



NATIONAL SENIOR CERTIFICATE EXAMINATION
SUPPLEMENTARY 2014

MATHEMATICAL LITERACY: PAPER I

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.

MA = Mark Allocation

AO = Answer Only

TL = Thinking Level

	Give full marks for answers only, unless question stipulates.	MA	AO	TL
1.1.1	$872,04 - \sqrt{484} \times 5^2 + 2,96$ $= 872,04 - 550 + 2,96 \checkmark^a$ $= 325 \checkmark^a$	2	2	1
1.1.2	$30\% \times 3\,000 \text{ ml} \checkmark^m$ $= 900 \checkmark^a \text{ ml} \checkmark^{\text{unit}}$	3	3	1
1.1.3	$\frac{9}{10} \times \checkmark^m 10\,000\,000 \checkmark^a$ $= 9\,000\,000 \checkmark^a$ (or $9 \checkmark^a \times 10^6 \checkmark^a$) (or $9 \checkmark^a$ million \checkmark^a)	3	3	1
1.2	Time = Distance \div Speed Time = $7\,000 \text{ km} \div 920 \text{ km/h} \checkmark^{\text{sub}}$ Time = $7,6086\dots$ hours \checkmark^a Time = 7 hours 36 min \checkmark^{ca} 31 sec \checkmark^{ca} (or 31,3 sec)	4	4	2
1.3.1	$\frac{4}{456} \checkmark^a \times 100 = 0,88\% \checkmark^{\text{ca}}$ (penalise for rounding)	2	2	1
1.3.2	$\frac{4}{454} \checkmark^a \checkmark^a$ or $\frac{2}{227}$	2	2	1
1.4	$R375 \div R75 \checkmark^m = 5 \text{ blankets} \checkmark^a$	2	2	2
1.5.1	$R5\,500 \times 0,11 \checkmark^m = \$605 \checkmark^a$	2	2	1
1.5.2	$\$5\,500 \div 0,11 \checkmark^m = R50\,000 \checkmark^a$	2	2	1
1.6	1.6.1 True \checkmark^a 1.6.2 False \checkmark^a 1.6.3 False \checkmark^a 1.6.4 True \checkmark^a 1.6.5 False \checkmark^a 1.6.6 True \checkmark^a	6	6	1
				[28]

QUESTION 3																
3.1.1	isiZulu \checkmark^a	1	1	1												
3.1.2	Afrikaans \checkmark^a	1	1	1												
3.1.3	4.4% \checkmark^a	1	1	1												
3.1.4	Afrikaans; English; Xitsonga, Tshivenda; IsiNdebele; Other; Sign language. <i>Any two</i> $\checkmark^a\checkmark^a$	2	2	1												
3.1.5	$9,6\% \checkmark^a \times 59\,961\,443 = 4\,892\,298,528 \approx 489\,299 \checkmark^{ca}$ OR $\frac{9,6}{100} \checkmark^a \times 59\,961\,443 = 4\,892\,298,528 \approx 4\,892\,299 \checkmark^{ca}$	2	2	1												
3.2.1	100% \checkmark^a	1	1	1												
3.2.2	1974 \checkmark^a	1	1	1												
3.2.3	83 333 333	1	1	1												
3.2.4 (a)	1960 – 1930 $\checkmark^m = 30$ years \checkmark^a	2	2	1												
3.2.4 (b)	$1\,000\,000\,000 \div 4\,000\,000\,000 \checkmark^m \times 100 \checkmark^m = 25\% \checkmark^a$	3	3	2												
3.2.4 (c)	$1\,000\,000\,000 \div 14 \checkmark^a \checkmark^m = 71\,428\,571 \checkmark^{ca}$	3	3	2												
3.2.5 (a)	2012 – 1820 = 192 years \checkmark^a	1	1	1												
3.2.5 (b)	(i) 1999 \checkmark^a (ii) 179 years \checkmark^a	2	2	1												
3.2.5 (c)	$\frac{7\,000\,000\,000 - 1\,000\,000\,000 \checkmark^a}{1\,000\,000\,000 \checkmark^a} \times 100 \checkmark^m = 600\% \checkmark^{ca}$	4	4	2												
3.2.6	\checkmark Heading \checkmark y axis-Heading \checkmark x axis-Heading \checkmark y axis-Increments \checkmark x axis-Increments $\checkmark\checkmark\checkmark$ accuracy of graph															
	<div style="border: 1px solid black; padding: 10px;"> <p style="text-align: center;">Rate of increase of the population</p> <table border="1"> <caption>Data points from the population graph</caption> <thead> <tr> <th>Year</th> <th>Population (in billions)</th> </tr> </thead> <tbody> <tr> <td>1820</td> <td>1</td> </tr> <tr> <td>1870</td> <td>~1.5</td> </tr> <tr> <td>1920</td> <td>~2</td> </tr> <tr> <td>1970</td> <td>~4</td> </tr> <tr> <td>2020</td> <td>7</td> </tr> </tbody> </table> </div>	Year	Population (in billions)	1820	1	1870	~1.5	1920	~2	1970	~4	2020	7	8		2/3
Year	Population (in billions)															
1820	1															
1870	~1.5															
1920	~2															
1970	~4															
2020	7															
				[33]												

QUESTION 4				
4.1.1	Water Heating	1	1	1
4.1.2	$100\% - 92\% \sqrt{m} \sqrt{a} = 8\% \sqrt{ca}$	3	1	2
4.1.3	$\frac{11}{100} \sqrt{m} \times 360 \sqrt{m} = 39,6^\circ \sqrt{a}$ $= 40^\circ \sqrt{ca}$	4	1	2
4.2	$0,4 \times 60 \sqrt{m} = 24 \text{ minutes } \sqrt{a}$	2	2	2
4.3	$0,75 \times 5 \times 4 \sqrt{m} \sqrt{m} = 15 \text{ hours } \sqrt{a}$	3	3	2
4.4.1	$(250 \times 6) \sqrt{a} \div 1000 \sqrt{sub}$ $= 1,5 \text{ kWh } \sqrt{a}$	3	3	1/2
4.4.2	$1,5 \times 365 \sqrt{m} = 547,5 \text{ kWh} / 548 \text{ kWh } \sqrt{ca}$ OR $1,5 \times 30 \times 12 = 540 \text{ kWh}$	2	2	1
4.4.3	$548 \text{ kWh} \times 117,29c \sqrt{m}$ OR $540 \text{ kWh} \times 117,29c \sqrt{m}$ $= 64\,274,92c \sqrt{ca}$ $= 63\,336,6c \sqrt{ca}$ $= R642,75 \sqrt{ca}$ $= R633,37 \sqrt{ca}$ OR $547,5 \text{ kWh} \times 117,29c$ $= 64\,216,275$ $= R642,16$	3	3	2
4.5.1	$150 \text{ l} \div 0,001 \text{ l } \sqrt{m} = 150\,000 \text{ cm}^3 \sqrt{a}$	2	2	1
4.5.2	$150\,000 \text{ cm}^3 = \pi \times \text{radius}^2 \times 120 \text{ cm } \sqrt{a} \sqrt{sub}$ $\frac{15\,0000}{\pi \times 120} = \text{radius}^2 \sqrt{m}$ $397,88... = r^2$ ($r^2 = 398,09 ...$ if $\pi = 3,14$) $r = \sqrt{397,88 ...} \sqrt{m}$ $r = 19,947 ... \text{ cm}$ $d = 19,947 ... \times 2 = 39,894 ... \text{ cm } \sqrt{ca}$ ($d = 39,904 ... \text{ cm}$ if $\pi = 3,14$) $d \approx 40 \text{ cm } \sqrt{ca}$	6	6	3
				[29]

QUESTION 5				
5.1	$h^2 = 32^2 - 6,5^2$ ✓substitution ✓subtracting $h^2 = 981,75$ $h = \sqrt{981,75}$ ✓m $h = 31,33\text{cm}$ ✓ca	4	4	2
5.2	$SA = \pi \times 6,5 \times 32 + \pi \times 6,5^2$ ✓sub $SA = 786,18$ ✓a cm ² ✓unit	3	3	1
5.3	$V = \frac{1}{3} \times \pi \times 6,5^2 \times 31,33$ ✓sub $V \approx 1\,386,17$ cm ³ ✓ca $V = 1\,386,17$ ml = 1,39ℓ ✓ca	3	3	2
				[10]
QUESTION 6				
6.1 (a)	Profit = R1 657 000 – R650 000 ✓m = R1 007 000 ✓a	2	2	1
6.1 (b)	Income = R1 063 000 + R680 000 ✓m = R1 743 000 ✓a	2	2	1
6.1 (c)	Expenses = R2 265 000 – R1 575 000 ✓m = R690 000 ✓a	2	2	1
6.1 (d)	Profit Margin = $\frac{R946\,000}{R1\,601\,000}$ ✓a × 100 ✓m = 59% ✓a (59,1%)	3	3	2
6.2	July ✓a	1	1	1
6.3	R750 000 – R680 000 ✓m = R70 000 ✓a	2	2	1
6.4	August ✓a	1	1	1
6.5.1	✓ key (see graph below)	1	1	1
6.5.2	✓✓✓✓ Accuracy of graph (see graph below)	4	4	1
6.5.3	✓ Suitable heading	1	1	1
Expenses and Profit of THE BEATS				
<p>The graph displays three data series over a six-month period from April to September. The vertical axis represents the amount in Rands, ranging from 0 to 1,700,000 in increments of 100,000. The horizontal axis lists the months. Fixed costs are shown as a solid horizontal line at 300,000 Rands. Variable costs are shown as a dashed line that starts at 350,000 in April, peaks at 450,000 in June, and ends at 350,000 in September. Profit is shown as a solid line that starts at 900,000 in April, reaches a peak of 1,550,000 in July, and ends at 950,000 in September.</p>				
				[19]

Total: 150 marks