



NATIONAL SENIOR CERTIFICATE EXAMINATION
NOVEMBER 2014

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.

Key: accuracy
method
continuous accuracy
rounding

Topics

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

QUESTION 1

			MA	Topic	TL
1.		e-Tolls			
	1.1	49 or 45 (as shown on annexure 1)	(2)	MP	2
	1.2	Sunbird = Gantry 8 Flamingo = Gantry 6 Travelling in northerly direction (or NNE)	(2)	MP	2
	1.3	Distance on map = 6cm 6cm : 21 km 6 cm : 2 100 000 (converting from km to cm) 1 : 350 000 OR Distance on map = 6,5 cm \approx 7 cm 7 cm = 2 100 000 cm 1 : 300 000	(5)	MP	3
	1.4 1.4.1 1.4.2	R2,58 + R3,36 + R2,76 = R8,70 (R8,70 + R11,61) \times 24 days = R20,31 \times 24 = R487,44	(4) (5)	MP	3
	1.5	Full amount \times 69% = Discounted price $x \times 69\% = R20,31$ $x = \frac{R20,31}{69\%}$ $x = R29,43$ R29,43 – R20,31 =R9,12	(5)	F	3
	1.6	Route (See answer sheet)	(4)	MP	3
	1.7.1	Amount excluding VAT: R133,38 \div 114% = R117 OR R133,38 \times $\frac{100}{114}$ = R117 <i>*Note: If they calculate 14% and then subtract (= R114,71) they get zero for this calculation.</i>	(3)	F	2
	1.7.2	Total VAT amount: R133,38 – R117 = R16,38 <i>* R133,38 – R114,71 = R18,67</i>	(2)	F	2

2.		Travelling (Time and Direction/maps)			
	2.1.1	Arrive 05:25 Leave 07:45 ^(times) 07:45 – 5:25 = 2 hours 20 minutes	(4)	M	3
	2.1.2	08 hr 40 min + 07 hr 50 min + 1 hr = 17 hr 30 min ∴ Thabo is correct	(5)	M	4
	2.1.3	18:45 + 8 hr 40 min flight time = 03:25	(4)	M	3
	2.1.4	08 hr 40 min + 07 hr 50 min + 2 hr 20 min = 18 hr 50 min = OR 18,8hr	(4)	M	3
	2.2.1	$1,85\% \times R25\ 000 = R462,50$	(3)	F	2
	2.2.2	$R25\ 000 \times \text{Error! Bookmark not defined.} \frac{100}{101,85}$ = R24 545,90 R24 537,50 ÷ R18,3325 =£ 1 338,93 =£ 1 335 OR If a candidate does the following they only get 3 marks R25 000 – R462,50 = R24 537,50 R24 537,50 ÷ R18,3325 = £ 1 338,4699 = £ 1 335	(5)	F	3
	2.3	$3,25\% \div 365 \approx 0,008904\%$	(2)	F	2
	2.4	Correct tax bracket R87 382 + 35% × (R410 000 – R377 450) = R87 382 + 35% × R32 550 = R87 382 + R11 392,50 = R98 774,50 R98 774,50 – R12 726 = R86 046,50	(5)	F	4

3.		Mr and Mrs Pillay			
	3.1.1	FALSE, she lies on the 25 th percentile.	(10)	DH	4
	3.1.2	FALSE, just less than 50% were heavier than him.			
	3.1.3	TRUE.			
	3.1.4	TRUE or FALSE, the girl was growing a little lower than the mean			
	3.1.5	TRUE.			
	3.2.1	$\frac{22\sqrt{a}}{100\sqrt{a}} \left(\frac{11}{50} \right)$	(2)	P	2
	3.2.2	$100 - 27.6 = 72,4\%$	(3)	P	2
	3.2.3	$23,9 : 100$ $= 239 : 1000$	(2)	P	2
	3.3	<p><i>200 ℓ NEW GEYSER:</i></p> $= 2 \times \pi \times r \times l + \pi \times r^2 \times 2$ $= 2 \times 3,14 \times 275 \times 1470 + 3,14 \times 275^2 \times 2$ $= 2\,538\,690 + 474\,925 \text{ mm}^2$ $= 3\,013\,615 \text{ mm}^2$ <p><i>100 ℓ OLD GEYSER:</i></p> $= 2 \times \pi \times r \times l + \pi \times r^2 \times 2$ $= 2 \times 3,14 \times 275 \times 840 + 3,14 \times 275^2 \times 2$ $= 1\,450\,680 + 474\,925 \text{ mm}^2$ $= 1\,925\,605 \text{ mm}^2$ <p>Therefore $1\,925\,605 \times 2$ $= 3\,851\,210 \text{ mm}^2$</p> <p>The surface area is not doubled so Mr Pillay is incorrect.</p>	(8)	M	4
	3.4	<p>He used the diameter measurement He should have divided by two to get the radius. $550 \div 2 = 275$</p> <p>He converted incorrectly from mm^3 to cm^3. He divided by 10 instead of 10^3. $798278693,3 \div 1\,000 = 798278,6933$</p> <p>OR they could have followed the correct answer through $\pi \times 275^2 \times 840$ $= 199\,569\,673,3 \text{ mm}^3$ $= 199\,569,67 \text{ cm}^3$</p>	(4)	M	4

3.5	$\text{Volume} = \pi \times 275^2 \times 1\,470 \text{ mm}$ $= 349\,069\,875 \text{ mm}^3 \text{ } (\div 1\,000)$ $= 349\,069,875 \text{ cm}^3 \text{ } (\div 1\,000)$ $= 349 \text{ } \ell$	(4)	M	3
3.6	Yes, as he is getting more than 200 litres OR No, as he is getting more than 200 litres which would add to his electricity bill	(2)	M	4

4.	Rhino Poaching			
4.1	1:1 For every rhino poached there is an arrest. OR 1:2 For every rhino poached, two arrests are made. OR 0:0 There are no rhinos being poached therefore no arrests need to be made. <i>Any sensible answer.</i>	(2)	DH	4
4.2	2011. The least number of rhinos were killed per arrests.	(2)	DH	4
4.3	$2,75 + 1,83 + 1,23 + 0,91 = 6,72$ $6,72 \div 4$ $= 1,68$	(3)	DH	2
4.4 4.4.1	$(2,75 \times 365) + (1,83 \times 366) + (1,23 \times 365) + (0,91 \times 365)$ $= 1003,75 + 669,78 + 448,95 + 332,15$ $= 2\ 454,63 \approx 2455$ OR 2454 OR $1004 + 670 + 449 + 332 = 2455$ OR $1003 + 669 + 448 + 332 = 2452$	(6)	DH	3
4.4.2	$2454,63 \times \$150\ 000 \times R10,61$ $= R3\ 906\ 543\ 645$ $= R3\ 907\ 000\ 000^{(r)}$ OR $2455 \times \$150\ 000 \times R10,61$ $= R3\ 907\ 132\ 500$ $= R3\ 907\ 000\ 000$ OR $2454 \times \$150\ 000 \times R10,61$ $= R3\ 905\ 541\ 000$ $= R3\ 905\ 000\ 000$ OR $2452 \times \$150\ 000 \times R10,61$ $= R3\ 902\ 358\ 000$ $= R3\ 902\ 000\ 000$	(4)	F	3
4.5	$946 - 333$ $= 613$	(2)	DH	2
4.6	We would hope to see a small range because that would mean that less rhinos are being killed.	(2)	DH	4
4.7	Yes. The data point lies on the zero. OR No. The increment is large and so the smaller numbers won't show on the graph.	(2)	DH	4
4.8	Any value between (and including) 13 000 – 13 500	(2)	DH	2

	4.9	Because the number of rhinos alive has dropped to below 5 000 so the number of rhinos killed will decrease as the numbers grow less and less.	(2)	DH	4
	4.10	$2025 - 2014 = 11$ years	(2)	DH	2

5.	Car Financing			
5.1	$R215\,600 \times 12,5\%$ $= R26\,950$ (Interest per year) $R26\,950 \times 5$ years $= R134\,750$ (Total interest paid) $R215\,600 + R134\,750$ $= R350\,350$ $= R350\,350 \div 60$ $= R5\,839,17$ If they answer: $(R26\,950 + R215\,600) \div 60$ $= R4\,042,50$ (4 marks)	(7)	F	3
5.2.1	$\frac{R\,2\,394,42 - R1\,911,05}{R1\,911,05} \times 100\%$ $= 25,3\%$	(3)	F	2
5.2.2	Any logical suggestion but the best value for money will be Virgin Money. Although the monthly repayments are slightly higher, there is no excess. The lowest monthly repayment option is Budget Medium Excess.	(2)	F	4
5.3.1	E	(2)	DH	4
5.3.2	D R4 180	(3)	DH	3
5.3.3	The median and lower quartile are close together which means the middle value of the data is far closer to the lower quartile than the upper quartile. 25% of the excess amounts are close to each other.	(2)	DH	4
5.4	$R2\,380,75 + R980,00 + R5\,839,17.$ $= R9\,199,92$	(3)	F	2

Total: 150 marks