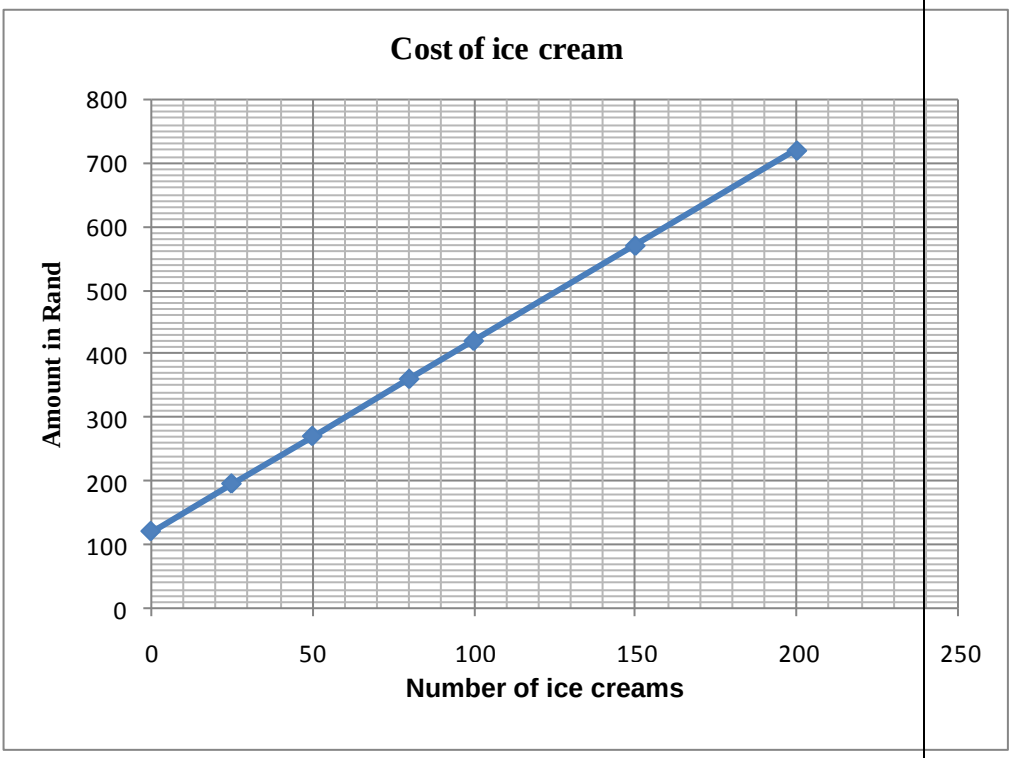
QUESTION 2

Question	Solution		Explanation
2.1	✓ ✓ ✓ Amount paid = licence fee + (R3 × number of ice creams) **OR** ✓ ✓ ✓ Amount Paid = R120 + (R3 × number of ice creams) **OR** ✓ ✓✓ Cost = 120 + 3 *x* *(Do not penalise for 'Amount paid' omitted)*		3 F 3 F (3)
2.2	A	Amount paid = licence fee + (R3 × number of ice creams) = R120 + (R3 × 80) ✓ = R120 + R240 = R360 ✓	1 SF 1 A (2 Answer only) (2)
	B 2	Amount paid = licence fee + (R3 × number of ice creams) = R120 + (R3 × 100) ✓ = R120 + 300 = R420 ✓	1 SF 1 A (2 Answer only) (2)
	C	Amount paid = licence fee + (R3 × number of ice creams) R570 = R120 + (R3 × number of ice creams) ✓ R570 – R120 = (R3 × number of ice creams) R450 = (R3 × number of ice creams) $\frac{R450}{R3}$ = number of ice creams ✓ = 150✓	1 SF 1 MA 1 A Answer only: 2 marks (3)

2.3	1 A labelling <u>both</u>, the x-and y-axis *(No half marks to be allocated)* 1 A beginning and end point 1 A other <u>two</u> corresponding points 1 A joining points (Straight line)  	Construct line graph (4)
2.4	✓ Percentage profit = $\frac{8-3}{3} \times 100\%$ ✓ = $\frac{5}{3} \times 100\%$ ✓ = 166,67%✓ Lerato's claim is invalid✓ *(Conclusion <u>must</u> be justified with calculations; no mark for valid/invalid only)*	1 M Subtracting 1 M expressing as % 1 S 1 A percentage 1 C - conclusion (5)

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QUESTION 3

NOTE: If units are omitted in any one of the sub-sections of Question 3, subtract <u>ONE mark only</u> for entire question

Question	Solution	Explanation
3.1	$V = \pi r^2 h$ ✓ $= 3{,}14\ (25\ cm)^2 \times 32\ cm$ ✓ $= 3{,}14\ 625\ cm^2 \times 32\ cm$ $= 62\ 800\ cm^3$ ✓ $= 62\ 800\ m\ell$ ✓ $(1\ cm^3 = 1\ m\ell)$ ∴ <u>Capacity in litres :</u> $62\ 800\ m\ell \div 1\ 000$ ✓ *(Mark with mistake: wrong answer in mℓ above)* (1 litre = 1 000 mℓ) = 62,8 litres ✓	CA if $(50\ cm)^2$ is used (No marks for 3,14 (50 cm) × 32 ; Max of 3 marks awarded for entire question) 1 A radius 1 SF 1 A 1 C 1 M 1 CA (2 Answer of 62,8 litres only ; not showing ÷ 1 000) (6)
3.2	<u>¾ of total volume of pot:</u> $\frac{3}{4} \times \frac{62{,}8\ l}{1}$ ✓ *(Mark with mistake in 3.1)* = 47,1 ℓ ✓ <u>Volume of water and volume of rice:</u> 625 mℓ + 250 mℓ ✓ =875 mℓ ✓ <u>Number of cups of rice:</u> Number of cups of rice = ($\frac{3}{4}$ of volume of pot) ÷ (total volume of water and rice) $= \frac{47\ 100\ m\ell}{875\ m\ell}$ ✓ OR $\frac{47{,}1\ \ell}{0{,}875\ \ell}$ (1 Litre = 1 000 mℓ) = 53,828 cups ✓ = 53 full cups ✓ OR Number of cups of rice = ($\frac{3}{4}$ of volume of pot) ÷ (total volume of water and rice) ✓ ✓ ✓ $= (\frac{3}{4} \times \frac{62800ml}{1}) \div (625 + 250)\ m\ell$ $= \frac{47\ 100\ m\ell}{875\ m\ell}$ ✓(Numerator) ✓(Denominator) = 53,828 cups ✓ = 53 full cups ✓	CA with mistake in question 3.1 1 M 1 A 47,1 ℓ 1 M adding 1 A 1 M 1 CA 1 R 53 full cups (7)

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QUESTION 4

Question	Solution	Explanation
4.1	Overtime pay: ✓ ✓ 30% of R75 = R22,50 ✓ **OR** 1,3 × R75 = R97,50 ✓ R75 + R22,50 = R97,50 ✓ ∴ 8 hours × R97,50/hour = R780 ✓	1 M 1 S 1 CA Answer only: 2 marks (3)
4.2	Gross salary: R11 250 + R780 ✓ = R12 030✓ *(Mark with mistake in QUESTION4.1)*	1 M 1 CA (2 Answer only) (2)
4.3	Nett salary: R12 030,00 – R2 241,21 ✓ = R9 788,79 ✓ *(Mark with mistake in QUESTION 4.2)*	1 M 1 CA (2 Answer only) (2)
4.4	It is a variable income/Not a fixed income ✓✓	2 R/J (2)

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QUESTION 5

NOTE: If % is omitted in 5.1 - 5.3 , subtract <u>ONE mark only</u> for the entire question

Question	Solution	Explanation
5.1	Level 2B: $\frac{59+60}{2}$ ✓ = $\frac{119}{2}$ = 59,5% ✓ = 60% ✓	1 M adding and dividing by 2 1 MA 59,5% 1 R60% (Answer only: 2 marks) (3)
5.2	Level 2A: $\frac{Total\ marks}{Number\ of\ learners}$ = $\frac{1\ 730}{30}$ ✓ ✓ = 57,6% ✓ = 58% ✓	1 M adding all the marks 1 M dividing by 30 (Total and number of learners incorrect : no further marks) 1 CA 1 R 58% (Answer only: 3 marks) (4)

5.3	Level 2A: 92 – 18 = 74% ✓ Level 2B: 98 – 11 = 87% ✓ ∴ Level 2A has a smaller range. ✓	 1 MA 74% 1 MA 87% 1 R/J (3)
5.4	Level 2A performed better than Level 2B ✓ Level 2A mean is higher ✓ and its range is smaller. ✓	CA 1 A Choice (according to 5.2 and 5.3) 2 R/J (3)

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TOTAL: 100