NATIONAL SENIOR CERTIFICATE EXAMINATION
NOVEMBER 2010

MATHEMATICAL LITERACY: PAPER II

MARKING GUIDELINES

Time: 3 hours 150 marks

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At standardisation meetings, decisions are taken regarding the allocation of marks in the interests of fairness to all candidates in the context of an entirely summative assessment.

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QUESTION 1

1.1

1.1.1 Restaurant [a] [a] am waterhole [cc] (2)

1.1.2 (a) ± 1mm 15 mm [a] : 2 km

$$1\text{mm} : \frac{2\ km}{15\ mm}\ ^{m}$$

Measured distance = 30 mm [a] (Allow 28 – 32 mm)

$$30\text{ mm} : \frac{2\ km}{15\ mm}\ \text{mm} \times 30\text{ mm}\ ^{m}$$

: 4 km [ca] (5)

(b) 15 mm : 2 km
15 mm : 2 000 000 mm [m]
1 mm : 133 333,33mm [m]
1 : 133 000 rounding (3)

1.2 Graph A = STATEMENT 1 [aa] STATEMENT 3
Graph B = STATEMENT 4 [aa] STATEMENT 2 (4)

1.3

1.3.1 US \$700 = 700 × R7,75 [m]
= R5 425 [a]

$\frac{2}{100}$ × R5 425 [m]
= R108,50 [ca]

R108,50 × $\frac{14}{100}$ [m]
= R15,19

∴ R5 425 – R108,50 – R15,19 [m]
= R5 301,31 (6)

OR

\$700 × $\frac{2}{100}$ [m]
= \$14 a
\$14 × $\frac{14}{100}$ [m]
= \$1,96

\$700 – \$14 – \$1,96 [m]
= \$684,04 [a]

684,04 × R7,75 [m]
= R5 301,31
OR

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$\$700 = 700 \times R7,75$ [m]
$= R5\ 425$ [a]
Commission $= R5\ 425 \times 0,2$ [m]
$= R108,50$ [ca]
Tax Amount $= R108,50 \times 1,14 = R123,69$ [m]

Amount $= R5\ 425 - R123,69$ [m]
$= R5\ 301,31$ (6)

1.3.2 $700 \times R7,75$ [m]
$= R5\ 425$ [ca]

[ca] [m]
Commission (+Tax) $= R5\ 425 - R5\ 264,20$
Commission (–Tax) $= R160,80$ [ca] $- R19,75$
$= R141,05$ [ca]

$$\% \text{ Commission} = \frac{R141,05}{R5\ 425} \times 100\% \text{ [ca]}$$

$= 2,6\%$ [ca]

OR

[m] [a] [ca]
$R19,17 \div 0,14 = R141,07$

$$\frac{R141,07}{R5425_{ca}} \times 100 \text{ [m]}$$

$= 2,6\%$ [ca]

(7)
[27]

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QUESTION 2

2.1

2.1.1 $30_{a} - 21\ \text{yrs}_{m}$

$= 9 \times 12$ months

$=$ 108 months [a] (3)

2.1.2 – P = R4 000 000 instead of R400 000 [a]
William had a "0" missing. He did not write four million correctly.
– i = 0,6 instead of 0,06 [a]
William calculated 6% as a decimal incorrectly. He divided by 10 instead of 100.
– 11 months instead of 12 months [a]
There are 12 months in a year and not 11.
– n = 9 months instead of 108 months [ca]
William forgot to convert the number of years to months.
– R6 854 797,995 instead of R 6 854 798,00 [a] or R645 130, 7277
The final answer has 3 decimal places whereas cents should only have 2 decimal places (10)

2.2

2.2.1 Simple Interest [a] – The straight [a] line graph indicates a constant increase in interest (2)

2.2.2(a) The vertical (*y*) axis begins with 0 on William's graph whereas Payout Investors begin their vertical axis at R950 000. (1)

(b) It gives the impression that more money is being made (1)

2.3

2.3.1 0 (1)

2.3.2 $\frac{4}{49}$ 8,21 (2)

2.3.3 Average = $\frac{\text{Total Winners}}{\text{No. of categories}}$ [m]

$8501 = \frac{1+1+41+A+2\,470+4\,542+52\,299}{7}$ [m] [a]

$8\,501 = \frac{A+59\,354}{7}$ [a]

$8\,501 \times 7 = A + 59\,354$

[m] $59\,507 = A + 59\,354$

$59\,507 - 59\,354 = A$ [m]

✓[ca] $153 = A$

$8\,501$ [m] $\times\ 7$ a $=\ 59\,507$
$59\,507$ [m] $-\ 59\,354$ [aa]
$= 153$ [ca]

(6)
[26]

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QUESTION 3

3.1 $P = (17\text{ m} \times 3)^{a\ m} + (17 - 1{,}3\text{ m})^{m}$
$= 51\text{ m} + 15{,}7\text{ m}$
$= 66{,}7\text{ m}^{ca}$
Rolls of fencing $= 66{,}7 \div 5\text{ m}^{m}$
$= 13{,}34$
$= 14$ rolls required c^{a}
Cost $= 14 \times R389{,}95^{m}$
$= R5\,459{,}30$
OR

$P = 17\text{ m} + 17\text{ m} + 17\text{ m} + (17\text{ m} - 1{,}3\text{ m})$
$= 17\text{ m} + 17\text{ m} + 17\text{ m} + 15{,}7\text{ m}^{a}$
$= 66{,}7\text{m ca}$
Rolls of fencing $= 66{,}7 \div 5\text{ m}^{m}$
$= 13{,}34$
$= 14$ rolls required ca
Cost $= 14 \times R389{,}95^{m}$
$= R5\,459{,}30$ ca

OR

$P = (17\text{ m} \times 4)^{a} - 1{,}3\text{ m}^{m}$
$= 68\text{ m} - 1{,}3\text{ m}^{m}$
$= 66{,}7\text{ m}^{ca}$
Rolls of fencing $= 66{,}7 \div 5\text{ m}^{m}$
$= 13{,}34$
$= 14$ rolls required ^{ca}
Cost $= 14$ x $R389{,}95^{m}$
$= R5\,459{,}30^{ca}$ (8)

3.2 Area of pool area $= l \times b$
$= 17\text{ m} \times 17\text{ m}^{csub}$
$= 289\text{ m}^{2\ ca}$

Area of Semi-Circle pool $= \dfrac{\pi \times r^2}{2}^{a}$ if scale is used 10 marks

$= \dfrac{3{,}14 \times 1{,}5^{2\ a}}{2}$
$= 3{,}5325\text{ m}^{2\ ac}$

Area of Walled section $= l \times b^{sub}$
$= 3\text{ m} \times 0{,}5\text{ m}$
$= 1{,}5\text{ m}^{2\ a}$

Area of Rectangular Pool $= 289\text{ m}^2 - 3{,}5325\text{ m}^2 - 1{,}5\text{ m}^2 - 244\text{ m}^{2\ m}$
$= 39{,}96 \ldots \text{ m}^2$
$= 40\text{ m}^2$

$\therefore$ Area $= l \times b$
$40\text{ m}^2 = 10\text{ m} \times b^{m}$
$4\text{ m} = b^{ca}$ (10)

3.3

3.3.1 $V = \left(\Pi \times r^2 \times d\right) \div 2$ m

$= (3{,}14 \times (1{,}5\text{ m})^2 \times 0{,}45) \div 2$ a a

$= 1{,}5896\text{ m}^3$ ca

$= 1{,}6\text{ m}^3$ a

$V = 61\text{ m}^3 + 1{,}6\text{ m}^3$ m

$= 63\text{ m}^3$ ca (6)

3.3.2 (a) $63\text{ m}^3 = 63\text{ k}\ell$ ca

$\therefore \frac{95}{100} \times 63\text{k}\ell$ m

$= 59{,}85\text{ k}\ell$ ca

$= 60\text{ k}\ell$ ca (4)

3.3.2 (b) Various answers.
E.g. When someone gets into the pool, the water will spill over and thus wasting water. (2)

3.4

Fixed charge	= R83,43 a	or	46 kℓ – 9 kℓ = 37 kℓ a
9 kℓ × R0	= R0,00 a		× R19,06 a or R20,96
16 kℓ × R9,27	= R148,32 a		= R705,22 ca
5 kℓ × R12,36	= R61,80 a		+ 83,43 ca
15 kℓ × R19,06	= R285,90 a		R788,65 ca
1 kℓ × R20,96	= R20,96 a		R110,41 ca
	R600,41 ca		R899,06 ca
+ 14% VAT	= R84,06 ca (Accept R84,05)		
	= R684,47 ca (Accept R684,46 and R684,45)		

46 ℓ × R20,96 = R964,16 ca etc. (9)

[39]

QUESTION 4

4.1

4.1.1 Rent-A-Van a - There is no once-off fee a a
– Daily increase of R750 a day c (3)

4.1.2 Charged per day, not part of a day. a (1)

4.1.3 (a) on answer sheet. (1)
(b) on answer sheet. (4)

4.1.4 (a) Cost = R750 a × D a a (2)

(b) Cost = R3 000 a + R400 a × D a (3)

If x –1

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750 D = 3 000 + 400 D [m]
350 D = 3 000
D = 8,5 [ca]
∴ after day 8 it is cheaper to use 'Holiday Fun' [ca]
OR
Day 9

Rent-A-Van	Holiday Fun
R750 × 9 [m]	R3 000 + R400 × 9 [m]
= R6 750 [ca]	= R6 600 [c]

Day 8

R750 × 8	R3 000 + R400 × 8 } not needed
R6 000	= R6 200

∴ Holiday Fun cheaper after Day 8 (4)

4.2

4.2.1 (a) R1 022 ÷ 10 [m] Accept R1 022
= R102,20 [a] (2)

(b) mean [a] (1)

4.2.2 540 km ÷ 6 km [m]
= $\frac{540\text{km}}{6\text{km}}$ ℓitres required
= 90 ℓitres required [a]
∴ 90 × R8,76 [m]
= R788,40
Therefore they have not budgeted correctly. (5)

R730 ÷ R8,76
= 83,3 [ca] × 6 km
= 500/ 499,8 [c a]
∴ no [ca]

4.2.3 (a) 10 nights involves 11 days. (1)

(b) Holiday Fun
R7 400 – R3 000
= R4 400 [a]
R4 400 ÷ 11
= R400 [ca] (3)

4.2.4 Food = 100% – 5% – 25% – 51% –7%
= 100% – 88%
= 12% [a]

$\frac{12}{100}$ × R14 600 [m]

= R1 752 [ca]

[a] $\frac{25}{100}$ × R1 752 [m]
= R438 [c a] Or R449,50

OR

25% [a] × [m] 12% [a] × [m] R14 600
= R438 [ca] (5)

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4.3

4.3.1 December is peak season compared to February when fewer people are on holiday. (2)

4.3.2 Mean $= \frac{3\,500 + 1\,500 + ... + 3\,500}{12}$ $^{m\,a}$ readings from graph

$= \frac{30\,000}{12}$ ^{a} ^{a}

$= 2\,500$ ^{ca} (5)

4.3.3 Range $= 2\,000 - 0$ ^{m}

$= 2\,000$ ^{a} (2)

4.3.4 (a) Perhaps no pensioner rates are offered during peak season. (2)
Holiday makers increase greater demand

(b) $\frac{30}{100}$ ^{m} $\times$ R150

$=$ R45

$\therefore$ R150 ^{m} $-$ R45

$=$ R105

OR

70% ^{m} $\times$ ^{m} R150 = R105 (2)

(c) Income $=$ R150 ^{a} $\times$ 500 ^{a} $=$ R75 000

$+$ R105 ^{a} $\times$ 1 000 ^{a} R105 000

R180 000 ^{ca}

Expenses $=$ 1 500 $\times$ R35 $=$ R52 500 ^{ca}

$+$ R65 000 ^{ma}

R117 500 ^{ca}

$\therefore$ Profit $=$ R180 000 $-$ R117 500

$=$ R62 500 ^{ca} (10)

[58]

Total: 150 marks

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