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 4

5 NOVEMBER 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
U	Unit

This marking guideline consists of 8 pages.

NB: Answer only (full marks or no full marks) – Chief Marker should finalise.

QUESTION 1

Question		Solution	Explanation
1.1	1.1.1	Cash price = R7 899 ÷✓(114 ÷ 100) = R7 899 ÷ 1,14✓ = R6 928,95 ✓	1 M division 1 M percentage 1 A solution (3)
	1.1.2	A = R1 399 + (R439,50 × 24) ✓ = R1 399 + R10 548✓ = R11 947,00 ✓	2 M add & multiply by 24 1 A solution (3)
	1.1.3	Interest = R11 947,00 – R7 899,00✓ = R4 048,00 ✓	1 M subtract 1 A solution (2)
1.2	1.2.1	Basic annual salary = R18 750,00 × 12✓ = R225 000,00✓	1 M multiply by 12 1 A solution (2)
	1.2.2	Tax bracket: 150 001 – 235 000✓ Tax rate: 27 000 + 25% of (225 000 – 150 000) ✓ = 27 000 + 0,25 × 75 000 = 27 000 + 18 750 = 45 750✓ Rebate : R10 755 Annual tax = R45750 – R10 755✓ = R34 995✓ Monthly tax = R34 995 ÷ 12✓ = R2 916,25✓	1 M correct bracket 1 M percentage 1 A tax before rebate 1 M subtract 1 A solution 1 M divide by 12 1 CA solution (7)
	1.2.3	Pension contribution = R18 750 × 7,5%✓ = R1 406,25✓	1 M percentage 1 A solution (2)
	1.2.4	Percentage for UIF = (R187,50 ÷ R18 750)%✓ = 1%✓	1 M ratio 1 A solution (2)
1.3	1.3.1	Med Aid Contr = R688 + R384✓ = R1 072✓	1RT 1 A solution (2)

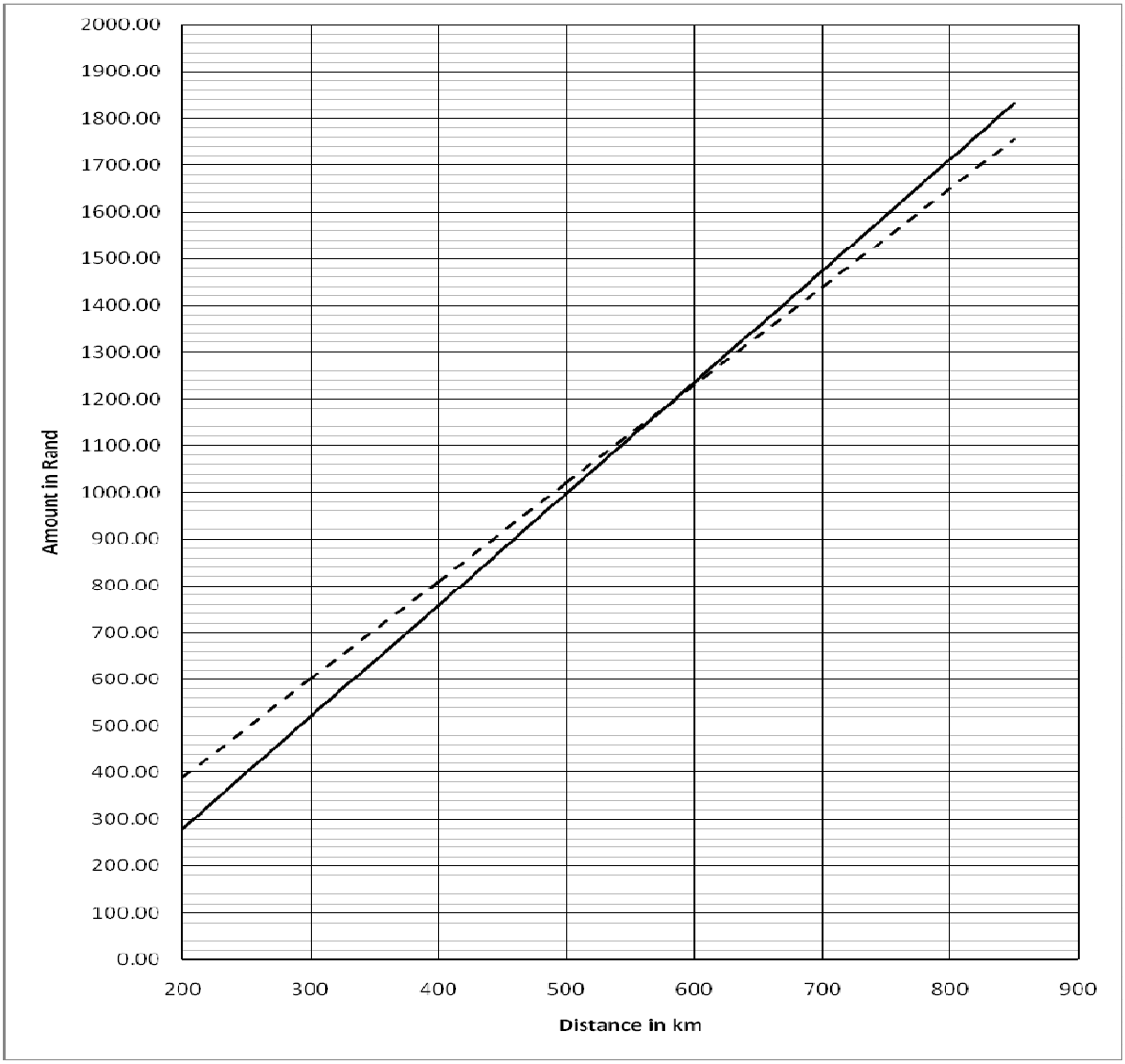
	1.3.2	Net salary = (basic salary + employer subsidy) – deductions ✓ Employer subsidy = R1 072,00 × 2/3✓ = R714,66✓ Net salary = (R18 750 + R714,66) – deductions = R19 464,66✓ – deductions Deduct = R1 072,00 + R1 406,25 + R187,50 + R2 912,83✓ = R5 578,58✓ Net salary = R19 464,66 – R5 578,58 = R13 886,08✓	1 E method 1 S 1 A solution 1 A solution 1 S 1 A solution 1 CA solution (7)
1.4	1.4.1	A = R10 000✓ (1 + 0,125 ✓)^3✓ ≈ R14 238,28 ✓	3 SF 1 CA 1 R (4)
	1.4.2	A = R12 999,99 ✓ (1 + 4.5 ÷ 100✓)^3✓ = R14 835,15 ✓ The investment will NOT be enough and she will be R596,87 short. ✓	3 SF 1 CA 1 R/J (5) **[40]**

QUESTION 2

Question	Solution	Explanation
2.1	Total distance = 267 km✓ × 2 + 40% of (267 km) ✓ = 534 km + 40% of 267 km✓ = 534 km + 106,8 km✓ = 640,8 km = 641 km✓	2 M 1 A 1 A 1 CA (5)
2.2	Cost = R280,00 + R2,39 × 197✓✓ = R280,00 R470,83✓ = R750,83✓	2 SF 1 CA 1 A (4)
2.3	✓ Cost = R390,00✓ + R2,10✓ × (No. of kms more than 200 km)	3 MA (3)
2.4	Cost = R390,00 + R2,10 × 289✓✓ = R390,00✓ = R996,90✓	2 SF 1 S 1 CA (4)

2.5	1 75 = 280 + 2,39 x ✓ 2,39 x = 1195 ✓ x = 500 ✓ Distance = 500 + 200 = 700 km ✓	3 M 1 A (4)
2.6	Beginning point✓ End point✓ Point of intersection ✓ Shape of straight/broken line ✓	4 per graph (8)

Key: Glad Car Hire is a broken line
Happy Rentals is a solid line



2.7	2.7.1	approximately R1 188 ✓✓	2 A (2)
	2.7.2	1714 ✓✓ -1650 ✓✓ ---------- R64 ✓ Must show evidence of using the graph An appropriate tolerance must be decided upon.	1 E 2 R/J 2 R/J (5) **[35]**

QUESTION 3

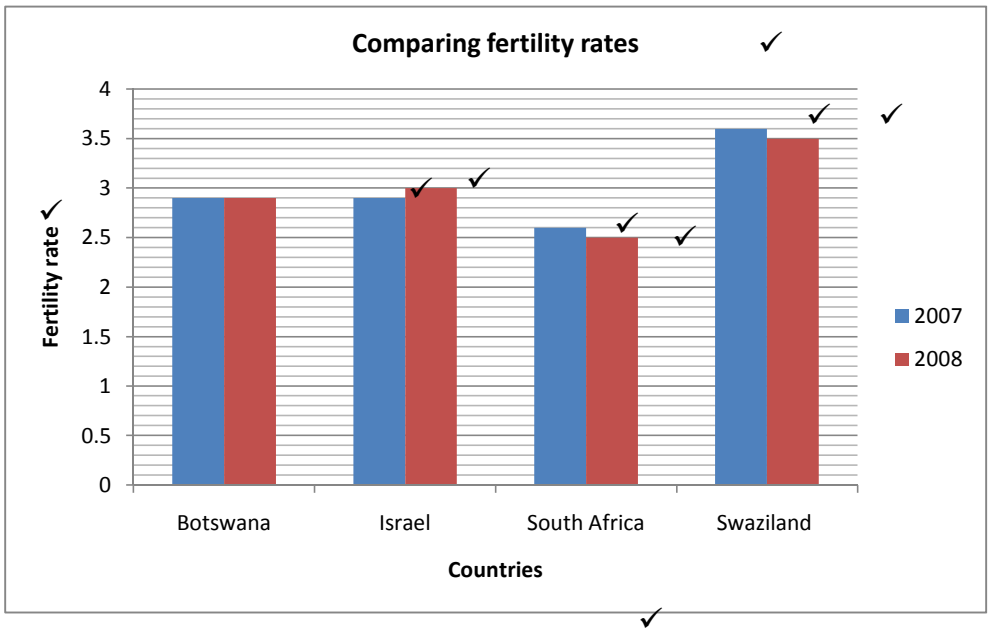
Question	Solution		Explanation
3.1	3.1.1	Height = 2400 ÷ 1 000 = 2,4 m✓	M divide by 1 000 A (2)
	3.1.2	Total area = 2 (area of side wall + area of front wall) + narrow widths = 2 ($l \times b + l \times b$) + 0,5 m^2 = 2 (3,54 × 2, 4 ✓+ 2,54 × 2,4) ✓ + 0,5 m^2✓ = 29,684 m^2✓ Area of door = 0,9 m × 2,1 m✓ = 1.89 m^2✓ Area of window = 1,62 × 0,7 = 1.134 m^2✓ Area to be painted = 29,684 m^2 – (1.89 + 1.134) m^2✓ = 26,66 m^2	1 A adding nw 1 A side wall dimensions 1 A front wall dimensions 1 A all conversions 1 MA area 1 A area of door 1 A area of window 1 M subtracting (8)
	3.1.3	Number of litres for two coats = (26,66 m^2 ÷ 10 m^2✓) × 2✓ = 2.666 × 2✓ = 5,332 *litres*✓	2 MA S 1A (4)
	3.1.4	Number of 5 litre tins ≈ 2 ✓ Cost of painting = R350 × 2✓ = R700 ✓	1R/J 1 M 1A (3)
	3.1.5	Volume = 3,54 × 2,54 × 2,4✓✓ = 21,8 m^3✓	1 A dimensions 1 SF 1 A in m^3 (3)

3.2	3.2.1	From given scale, approx. distance = 100 km + 100 km + 100 km + 100 km + 50 km✓✓ = 450 km✓ Work out distance from final printed exam paper	Alternative responses 3 RM (3)
	3.2.2	From Beaufort West to Johannesburg via Kimberley approx distance = 820 km✓✓ From Beaufort West to Johannesburg via Bloemfontein approx distance = 780 km✓✓ Bloemfontein is the shortest route by approximately 40 km. ✓✓ Work out distance from final printed exam paper	Alternative responses 2 RM 2 RM 2 R/J (6)
	3.2.3	North West✓ ✓	2 RM (2)
	3.2.3	South East✓✓	2 RM (2)
3.3	3.3.1	GMT = SA – 2 hours✓ or 12 – 2 = 10 hrs = 08:15 am✓ Time in New Zealand = GMT + 12 hrs or 10:15 + 10 = 20:15✓	1 S 1 M 1A (3)
	3.3.2	USA Time = GMT – 5 or 10:15 – (2 + 5) = 8:15 – 5hrs ✓ = 03:15 am✓✓	 1R/J 2CA (3) **[39]**

QUESTION 4

Question		**Solution**	**Explanation**
4.1	4.1.1	Swaziland ✓✓	2 RT (2)
	4.1.2	In 2008 & 2009 rate the same as well as in 2010 & 2011✓ 0.1% lower in 2010 & 2011 compare to 2008 & 2009 (a slight decrease in the fertility rate) ✓ Any other appropriate trend	2 R/J (2)
	4.1.3	The population growth slightly decreased✓✓	2 R/J (2)

	4.1.4	In 2008 & 2009 rate the same as well as in 2010 & 2011✓ 0.1% higher in 2010 & 2011 compared to 2008 & 2009 (a slight increase in the fertility rate) ✓ Any other appropriate trend	2 R/J (2)
	4.1.5	The fertility rate was constant in the same years; ✓✓ Israel's fertility rate was generally higher than that of South Africa. South Africa's fertility rate showed a slight decrease whereas Israel's fertility rate showed a slight increase. Any other appropriate comparison	2 R/J Only one comparison needed (2)
	4.1.6	Rate for 2011 of four countries: • Minimum rate = 2,5✓ • Maximum rate = 3,5✓ • Median = (3,0 + 2,8) ÷ 2 = 2,9✓✓ • Mean = 11.8 ÷ 4 = 2.95✓✓	2 RT 2 M 2 A (6)
	4.1.7	Graph: 2 A per double bar (2 × 3) 1 A shape double bar graph 1 A headings on axis 1 A Title	9 A (9)



4.2	4.2.1	R43 ✓✓	2 RG	(2)
	4.2.2	R32 – R36 ✓✓	2 RG	(2)
	4.2.3	Ngobs Movies: R36 – R54 ✓ Nlamus Theatre: R51,50 – R60 ✓ The top range of Nlamus is more expensive✓	2 RG 1 R/J	(3)
	4.2.4	Ngobs ticket range price = R54 – R32 = R22✓ Nhlamus ticket range price = R60 – R32 = R28✓ Nlamus theatre has greater range in ticket prices with a difference of R6,00 ✓✓	1A 1A 2R/J	(4) **[36]**

TOTAL: 150