



NATIONAL SENIOR CERTIFICATE EXAMINATION
NOVEMBER 2015

MATHEMATICAL LITERACY: PAPER II

MARKING GUIDELINES

Time: 3 hours

150 marks

These marking guidelines are prepared for use by examiners and sub-examiners, all of whom are required to attend a standardisation meeting to ensure that the guidelines are consistently interpreted and applied in the marking of candidates' scripts.

The IEB will not enter into any discussions or correspondence about any marking guidelines. It is acknowledged that there may be different views about some matters of emphasis or detail in the guidelines. It is also recognised that, without the benefit of attendance at a standardisation meeting, there may be different interpretations of the application of the marking guidelines.

Topics

F	Finance
MP	Maps and Plans
M	Measurement
P	Probability
DH	Data Handling

QUESTION 1

$$\begin{aligned}
 1.1 \quad \% \text{ increase} &= \frac{R1\,029\,331,00 - R50\,143,00}{R50\,143} \times 100 \\
 &= 1\,952,7 \\
 &= 1\,953\%
 \end{aligned}
 \tag{5}$$

$$\begin{aligned}
 1.2 \quad 1.2.1 \quad 2014 - R1\,251\,158,39 \\
 &= R1\,300\,000
 \end{aligned}
 \tag{3}$$

$ \begin{aligned} 1.2.2 \quad 2010 - 2000 \\ &= R1\,029\,331 - R271\,863 \\ &= R757\,468 \end{aligned} $	$ \begin{aligned} 2020 - 2011 \\ R1\,598\,336,77 - R1\,080\,797,66 \\ = R517\,539,11 \end{aligned} $
\therefore Greatest range is 2000 – 2010	

(5)

$$\begin{aligned}
 1.2.3 \quad \frac{R967\,298 + R1\,029\,331}{2} \\
 = R998\,314,50
 \end{aligned}
 \tag{3}$$

$$1.2.4 \quad 2013 \tag{2}$$

$$\begin{aligned}
 1.2.5 \quad \frac{R1\,366\,264,97 + R1\,420\,915,57 + \dots + R1\,598\,336,77}{5} \\
 = \frac{R7\,400\,131,78}{5} \\
 R1\,480\,026,36
 \end{aligned}
 \tag{4}$$

1.3 1.3.1 As the population increased, so did the price of houses.
 OR
 The price of homes increased a lot faster than the population growth until 2005; in 2008, the house prices decreased even though the population increased, and then from 2011, the population and house prices increased simultaneously.
 OR
 There was a constant increase in total population from 1966 to 2011, then a gradual increase until 2047. House prices increased rapidly from 1984 to 2011 then gradually until 2047.

(2)

$$\begin{aligned}
 1.3.2 \quad \pm R1\,175\,000 \text{ (R1\,150\,000 - R1\,175\,000)} \\
 \pm 57\,500\,000 \text{ (55\,000\,000 - 57\,500\,000)}
 \end{aligned}
 \tag{4}$$

1.3.3 The scale is too large and this makes it difficult to indicate small values. (2)

1.4 1.4.1 (a) $32\% = R30\ 505$ OR $32\% \times y = R30\ 505$
 $\therefore R30\ 505 \div 32 \times 100$ $y = \frac{R30\ 505}{32\%}$
 $= R95\ 328,13$ $y = R95\ 328,13$ (4)

(b) $45\% - 32\% = 13\%$
 \therefore Food and non-alcoholic beverages. (2)

1.4.2 (a) $2,7\% : 3\%$
 $9 : 10$ (3)

(b) $9 : 10$
 $R9 : R10$
 $R1 : \frac{10}{9}$
 $= R1,11$ (3)

1.5 $R54\ 000 \times 1,0517 = R56\ 791,80$
 $R56\ 791,80 \times 1,0517 = R59\ 727,94$
 $R59\ 727,94 \times 1,0517 = R62\ 815,87$

$R62\ 815,87 \div 12 = R5\ 234,66$

OR

$R54\ 000 \div 12 = R4\ 500$

$R4\ 500 \times 1,0517 = R4\ 732,65$

$R4\ 732,65 \times 1,0517 = R4\ 977,33$

$R4\ 977,33 \times 1,0517 = R5\ 234,66$ (8)

1.6 1.6.1 1999 or 2000 (2)

1.6.2 30th (2)

1.6.3 20 (2)

1.6.4 (a) $5\% \times 20 = 1$ house
OR
95% of 20 = 19 houses
 $\therefore 20 - 19 = 1$ house (2)

(b) $20 - 1 = 19$ houses
OR
95% of 20 = 19 houses (2)

1.6.5 No reason to brag. 70% of houses were more expensive than his house. (3)
[63]

QUESTION 2

2.1 2.1.1 $\text{Area} = \pi \times r^2$ If π on calculator is used:
 $= 3,14 \times (2,15 \text{ m})^2$ $A = 14,52 \text{ m}^2$
 $= 14,51 \text{ m}^2$ (3)

2.1.2 $\text{Volume} = 3,14 \times (2,15 \text{ m})^2 \times 0,9$ If π on calculator is used:
 $= 13,063185 \times \frac{2}{3}$ $V = 13,06981084 \times \frac{2}{3}$
 $= 8,71 \text{ m}^3$ $= 8,71 \text{ m}^3$
 \therefore the company will collect the sand (5)

2.2 2.2.1 $73\frac{1}{2} \times 2,54 \text{ cm}$
 $= 186,69 \text{ cm} \div 100$
 $= 1,8669$
 \therefore shorter than 1,9 m (5)

2.2.2 $1 \text{ m} - (33 \times 2,54)$
 $100 \text{ cm} - 83,82 \text{ cm}$ (subtracting)
 $= 16,18 \text{ cm}$

 $100 \text{ cm} - (36 \times 2,54)$
 $= 100 \text{ cm} - 91,44$ (converting)
 $= 8,56 \text{ cm}$

 $\text{Total waste} = (16,18 \text{ cm} \times 2) + (8,56 \text{ cm} \times 3)$
 $= 32,36 \text{ cm} + 25,68 \text{ cm}$ (above calculation correct)
 $= 58,04 \text{ cm}$ (9)

2.2.3

WOOD NEEDED TO BUILD SHELVES			
<i>Description</i>	<i>Quantity</i>	<i>Quantity to be purchased</i>	Total
<i>Uprights</i>	× 4	4 × 2 m @ R55,06 each	R220,24
<i>Upright supports</i>	× 4	2 × 1 m @ R27,53/m	R55,06
<i>Top shelf</i>	× 1	5 × 1 m @ R27,53/m	R137,65
<i>Other shelves</i>	× 3	15 × 1 m @ R27,53/m	R412,95
<i>Shelf support</i>	× 8	4 × 1 m @ R27,53/m	R110,12
		TOTAL EXCL. VAT	R936,02
		VAT @ 14%	R131,04
		TOTAL INCL. VAT	R1 067,06

\therefore Bongani is incorrect. (9)
[31]

QUESTION 3

$$\begin{aligned}
 3.1 \quad 180 \times R13,56 &= R2\,440,80 \\
 800 \times R17,13 &= + \underline{R13\,704,00} \\
 &R16\,144,80
 \end{aligned}
 \tag{6}$$

$$\begin{aligned}
 3.2 \quad 5,7 &= 1 \text{ cm} : 22\,000\,000 \\
 5,9 \text{ cm} &= 1\,237 \text{ km} \\
 5,9 \text{ cm} &= 1\,237 \times 100\,000 \\
 5,9 \text{ cm} : 123\,700\,000 \\
 1 : 123\,700\,000 \div 5,9 \\
 1 : 20\,966\,101,69 \\
 1 : 21\,000\,000
 \end{aligned}
 \tag{5}$$

to

$$\begin{aligned}
 5,4 \text{ cm} &= 1\,237 \text{ km} \\
 5,4 \text{ cm} &= 1\,237 \times 100\,000 \\
 5,4 \text{ cm} : 123\,700\,000 \\
 1 : 22\,907\,407,41 \\
 1 : 23\,000\,000
 \end{aligned}$$

$$\begin{aligned}
 3.3 \quad 3.3.1 \quad \text{Speed} &= \frac{1\,397 \text{ km}}{15,5} \\
 &= 90,13 \\
 &90 \text{ km/hr}
 \end{aligned}
 \tag{4}$$

$$\begin{aligned}
 3.3.2 \quad 15,5 \div 2 &= 7,75 = 7 \text{ breaks} \\
 \therefore 7 \times 15 \text{ minutes} &= 1 \text{ hour } 45 \text{ minutes} \\
 \therefore \text{Journey} &= 15 \text{ hours } 30 \text{ minutes} + 1 \text{ hour } 45 \text{ minutes} \\
 &= 17 \text{ hours } 15 \text{ minutes}
 \end{aligned}
 \tag{6}$$

$$\begin{aligned}
 3.4 \quad 10 \text{ a.m.} - 10 \text{ a.m.} &= 24 \text{ hours} \\
 12:16 - 10 \text{ a.m.} &= 2 \text{ hours } 16 \text{ minutes} \\
 &26 \text{ hours } 16 \text{ minutes} \\
 \therefore \text{train does not take double the time}
 \end{aligned}
 \tag{3}$$

$$\begin{aligned}
 3.5 \quad 1\,397 \text{ km} \div 100 \text{ km} \\
 &= 13,97 \times 5,8 \text{ } \ell \\
 &= 81,026 \text{ } \ell \times R11,07 \\
 &= R896,96 + R138,50 \\
 &= R1\,035,46 \\
 \text{Cost of train} &= R630 \times 2 \\
 &= R1\,260
 \end{aligned}$$

\therefore Car is cheaper.

(12)
[36]

QUESTION 4

4.1 4.1.1 $R779 \times 30$
 $= R23\,370$
 \therefore The total payable amount does not include the deposit. (4)

4.1.2 $R1\,500 + R23\,370 - R14\,999$
 $= R9\,871$ extra (4)

4.1.3 Name any 1 advantage and any 1 disadvantage. (2)

4.2 4.2.1 $360^\circ - 180^\circ - 10^\circ - 75^\circ - 90^\circ$
 $= 5^\circ$
 $\therefore \frac{5}{360} = \frac{1}{72}$ (4)

4.2.2 (a) Tree diagram 2 (2)

(b) $\frac{1}{2} \times \frac{1}{2} = \frac{1}{4}$ (4)

[20]

Total: 150 marks