INTERNATIONAL SECONDARY CERTIFICATE EXAMINATION
NOVEMBER 2023

QUANTITATIVE REASONING: PAPER I

MARKING GUIDELINES

Time: 3 hours 150 marks

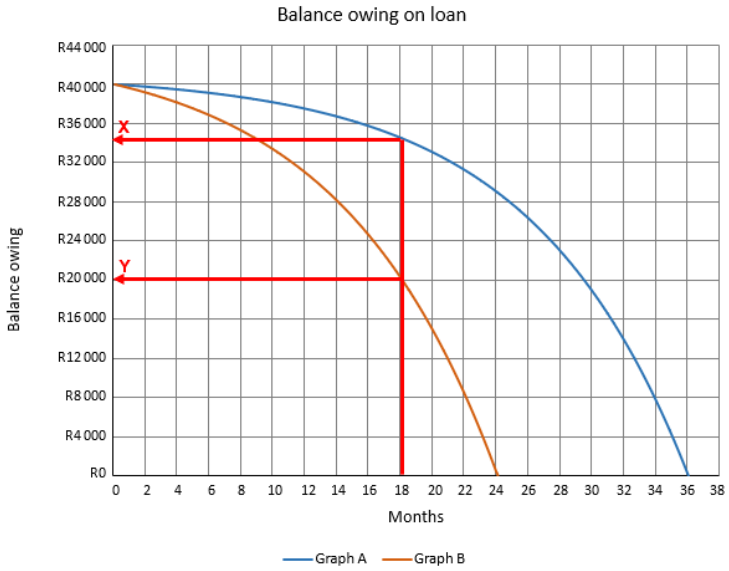
These marking guidelines are prepared for use by examiners and sub-examiners, all of whom are required to attend a standardisation meeting to ensure that the guidelines are consistently interpreted and applied in the marking of candidates' scripts.

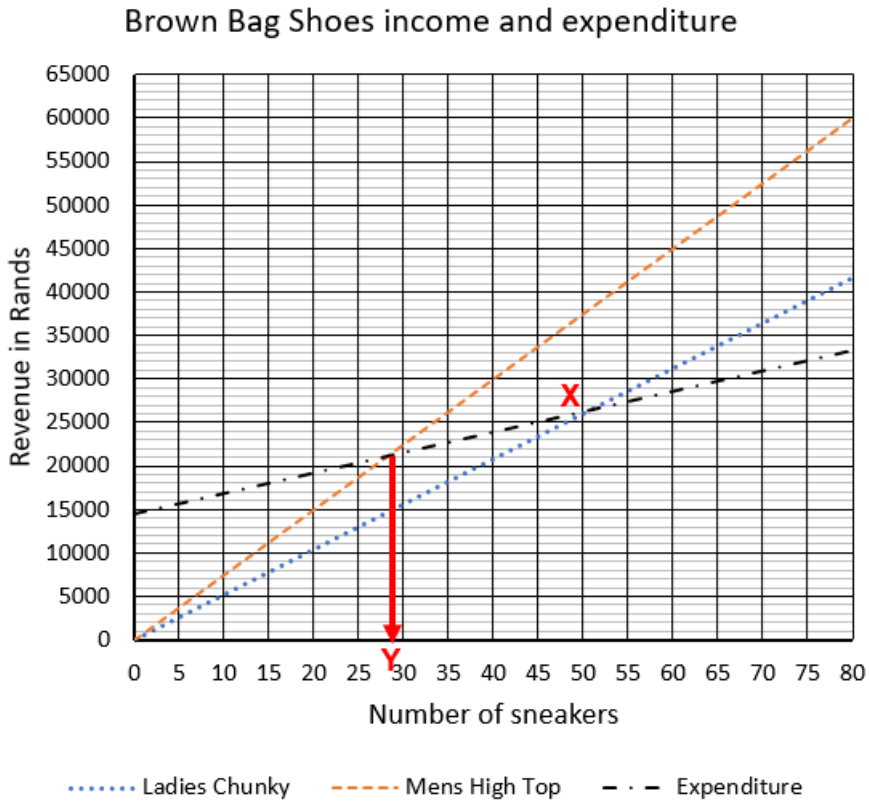
The IEB will not enter into any discussions or correspondence about any marking guidelines. It is acknowledged that there may be different views about some matters of emphasis or detail in the guidelines. It is also recognised that, without the benefit of attendance at a standardisation meeting, there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

Q1	Marking guideline	Marks
1.1.1	My-Mens	
1.1.2	Give a gift card of R200 or more	
1.1.3	Cash, Debit card, Credit card, cell phone	
1.1.4	3 times	
1.1.5	Credit	
1.1.6	800	
1.1.7	R379 ÷ 4 = R94,75	
1.1.8	Shirt Jacket Plaid	
1.2.1	63%	
1.2.2	Android	
1.2.3	Female **OR** Women	
1.2.4	65^{+} 4%	
1.2.5	True	
1.2.6	(a) R844 – R428 = R416	
	(b) R844 : R428 = 211 : 107	
1.2.7	22 million × R625 = R13 750 Million OR R13 750 000 000 OR R13,75 billion	

Q2	Marking guideline	Marks
2.1	Operating costs and production costs are separated Operating costs) need to be paid no matter what she produces and production costs depends on the number of pairs of shoes ordered **OR** Split into Budgeted and Actual, showing Operational Costs and Production Costs. The Operational Costs are the costs that have to be paid every month and the production costs depends on the number of shoes ordered.	
2.2	50 × R420 = R21 000	
2.3	R500 : 100% Rx : 91,74% x = 91,74 ÷ 100 × 500 x = R458,70 **OR** R500 × 8,26% =R41,30 R500 – R41,30 = R458,70	
2.4.1	28,25%	
2.4.2	(R1 502,48 + R69,00) × (5 × 12 months) R1 571,48 × 60 R94 288,80 **OR** R69 × 60 = R4140 R1 502,48 × 60 = R90 148,80 (R4140 + R90 148,80) = R94 288,80	
2.5	R42 000 R40 378,95 positive	
2.6	Actual income = R69 850 + R21 840 + R11 550 = R103 240 Actual Expenditure: Operating costs R458,70 + R741,30 + R1 505,00 + R25 600,00 = R28 305,00 Actual Expenditure: Production costs R38 450,00 + R1 463,95 + R465,00 = R40 378,95 Total Expenditure R28 305,00 + R40 378,95 = R68 683,95 Profit/loss = R103 240 – R68 683,95 = R34 556,05 profit Percentage profit $\frac{\text{R34 556,05}}{\text{R103 240}}$ × 100% = 33,471 … ≈ 33,5%	

2.7	Number of sneakers sold R635 : 1 pr R69 850 : x prs x = 69 850 ÷ 635 × 1 x = 110 prs Total number of brown bags needed = 52 + 11 + 110 = 173 pairs of shoes **OR** 200 – 110– 11- 52 = 27 left She bought 200 bags and only needs 173 so she has enough bags	

Q3	Marking guideline	Marks
3.1	R40 000	
3.2	36 months ÷ 12 = 3 years	
3.3	18 months	
3.4	 **X** and **Y** on graph Midway = 18 months Graph A → R40 000 – R35 000 = R5 000 Graph B → R40 000 – R20 000 = R20 000 Difference = R20 000 – R5 000 = R15 000 **OR** R35 000 – R20 000 = R15 000	
3.5.1	Simple interest is calculated on the original amount of a loan and remains the same Compound interest is 'interest on interest' and the amount keeps changing.	
3.5.2	A = R38 661,67 B = R38 661,67 × $\frac{17{,}6\%}{12}$ **OR** × 1,4667 = R567,04 C = R1 925,00 D = R38 661,67 + R567,04 – R1 925,00 = R37 303,71	

Q4	Marking guideline	Marks
4.1.1	Number of sneakers × R750	
4.1.2	R14 500 + (R235 × number of sneakers bought)	
4.2	A = R0 B = R14 560 C = R0 D = R33 000 E = R14 500 F = R14 970 G = 75	
4.3		
4.4.1	**X** on the graph	
4.4.2	The income = the expenditure **OR** no profit and no loss i.e., making and selling 50 pairs of sneakers costs/generates R26 000 **OR** It means that 50 pairs of sneakers need to be sold before a profit is made.	
4.4.3	**Y** on the graph 28 or 29 pairs **OR** from the table = 29 pairs	

4.4.4	Income = R21 000 Expenditure = R30 000 Profit = R21 000 – R30 000 Loss R9 000 **OR** I = 40 × R520 = R20 800 E = R14500 + 65 × R235 = R29 775 R20 800 – R29 775 = R8 975 Loss	
4.4.5	No, this is not a good decision because the men's High-Top sneakers are more profitable than the ladies' sneaker. The 15% discount should apply to the men's sneakers and the 5% discount to the ladies' sneakers. No, the break-even point for ladies is already high and will be so much higher on graph that they would need to sell much more before making a profit.	
4.5.1	180 + 180 = 360	
4.5.2	$\frac{190}{608} \times 100\% = 31{,}25\% \approx 31\%$	
4.5.3	High-Tops for 40+ females	

Q5	Marking guideline	Marks
5.1.1	33 + 440 + 49 + 207 + 322 + 72 + 117 + 209 + 247 = 1 696 million 1 696 million ÷ 1 000 = $1,7 billion	
5.1.2	Prize money $\frac{440}{1\,696}$× 100% = 25,943… ≈ 25,9% (Accept 26%) **OR** $\frac{0,44}{1,7}$ × 100% = 25,882.. ≈ 25,9% (Accept 26%)	
5.1.3	$\frac{322}{1\,96}$ 360° = 68,34.. ≈ 68,3°	
5.2.1	Million $	
5.2.2	$68 million ÷ 4 Teams = $17 million	
5.2.3	R17,638 : $1 Rx : $42 million x = 42 ÷ 1 × 17,638 = R740,796 million R740 796 000	
5.3.1	The longer the plot the greater the range The minimum values are the same but the maximum value for rugby is greater.	
5.3.2	2,06 m – 1,61 m = 0,45 m **OR** 45 cm	
5.3.3	A: 1,86 m B: 50th C: 15 D: taller **OR** shorter higher **OR** lower E: 25 F: 1,88 – 1,68 = 0,2 m	

Total: 150 marks