NATIONAL SENIOR CERTIFICATE EXAMINATION
NOVEMBER 2022

MATHEMATICAL LITERACY: PAPER I

MARKING GUIDELINES

Time: 3 hours 150 marks

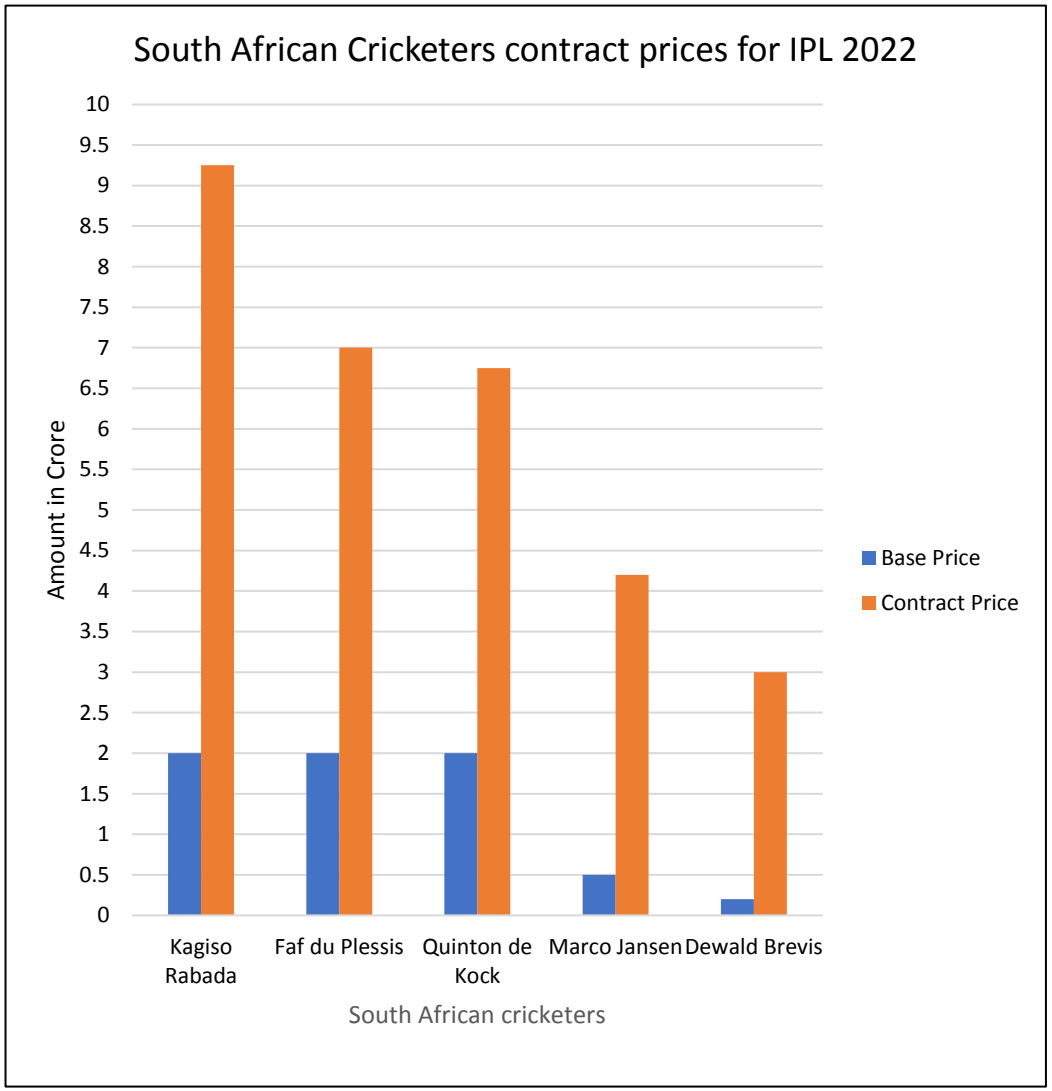
These marking guidelines are prepared for use by examiners and sub-examiners, all of whom are required to attend a standardisation meeting to ensure that the guidelines are consistently interpreted and applied in the marking of candidates' scripts.

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.

Q1	Marking guideline	Skills assessed	Topic	Level
KEY	**a** accuracy **m** method **mca** method continued accuracy	**ca** continued accuracy **ma** method accuracy **r** rounding	**F** Finance **D** Data handling **P** Probability	**1** KN **2** RP **3** MSP **4** R&R
1.1.1	31/12/2021 or 31 December 2021	31/12/2021	F	1
1.1.2	Invoice or Tax Invoice	Invoice	F	1
1.1.3	Phone: 021 851 7124 Email: hiqswest@gmail.com In person: 17 Mountain Road OR Phone or email or at 17 mountain road	Phone or 021 851 7124 email OR hiqswest@gmail.com In person or 17 mountain Rd	F	1
1.1.4	R. Gumede 17 Mountain Road Somerset West 7130 17 mountain Road	R. Gumede 17 Mountain Road Somerset West 7130	F	1
1.1.5 (a)	R271,30	R271,30	F	1
1.1.5 (b)	Nedbank	Nedbank	F	1
1.1.5 (c)	Value added Tax	Value added Tax	F	1
1.1.6	= R1 780 ÷ 2 = R890	dividing by 2 R890	F	1

1.1.7	$= R1780 : R300$ $= \frac{R1780}{R1780} : \frac{R300}{R1780}$ $= 1 : 0.17$ OR use the price before VAT $R1547,84 : R260,87$ $\frac{R1547,84}{R1547,84} : \frac{R260,57}{R1547,84}$ $= 1 : 0.17$ OR $= R1780 : R260$ $= \frac{R1780}{R1780} : \frac{R260}{R1780}$ $= 1 : 0.15$ One only OR $= R1547,84 : R300$ $= \frac{R1547,84}{R1547,84} : \frac{R300}{R1547,84}$ $= 1 : 0.19$ One only	R1 780:R300 1:0,17	F	1
1.2.1	Histogram	Histogram	D	1
1.2.2	R6 000	R6 000	D	1
1.2.3	24 Months	24 Months	D	1
1.2.4	If they have less than 2 mm tread	less than 2 mm tread	D	1
1.2.5	36%	36%	D	1
1.2.6 (a)	= R1 780 × 20% = R356	R356	D	1
1.2.6 (b)	She gets 100% cover for 24 months or She get 100% cover for 2 years	a 100% 24 months	D	1

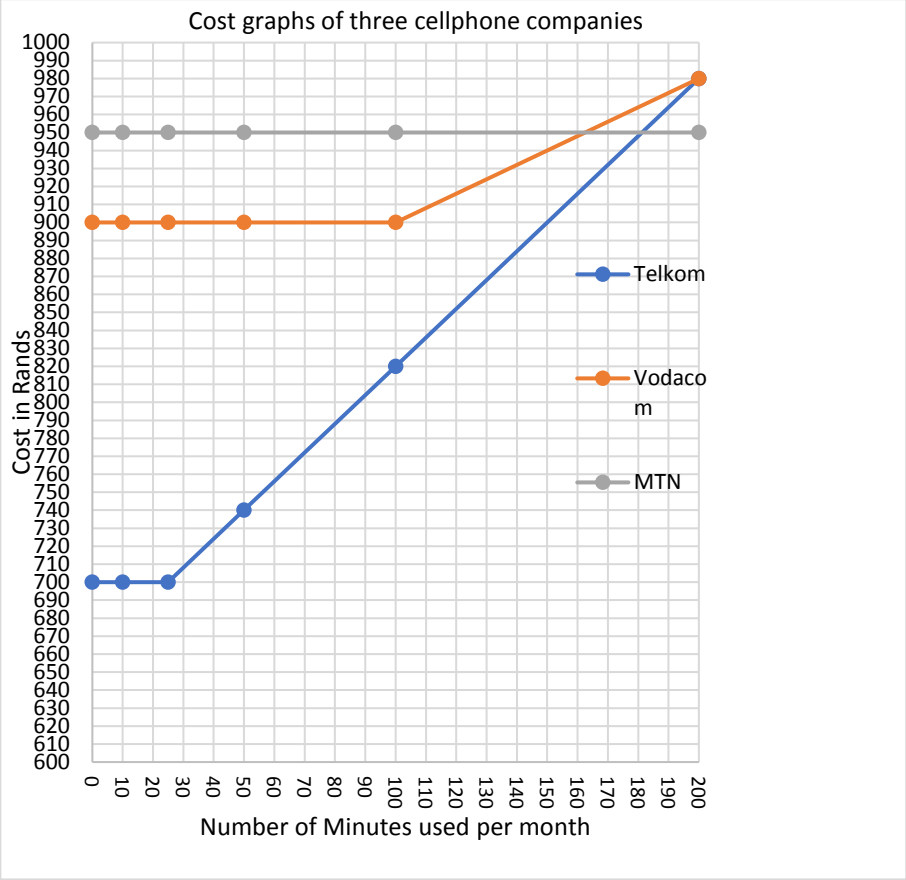
Q2	Marking guideline	Skills assessed	Topic	Level
KEY	**a** accuracy **m** method **mca** method continued accuracy	**ca** continued accuracy **ma** method accuracy **r** rounding	**F** Finance **D** Data handling **P** Probability	**1** KN **2** RP **3** MSP **4** R&R
2.1.1 (a)	Mean $= \frac{506}{6} = 84{,}33$ Accept 84	divided by 5; 6 or 7 a 84,33 correct answer	D	2
2.1.1 (b)	6; 65; 96; 97; 104; 138 Median = 96,5 Accept 96 or 97	ordering data 96,5 correct answer	D	2
2.1.1 (c)	Range = 138 – 6 Range = 132	subtracting 6 from 138 132 correct answer	D	2
2.1.2	Number of Rupees = 3 × 10 000 000 Number of Rupees = 30 000 000 rupees Rand value = 30 000 000 rupees × 0,2 Rand value = R6 000 000 Rand value = six million rand	Multiplying R10 000 000 by 3 30 000 000 rupees multiplying previous answer by 0,2 R6 000 000 six million rand	F	3

2.1.3 (a)		heading, axes labels and legend Double bar graph correct plotting First 3 orange bars correct plotting Last 2 orange bars correct plotting First 3 blue bars correct plotting Last 2 blue bars space between bars	D	2

2.1.3 (b)	$\%\ \text{increase} = \frac{9{,}25 - 2}{2} \times 100$ $\%\ \text{increase} = 362{,}5\%$ Wrong values used correctly One mark only	9,25 subtracting 2 dividing by 2 362,5%	F	2
2.2.1 (a)	Broken line graph or line graph	Broken line graph	D	1
2.2.1 (b)	The rand has strengthened from a high of R14,6458 to R14,4701 over the days 28–30 March	strengthened high of R14,6458 to R14,4701 28 March-30 March	D	4
2.2.1 (c)	The increases and decreases on the y-axis seem more extreme due to the y-axis not starting at zero or only starting at 14,4482 Or The graph is misleading as it goes down (decreases) but shows a strengthening of the Rand	increases and decreases on the y-axis seem more extreme. y-axis not starting at zero or starts at 14,4482 Or Graph is decreasing Shows a strengthening of the Rand.	D	4
2.2.2	Value in dollars = 20(248,17) + 50(139,14) + 30(391,82) Value in dollars = \$23 675 Value in rands = \$23 675 × 14,4701 Value in rands = R342 579,62✓car rounding two decimal places	multiply and adding three values correct answer multiplying answer by 14,4701 R342 579,62 correct rounding	F	2

Q3	Marking guideline	Skills assessed	Topic	Level
KEY	**a** accuracy **m** method **mca** method continued accuracy	**ca** continued accuracy **ma** method accuracy **r** rounding	**F** Finance **D** Data handling **P** Probability	**1** KN **2** RP **3** MSP **4** R&R
3.1.1	Option 1 = R700 × 24 = R16 800 Option 2 = R900 × 36 = R32 400 Option 3 = R950 × 36 = R34 200	R16 800 R32 400 × 36 R34 200	F	2
3.1.2	The number of free minutes per month. a The cost per minute for making calls. a Length of contract. a	free minutes peak call rate length of contract	F	4
3.1.3 (a)	$P(\text{MTN}) = \frac{1}{3} = 0{,}33$ or 33,33%	$\frac{1}{3}$ 0,33	P	1
3.1.3 (b)	$P(\text{Vodacom or Telkom}) = \frac{2}{3} = 0{,}67$ or 66,67%	$\frac{2}{3}$ 0,67	P	1
3.1.4 (a)	**Method 1:** $\text{Price excl VAT} = \frac{\text{R15 500}}{115} \times 100 = \text{R13 478,26}$ $\text{VAT} = \text{R15 500} - \text{R13 478,26} = \text{R2 021,74}$ **Method 2:** $\text{VAT} = \frac{\text{R15 500}}{115} \times 15 = \text{R2021,74}$	**Method 1:** $\frac{\text{R15 500}}{115} \times 100$ R13 478,26 R2 021,74 **Method 2:** $\frac{\text{R15 500}}{115}$ × 15 R2 021,74	F	2

3.1.4 (b)	Cash Price = R15 500 Cost of minutes = R1,60 × 25 min × 24 months = R960 Total cost = R16 460 Cheaper to get cash option Or $= \text{R}15\,500 \div 24$ $= \text{R}645{,}83$ per month $\text{R}700 - (1{,}60 \times 25)$ $= \text{R}660$ Cheaper to get cash option $= \text{R}15\,550 \div 24$ $= \text{R}645{,}83$ per month Contract $= \text{R}700$ per month Cheaper to get cash option Or R16 800 = Cheaper cash	multiplying by 25 and 24 R960 Total cost for cash = R16 460 cheaper to get cash	F	4
3.1.5	(a) R700 (b) 700 + 25 × 1,60 = R740 (c) (R980 – R700) ÷1,60 = 175 Number of mins = 175 + 25 = 200 OR (R980 – R900) ÷ R0,80 = 100 Number of mins = 100 + 100 = 200	(a) R700 (b) substitution R740 (c) subtract R700 175 200	F	2

3.1.6		heading, axes labels (i) correct plotting 3.1.5 (a) (ii) correct plotting 3.1.5 (b) (iii) correct plotting 3.1.5 (c) Joining of points with ruler correct Legend	F	3
3.1.7 (a)	(180 minutes ; R950)	180 minutes R950	F	4
3.1.7 (b)	After 180ca minutes	fter 180	F	4
3.1.8	Option 1 as it will be the cheapest of the three options OR Option 1 as the graph is below the other graphs.	Option 1 cheapest of the three	F	4

<table>
<tr><th>Q4</th><th>Marking guideline</th><th>Skills assessed</th><th>Topic</th><th>Level</th></tr>
<tr><td>KEY</td><td>a accuracy
m method
mca method continued accuracy</td><td>ca continued accuracy
ma method accuracy
r rounding</td><td>F Finance
D Data handling
P Probability</td><td>1 KN
2 RP
3 MSP
4 R&R</td></tr>
<tr><td>4.1.1</td><td>Cost of electricity = 146,48 × 500 + 169,11 × 500 + 100 × 182,07
Cost of electricity = 176 002 cents
Cost including fix costs = 176 002 + 169,30 + 498,74
Cost including fix costs = 176 670 ÷ 100
Cost including fix costs = R1 766,70</td><td>using tariff table correctly
176 002 cents
adding 169,30
adding 498,74
dividing by 100 to get rands
unit</td><td>F</td><td>3</td></tr>
<tr><td>4.1.2</td><td>1 100 units: R1766,70
1 unit: R1,61</td><td>correct values
written as a rate
1 unit: R1,61
rounding</td><td>F</td><td>3</td></tr>
<tr><td>4.1.3</td><td>2020/2021
Price = R1 766,70 ÷ 114,59% = R1 541,76</td><td>dividing by
114,59% or 1,11459
R1541,76</td><td>F</td><td>3</td></tr>
<tr><td>4.1.4</td><td>
<table>
<tr><th>Block name</th><th>kwh used</th><th>Tariff (cents/kwh) Including VAT</th></tr>
<tr><td>Block one</td><td>0–500 kwh</td><td>146</td></tr>
<tr><td>Block two</td><td>501–1 000 kwh</td><td>(a) 169</td></tr>
<tr><td>Block three</td><td>(b) 1 001–2 000 kwh</td><td>182</td></tr>
<tr><td>Block four</td><td>2 001–3 000 kwh</td><td>192</td></tr>
<tr><td>Block five</td><td>(c) 3 001 or more
OR
≥3 001 or >3000</td><td>(d) 202</td></tr>
</table>
</td><td>(a) 169
(b) 1 001–2 000 kwh
(c) 3 001 kwh or more
OR
more than3000 kwh
OR
greater than or equal to 3 001 kwh
(d) 202</td><td>F</td><td>2</td></tr>
</table>

<table>
<tr><td>4.2.1</td><td>2%</td><td>2%</td><td>D</td><td>2</td></tr>
<tr><td>4.2.2</td><td>$P(\text{year no increase}) = \frac{4}{27}$
$P(\text{year no increase}) = 14{,}8$</td><td>4
27
×100
14,8%</td><td>P</td><td>4</td></tr>
<tr><td>4.2.3</td><td>2009 and 31%</td><td>2009
31%</td><td>D</td><td>4</td></tr>
<tr><td>4.2.4</td><td>After 2007 there were several sharp increases in the electricity price all having increases of over 20%</td><td>2007
Sharp increases over 20%</td><td>D</td><td>4</td></tr>
<tr><td>4.2.5</td><td>High inflation Vs Low increase values given

<table>
<tr><td>Year</td><td>Inflation</td><td>Price</td></tr>
<tr><td>1996</td><td>7%</td><td>1%</td></tr>
<tr><td>1997</td><td>7%</td><td>4%</td></tr>
<tr><td>1998</td><td>6%</td><td>3%</td></tr>
<tr><td>1999</td><td>4%</td><td>1%</td></tr>
<tr><td>2004</td><td>1%</td><td>0%</td></tr>
<tr><td>2001</td><td>5%</td><td>4%</td></tr>
</table>
Low Inflation Vs High Increase values given

<table>
<tr><td>Year</td><td>Inflation</td><td>Price</td><td>Year</td><td>Inflation</td><td>Price</td></tr>
<tr><td>2000</td><td>7%</td><td>1%</td><td>2013</td><td>5%</td><td>15%</td></tr>
<tr><td>2003</td><td>7%</td><td>4%</td><td>2014</td><td>5%</td><td>8%</td></tr>
<tr><td>2005</td><td>6%</td><td>3%</td><td>2015</td><td>4%</td><td>8%</td></tr>
<tr><td>2006</td><td>4%</td><td>1%</td><td>2016</td><td>5%</td><td>8%</td></tr>
<tr><td>2008</td><td>1%</td><td>0%</td><td>2017</td><td>4%</td><td>8%</td></tr>
<tr><td>2009</td><td>5%</td><td>4%</td><td>2018</td><td>3%</td><td>6%</td></tr>
<tr><td>2010</td><td>4%</td><td>25%</td><td>2019</td><td>3%</td><td>14%</td></tr>
<tr><td>2011</td><td>5%</td><td>26%</td><td>2020</td><td>2%</td><td>4%</td></tr>
<tr><td>2012</td><td>6%</td><td>25%</td><td></td><td></td><td></td></tr>
</table>
Therefore, Sashin is incorrect</td><td></td><td>D</td><td>4</td></tr>
<tr><td></td><td></td><td></td><td></td><td></td></tr>
</table>

Q5	Marking guideline	Skills assessed	Topic	Level
KEY	**a** accuracy **m** method **mca** method continued accuracy	**ca** continued accuracy **ma** method accuracy **r** rounding	**F** Finance **D** Data handling **P** Probability	**1** KN **2** RP **3** MSP **4** R&R
5.1.1	Annual gross salary = R45 000 × 12 = R540 000	multiple R45 000 × 12 R540 000	F	2
5.1.2	Annual pension = R540 000 × 15% = R81 000 Or R6750	R540 000 × 15% R81 000	F	2
5.1.3	Annual taxable salary = R540 000 – R81 000 Annual taxable salary = R459 000	subtract R81 000 R459 000	F	1
5.1.4	Annual tax = R73 726 + 31% (R459 000 – R353 100) Annual tax = R73 726 + R32 829 – R16 425 Annual tax = R106 555 – R16 425 Annual tax = R90 130	correct tax bracket subtract R353 100 correct R32 829 correct R106 555 R16 425 R90 130	F	3
5.2	Tax = R91 250× 18% -Rebate Tax = R16 425 – R16 425 Tax = R0 OR Tax Threshold = R16 425 ÷ 18% Tax Threshold = R91 250 OR R91250 + R16425 =R107 675 R107 675 ÷118% =R91 250	Multiple by 18% R16 425 Tax = R0 after rebate OR Use correct rebate divide by 18% R91 250	F	4

Total: 150 marks