



NATIONAL SENIOR CERTIFICATE EXAMINATION  
MAY 2023

**MATHEMATICAL LITERACY: PAPER I**  
**MARKING GUIDELINES**

Time: 3 hours

150 marks

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**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.**

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Q1	Marking guideline	Skills assessed	Topic	Level
KEY	<b>a</b> accuracy <b>m</b> method <b>mca</b> method continued accuracy	<b>ca</b> continued accuracy <b>ma</b> method accuracy <b>r</b> rounding	<b>F</b> Finance <b>D</b> Data handling <b>P</b> Probability	<b>1</b> KN <b>2</b> RP <b>3</b> MSP <b>4</b> R&R
1.1.1	Four months 1 January to 30 April	four months	F	1
1.1.2	eThekweni High School 23 Protea Road, Morningside, Durban, 4001	Ethekweni High School address	F	1
1.1.3	Tax; UIF; SACE; Old Mutual RA – any two	tax UIF – any two	F	1
1.1.4	$R500 \times 12 = R6\ 000$	$R500 \times 12$ $R6\ 000$	F	1
1.1.5 (a)	Total income = $R22\ 100,56 + R1\ 500 + R800 + R500$ Total income = $R24\ 900,56$	adding all correct values correct answer	F	1
1.1.5 (b)	Tax = $R4\ 507,37 - R1\ 500 - R15 - R177,12$ Tax = $R2\ 815,25$	subtracting all values correct answer	F	1
1.1.5 (c)	Nett PAY = $R24\ 900,56 - R4\ 507,37$ Nett PAY = $R20\ 393,19$	subtracting values correct answer	F	1
1.1.6	RA percentage = $\frac{R1500}{R22100,56} \times 100$ RA percentage = 6,79%	R1500 dividing by $R22\ 100,56$ 6,79%	F	1
1.1.7 (a)	Unemployment Insurance Fund	UIF	D	1
1.1.7 (b)	retrenchment; unemployed; illness – any one	retrenchment illness	D	1
1.2.1	Questionnaire; interview; Online form – any one	questionnaire interview	D	1
1.2.2	32	32	D	1
1.2.3	20 years	20	D	1
1.2.4	Zulu language = $\frac{23}{32} \times 100 = 71,88\% \approx 72\%$	$\frac{23}{32}$ 71,88%	D	1
1.2.5	Afrikaans	Afrikaans	D	1
1.2.6	$P(\text{Study}) = \frac{21}{32}$	$\frac{21}{32}$	P	1

Q2	Marking guideline		Skills assessed	Topic	Level																									
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2.1.1 (a)	mean = $\frac{8\ 893}{10} = 889,3$		divide 8 893 by 10 889,3	D	2																									
2.1.1 (b)	median = $\frac{159 + 130}{2} = 144,5$ Accept 144 or 145		$\frac{159 + 130}{2}$ 144,50	D	2																									
2.1.1 (c)	Range = $715 - 77 = 638$		subtract 77 from 715 638	D	2																									
2.1.1 (d)	Kenya Nigeria		Kenya Nigeria	D	2																									
2.1.2	<table border="1"> <caption>All-time Commonwealth Games medal table</caption> <thead> <tr> <th>Country</th> <th>Gold</th> <th>Silver</th> <th>Bronze</th> </tr> </thead> <tbody> <tr> <td>Australia</td> <td>920</td> <td>780</td> <td>710</td> </tr> <tr> <td>England</td> <td>710</td> <td>710</td> <td>710</td> </tr> <tr> <td>Canada</td> <td>480</td> <td>520</td> <td>550</td> </tr> <tr> <td>India</td> <td>180</td> <td>170</td> <td>150</td> </tr> <tr> <td>New Zealand</td> <td>150</td> <td>220</td> <td>280</td> </tr> </tbody> </table>		Country	Gold	Silver	Bronze	Australia	920	780	710	England	710	710	710	Canada	480	520	550	India	180	170	150	New Zealand	150	220	280		compound bar graph plotting legend/Key	D	2
Country	Gold	Silver	Bronze																											
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2.2.1	<p><math>\frac{25}{100} = \frac{1}{4}</math></p> <p>Accept <math>\frac{3}{4}</math> (1 mark only)</p>		<p><math>\frac{25}{100}</math>  <math>\frac{1}{4}</math> simplifying fraction</p>	F	1
2.2.2 (a)	<p>Birmingham city = <math>\frac{778\ 000\ 000}{75} \times 25</math>                      Birmingham city = £259 333 333,33                      Accept £259 333 333,30  <b>OR</b>                      Birmingham city = £259,3333333 million</p>		<p>£778 000 000                      dividing by 75                      multiplying by 25                      £259 333 333,33</p>	F	3
2.2.2 (b)	<p>Total cost = £778 000 000 + £259 333 333,33                      Total cost = £1 037 333 333,33  <b>OR</b>                      Total cost = £1 037,33333333 million</p>		<p>adding correct values                      £1 037 333 333,33</p>	F	2
2.2.2 (c)	<p>Euro = £1 037 333 333,33 × 1,18571                      Euro = €1 229 976 506,66                      Rand = €1 229 976 506,66 ÷ 0,058549                      Rand = R21 007 643 280                      Rand = R21 008 000 000</p> <p>Dollars = £1 037 333 333,33 × 1,1725                      Dollars = \$1 216 273 333                      Rand = \$1 216 273 333 ÷ 0,059614                      Rand = R20 402 478 170                      Rand = R20 402 000 000</p>		<p>multiplying by 1,18571                      €1 229 976 506,66                      dividing by 0,058549                      R21 007 643 280                      correct rounding</p> <p>multiplying by 1,1725                      \$1 216 273 333                      dividing by 0,059614                      R20 402 478 170                      correct rounding</p>	F	3
2.2.2 (d)	<p>Twenty-one billion and eight million                      or                      Twenty billion four hundred and two million</p>		<p>correct words</p>	F	1

Q3	Marking guideline			Topic	Level														
KEY	<p><b>a</b> accuracy  <b>m</b> method  <b>mca</b> method continued accuracy</p>			<p><b>F</b> Finance  <b>D</b> Data handling  <b>P</b> Probability</p>	<p><b>1</b> KN  <b>2</b> RP  <b>3</b> MSP  <b>4</b> R&amp;R</p>														
3.1.1	<p>Industry = <math>1\% \times 20</math>                      Industry = 20%</p> <p>Transport = <math>21\% + 18\%</math>                      Transport = 39%</p>			D	2														
3.1.2	<p><b>Economic Sectors of the Western Cape</b></p> <table border="1"> <thead> <tr> <th>Sector</th> <th>Percentage</th> </tr> </thead> <tbody> <tr> <td>Transport</td> <td>38%</td> </tr> <tr> <td>Residential</td> <td>21%</td> </tr> <tr> <td>Industry</td> <td>20%</td> </tr> <tr> <td>Commerce</td> <td>11%</td> </tr> <tr> <td>Solid Waste</td> <td>7%</td> </tr> <tr> <td>Other</td> <td>1%</td> </tr> </tbody> </table>	Sector	Percentage	Transport	38%	Residential	21%	Industry	20%	Commerce	11%	Solid Waste	7%	Other	1%			D	3
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3.1.3	<p>South Africa = <math>339\,117\,323 \div 13 \times 100</math>                      South Africa = 2 608 594 792,31 GJ                      Barrels of oil = <math>2\,608\,594\,792,31 \times 0,17</math>                      Barrels of oil = 443 461 115                      Accept 443 461 115</p>		<p>dividing by 13                      multiplying by 100                      2 608 594 792,31                      multiplying by 0,17                      443 461 115</p>	D	3
3.1.4	<p><math display="block">\frac{R2\,187}{R2\,187} \cdot \frac{\\$130}{R2\,187}</math>                      R1 : \$0,05944215                      R1 : \$0,0594</p>		<p>correct Ratio R2 187 : \$130                      dividing by R2 187                      R1: \$0,05944215                      R1: \$0,0594</p>	F	2
3.2.1	<p>Increase 2006–2017 = <math>R6,73 \times 2 = R13,46</math>                      Price 2017 = R13,46 so has double                      Increase 2017–2022 = <math>R13,46 \times 2 = R26,92</math>                      Price 2022 = R26,92 so has doubled                       TopAuto website is correct</p>		<p>multiplying R6,73 by 2                      R13,46                      comparing 2017 price                      R26,68                      R26,74                      website is correct                      Accept partial correct as it has only double not more than doubled</p>	D	4
3.2.2	<p>% increase = <math>\frac{R26,92 - R6,73}{R6,73} \times 100</math>                      % increase = 300%</p>		<p>subtract R6,73 from R26,92                      dividing by R6,73                      300%</p>	D	2
3.2.3	<p><math display="block">\text{VAT} = \frac{R26,92}{115} \times 15</math>                      VAT = R3,51  <b>OR</b> Price excluding VAT = <math>\frac{R26,92}{115} \times 100</math>                      Price excluding VAT = R23,41                      VAT = <math>R26,92 - R23,41 = R3,51</math></p>		<p>divide R26,92 by 115                      Multiply by 15                      R3,51</p>	D	2

Q4	Marking guideline		Skills assessed	Topic	Level
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4.1.1 (a)	VAT = R628 900 × 15% = R94 335		multiplying R628 900 by 15% R94 335	F	2
4.1.1 (b)	Total = R628 900 + R94 335 Total = R723 235		adding VAT to R628 900 R723 235	F	2
4.1.2 (a)	Deposit = R723 235 × 10% Deposit = R72 323,50 Total cost = R72 323,50 + R13 764 × 12 × 5 Total cost = R898 163,50		R72 323,50 R13 764 × 12 × 5 R898 163,50	F	3
4.1.2 (b)	Interest = R898 163,50 – R723 235 Interest = R174 928,50		subtracting R723 235 from (a) R174 928,50	F	2
4.1.3	Interest = R650 911,50 × 0,095 × 5 Interest = R309 182,96 So, interest rate is not correct  <b>Alternative solution</b>  $R174\ 928,50 = R650\ 911,50 \times \frac{rate}{100} \times 5$ $\frac{R174\ 928,50}{R650\ 911,50 \times 5} = \frac{rate}{100}$ $0,053748 = \frac{rate}{100}$ $5,37\% = rate$ So, interest rate is not correct		substitution correct R309 182,96 interest rate is not correct	F	4

Q4	Marking guideline		Skills assessed	Topic	Level
KEY	<p><b>a</b> accuracy  <b>m</b> method  <b>mca</b> method continued accuracy</p>		<p><b>ca</b> continued accuracy  <b>ma</b> method accuracy  <b>r</b> rounding</p>	<p><b>F</b> Finance  <b>D</b> Data handling  <b>P</b> Probability</p>	<p><b>1</b> KN  <b>2</b> RP  <b>3</b> MSP  <b>4</b> R&amp;R</p>
4.1.4	<p>Monthly repayment = <math>R68\,500 \times 20\%</math>                      Monthly repayment = R13 700                      This is not enough to cover the R13 764</p> <p><b>Alternative solution</b>                      Monthly required salary = <math>R13\,764 \div 20\%</math>                      Monthly required salary = R68 820                      Monthly salary of R68 500 will not cover bond repayment of the R13 764</p>		<p>multiply R68500 by 20%                      R13 700                      this is lower than R13 764</p>	F	4
4.2.1 (a)	<p>rate = <math>7,3 \times 24,99 \div 100</math>                      rate = 1,82427</p>		<p>using correct value of 7,3                      multiplying by 24,99                      dividing by 100</p>	F	4
4.2.1 (b)	<p>Fixed cost = <math>R744\,900 - R723\,400</math>                      Fixed cost = R21 500</p>		<p>using correct value of R744 900                      subtracting R723 400</p>	F	2
4.2.2	<p>a = <math>R21\,500 + 1,19952 \times 10\,000</math>                      a = R33 495,20</p> <p>b = <math>R1,82427 \times 20\,000</math>                      b = R36 485,40</p> <p>c = <math>R182\,427 \div 1,82427</math>                      c = 100 000                      or                      c = <math>R141\,452 - R21\,000 \div 1,19952</math>                      c = 100 000</p>		<p>substitution                      R33 495,20</p> <p>substitution                      R36 485,40</p> <p>substitution                      100 000</p>	F	2

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4.2.3	<p style="text-align: center;"><b>Fuel cost of Petrol RAV4 vs Hybrid RAV4</b></p> <table border="1" style="margin-top: 10px;"> <caption>Data points from the graph</caption> <thead> <tr> <th>Number of Kilometres</th> <th>Petrol Cost (Rands)</th> <th>Hybrid Cost (Rands)</th> </tr> </thead> <tbody> <tr> <td>0</td> <td>R 0.00</td> <td>R 20 000.00</td> </tr> <tr> <td>10000</td> <td>R 16 000.00</td> <td>R 32 000.00</td> </tr> <tr> <td>20000</td> <td>R 32 000.00</td> <td>R 44 000.00</td> </tr> <tr> <td>40000</td> <td>R 72 970.80</td> <td>R 69 480.80</td> </tr> </tbody> </table>	Number of Kilometres	Petrol Cost (Rands)	Hybrid Cost (Rands)	0	R 0.00	R 20 000.00	10000	R 16 000.00	R 32 000.00	20000	R 32 000.00	R 44 000.00	40000	R 72 970.80	R 69 480.80	heading & axes & graph labels or legend end value petrol (R72 970,80) end value hybrid (R69 480,80) y-intercept petrol + straight line y-intercept hybrid+ straight line	F	3
Number of Kilometres	Petrol Cost (Rands)	Hybrid Cost (Rands)																	
0	R 0.00	R 20 000.00																	
10000	R 16 000.00	R 32 000.00																	
20000	R 32 000.00	R 44 000.00																	
40000	R 72 970.80	R 69 480.80																	
4.2.4	(34 390; R62 73664) X range (33 000 – 34 500) Y range (R62 000 – R63 000)	$\approx 34\ 000$ $\approx R62\ 000$	F	2															
4.3.1	$P(\text{one ticket}) = \frac{1}{360} \times 100 = 0,28\%$	$\frac{1}{360}$ 0,28%	P	2															
4.3.2		(a) correct interval (b) Position correct for 4.3.1 both labels correct	P	2															

Q5	Marking guideline		Skills assessed	Topic	Level
KEY	<p><b>a</b> accuracy  <b>m</b> method  <b>mca</b> method continued accuracy</p>		<p><b>ca</b> continued accuracy  <b>ma</b> method accuracy  <b>r</b> rounding</p>	<p><b>F</b> Finance  <b>D</b> Data handling  <b>P</b> Probability</p>	<p><b>1</b> KN  <b>2</b> RP  <b>3</b> MSP  <b>4</b> R&amp;R</p>
5.1	They pay no transfer fees/tax as rate of tax is 0%		no transfer fees/tax rate of tax 0%	F	4
5.2	<p>Tax = R88 250 + 11% × 2 500 000 – R2 475 000                      Tax = R88 250 + 11% × R25 000                      Tax = R88 250 + R2 750                      Tax = R91 000</p>		<p>correct tax bracket                      11% of R25 000                      add R2 750                      R91 000</p>	F	3
5.3	<p>New price = R2 500 000 × 95%                      New price = R2 375 000                      Tax = R44 250 + 8% × (R2 375 000 – R1 925 000)                      Tax = R44 250 + R36 000                      Tax = R80 250</p> <p>Savings = R91 000 – R80 250 = R10 750</p> <p>The statement is valid</p>		<p>R2 375 000                      correct tax bracket                      8% of R450 000                      R80 250                      R10 750                      Valid/True</p>	F	4
5.4	<p>Transfer costs = R1 026 00 + 13% × R1 000 000                      Transfer costs = R1 026 000 + R130 000                      Transfer costs = R1 156 000</p> <p>Percentage of property value = <math>\frac{R1\,156\,000}{R12\,000\,000} \times 100</math>                      Percentage of property value = 9,63%</p> <p>Almost 10% is valid</p>		<p>correct tax bracket                      R1000 000                      R1 156 000                      percentage of house                      9,63%                      Almost 10% is correct</p>	F	4

**Total: 150 marks**