education

Department:
Education
REPUBLIC OF SOUTH AFRICA

MARKING GUIDELINE

NATIONAL CERTIFICATE (VOCATIONAL)
NQF LEVEL 2

NOVEMBER 2007

MATHEMATICAL LITERACY
SECOND PAPER

This marking guideline consists of 8 pages.

QUESTION 1

1.1	1.1.1	60 km/h	1 mark correct answer	(1)
	1.1.2	12 minutes	1 mark correct answer	(1)
	1.1.3	Points: D to E	2 marks both points correct	(2)
	1.1.4	She drove at a constant speed of 60 km/h	2 marks appropriate description	(2)
	1.1.5	At this stage, Maria slammed the breaks to avoid hitting the child.	2 marks appropriate description	(2)
	1.1.6	Distance: B to C Time = 4 minutes = (4 ÷ 60) hours Speed = 60 km / h Distance = speed ×time = 60 km/h ×(4 ÷60)h = 4 km	1 mark conversion 1 mark formula 2 marks method 1 mark correct answer	(5)
	1.1.7	$\text{dist} = \frac{s^2}{19{,}6 \times f}$ $= \frac{16{,}7^2}{19{,}6 \times 0{,}8}$ $= 17{,}7 \approx 18\text{m}$	2 marks correct values 1 mark simplification 2 mark for correct answer	(5)
	1.1.8	Good or bad weather – wet or dry road The condition of the road The condition of the tyres of the car	2 marks per condition	(4)
1.2	1.2.1	Distance = speed ×time = 60 km/h × (2 ÷60 ÷60)h ≈ 0,033 km ≈ 0,033 ×1000 ≈ 33 m	2 marks correct values 2 marks correct conversions 1 mark correct answer	(5)

1.2.2 See table and graph below — See mark allocation below graph

TABLE OF VALUES			
Speed in km/h	60	80	100
Safe following distance in m	33	44	55

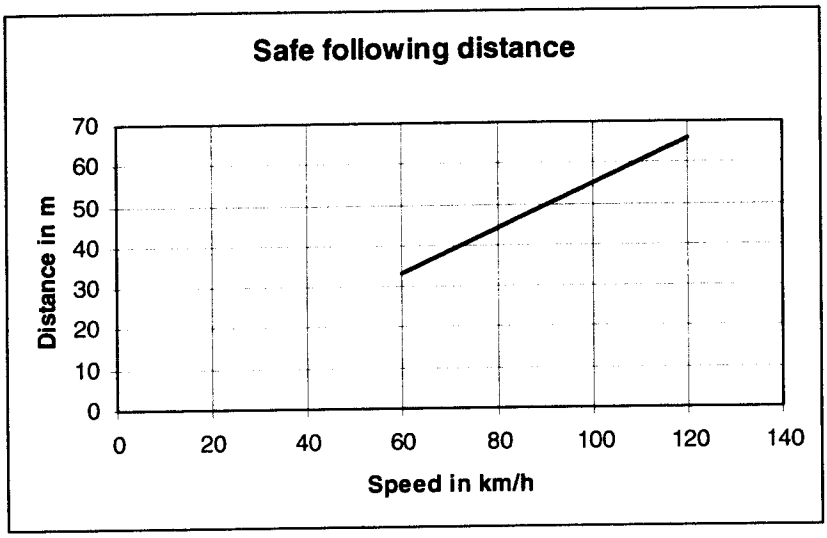

Table:
1 mark for speed row
1 mark for distance row
2 marks per correct pair if entries (maximum of 4 marks)

Graph:
2 marks scale on axes
1 mark labelling axes and graph
2 marks for plotting points according to table
1 mark for line (12)

1.2.3 If you increase your speed the following distance should also be increased. — 3 marks relationship based on tables or graph (3)

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QUESTION 2

2.1 2.1.1 R0,90 per R1 000,00 — 1 mark correct answer (1)

2.1.2 R4,10 per R1 000,00 — 1 mark correct answer (1)

2.2 2.2.1 A spouse of 39 years old (R15 000,00):
= R1,35×15
= R20.25

1 mark correct values
1 mark correct answer
(2)

2.2.2 A mother-in-law of 63 years old (R7 000,00)
= R3,50 ×7
= R24,50

1 mark correct values
1 mark correct answer
(2)

2.2.3 A 21 year old student (R1 000,00)
= R0,90 ×1
= R0,90

1 mark correct values
1 mark correct answer
(2)

2.3 2.3.1 See table below

See mark allocation below table

	Persons to be insured	Their ages in years	Cover	Monthly Premium
1	Himself	59	**R15 000**	**R1,35 ×15 = R20,25**
2	His spouse	53	**R15 000**	**R1,35 ×15 = R20,25**
3	His son	18	**R5 000**	**R0,90 ×5 = R4,50**
4	His daughter	25	**R8 000**	**R3,50 ×8 = R28,00**
5	His brother	64	**R8 000**	**R3,50 ×8 = R28,00**
6	His sister in law	69	**R8 000**	**R12,30 ×8 = R98,40**
			TOTAL COSTS	**R199,40**

3 marks for correct covers
6 marks for correct premiums (part marks possible)
1 mark for correct total (10)

2.3.2 See table below

See mark allocation below table

	Persons to be insured	Their ages in years	Maximum	Monthly Premium
1	Himself	**59 + 1= 60**	R15 000	**R4,10 ×15 = R61,50**
2	His spouse	53 + 1 = 54	R15 000	R20,25
3	His son	18 + 1 = 19	R5 000	R4,50
4	His daughter	25 + 1= 26	R5 000	R28,00
5	His brother	**64 + 1= 65**	R8 000	**R12,30 ×8 = R98,40**
6	His sister-in-law	**69 + 1= 70**	R8 000	**R17,50 ×8 = R140,00**
			TOTAL COSTS	**R352,65 + 2.5% of R352,65 = R361,47**

Alternate approaches that result in the same and correct answer need to be marked accordingly

6 marks for premiums of: "himself"; "his brother"; and "his sister-in-law"
1 mark for R325,65
2 marks for 2,5% increase
1 mark for final answer (10)

2.4 See table below for one possible solution

See mark allocation below table

	Persons to be insured	Their ages in years	Cover	Monthly premium
1	Herself	40	R15 000	**R1,35 ×15 = R20,25**
2	Her spouse	35	R15 000	**R1,35 ×15 = R20,25**
3	Her son	14	R4 000	**R0,90 ×4 = R3,60**
4	Her daughter	15	R4 000	**R0,90 ×4 = R3,60**
5	Her mother	63	**R6 000**	**R3,50 ×6 = R21,00**
6	Her father-in-law	71	**R2 000**	**R17,50 ×2 = R35,00**
7	Her mother-in-law	64	**R6 000**	**R3,50 ×5 = R21,00**
TOTAL MONTHLY PREMIUM				**R124,70**

Alternate approaches that result in the same and correct answer need to be marked accordingly

6 marks for covers and corresponding premiums of 5; 6; and 7 that lead to correct total
2 marks for correct other premiums (part marks possible)
1 mark for correct total (9)
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QUESTION 3

3.1 Area of garden =
Area half circle + 2 × (Area triangle) + Area rectangle

$$=\frac{1}{2}(\pi \times r^2) + 2 \times (\frac{1}{2} \times b \times h) + (l \times b)$$

$$=\frac{1}{2}(\pi \times 3^2) + 2\,(\frac{1}{2} \times 3 \times 3) + (3 \times 6)$$

$$\approx 42 m^2$$

Area of half circle:
1 mark formula
1 mark values
1 mark answer

Area of Triangles
1 mark method
1 mark answer

Area of Rectangle
1 mark method
1 mark answer

1 mark total area (8)

3.2 Hypotenuse of triangle $= \sqrt{3^2 + 3^2}$ (Pythagoras)
$= \sqrt{18}$
$\approx 4{,}24\text{m}$

Hypotenuse
1 mark using Pythagoras
1 mark values
1 mark correct answer

Total perimeter :
$= \pi \times r + 3\text{m} + 3\text{m} + 6\text{m} + 2 \times 4{,}24\text{m}$
$= \pi \times 3\text{m} + 3\text{m} + 3\text{m} + 6\text{m} + 2 \times (4{,}24\text{m})$
$\approx 40\text{m}$

Half circle (included in perimeter calculation)
1 mark formula
1 mark values
1 mark correct answer

1 mark total perimeter (7)
[15]

QUESTION 4

4.1 3 schools

1 mark correct answer (1)

4.2 One possible solution (there are others):
From Namana Street
Left into Community Rd
Right into Hamilton Rd
Left into Fort Hare Rd
Right into Harvey Rd
Right in Mannion Rd

4 marks valid solution
-1 mark per error
(4)

4.3 Hornby St travelling North West

Kolbe Ave travelling North

Roth Ave travelling West

1 mark per correct road
1 mark per correct direction

-1 mark per additional road (i.e. not shortest route) (6)

4.4 (10 + 7 + 22 + 13) mm
= 1170 metres

2 marks measurements
2 marks correct conversion (4)
[15]

QUESTION 5

5.1 2006: 1258 fatalities

1 mark correct year
1 mark correct value (2)

5.2 January to April of 2006:
1 377 – 872 = 505
Percentage increase $= \frac{505}{872} = 57{,}9\% \approx 58\%$

1 mark difference
1 mark method
1 mark correct answer
(3)

5.3 Mean (January) $= \frac{879+930+872}{3} = 894$ fatalities

Mean (February) $= \frac{820+931+1031}{3} = 927$ fatalities

January's average number of fatalities is lower than that of February.

Difference on average is 33 fatalities.

Mean (January)
1 mark method
1 mark correct values
1 mark correct answer

Mean (February)
1 mark method
1 mark correct values
1 mark correct answer

1 mark interpretation (7)

5.4 2005 (January to March)

% difference $= \frac{1159-930}{930} = 25\%$ increase

2006 (January to March)

% difference $= \frac{1258-872}{872} = 44\%$ increase

Increase of number of fatalities from January to March 2006 is 23% more than that of 2005 for the same period.

2005 percentage change
1 mark method
1 mark correct values
1 mark correct answer

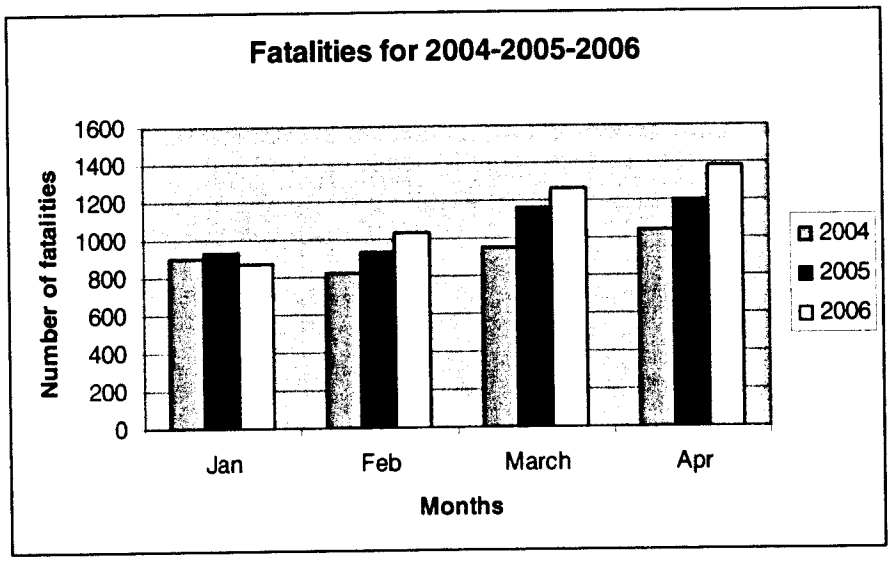
2006 percentage change
1 mark method
1 mark correct values
1 mark correct answer

1 mark interpretation (7)

5.5 The number of fatalities increases from January to April. 3 marks interpretation (3)

5.6 See graph below for one possible solution

See mark allocation below graph



2 marks scale
2 marks labelling axis and graph
1 mark legend
5 marks for correct bars (-1 per incorrect bar) (10)

5.7	April Highest number of fatalities over this 3 year period Number of long weekends Also school holiday period	1 mark correct month 2 marks per reason	(5)
5.8	January Schools just open. Not so many traffic on the national roads	1 mark correct month 2 marks appropriate reason	(3) **[40]**

TOTAL: 150