



INTERNATIONAL SECONDARY CERTIFICATE EXAMINATION
NOVEMBER 2022

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.

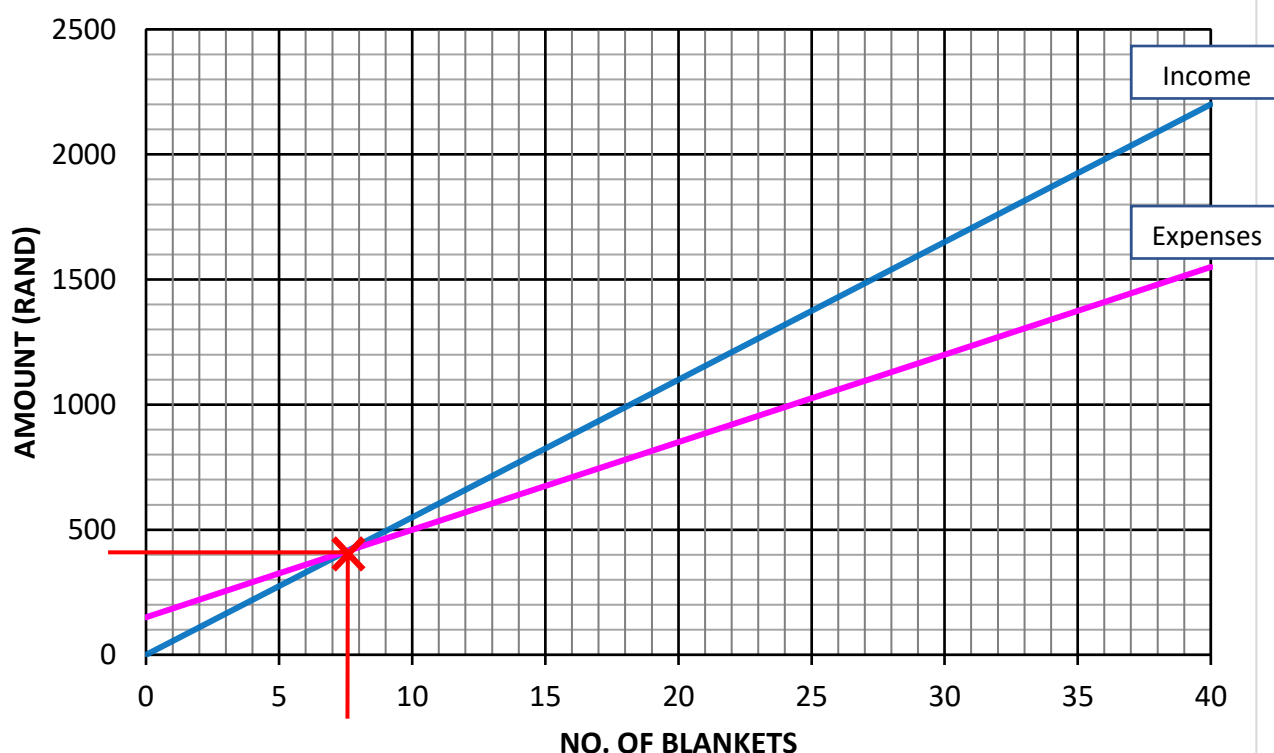
The IEB will not enter into any discussions or correspondence about any marking guidelines. It is acknowledged that there may be different views about some matters of emphasis or detail in the guidelines. It is also recognised that, without the benefit of attendance at a standardisation meeting, there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

QUESTION 1			
1.1	1.1.1	R11 629	
	1.1.2	R800 000	
	1.1.3	$R18\ 000 - R15\ 506 = R2\ 494$	
	1.1.4	$R12\ 000 - R1\ 200 = R10\ 800$ R1,2 million/R1 200 000	
	1.1.5 (a)	$R23\ 259 \times \underline{12 \times 20} = R5\ 582\ 160$	
	(b)	Total Paid – Cost $R5\ 582\ 160 - R3\ 000\ 000 = R2\ 582\ 160$	
	1.1.6	$R1\ 000\ 000 : \underline{R9\ 000}$... you pay approximately <u>R9 000</u> rent per month.	
1.2	1.2.1	Switzerland	
	1.2.2	United States / America	
	1.2.3	$44\% \times 15\ 000 = 6\ 600$ OR $15\ 000 - (56\% \times 15\ 000) = 6\ 600$	
	1.2.4	$24\% + 71\% = 95\%$ 5% chose OTHER.	
	1.2.5	$42\% : 54\% = 7 : 9$	
1.3	1.3.1	$R19,65 \times 1500 = R29\ 475$	
	1.3.2	$R7\ 800 \times 2 = R15\ 600$	
	1.3.3	$R29\ 475 - R15\ 600 = R13\ 875$ (1.3.1 – 1.3.2)	

QUESTION 2			
2.1	2.1.1	$R119,95 \div 3 = R39,98$	
	2.1.2	$5 \text{ kg} \div 1,5 \text{ kg} \times R85,99 = R286,63$ OR $R85,99 \div 1,5 = R57,33 \text{ per kg}$ $R57,33 \times 5 = R286,63 / ,65$ OR $0,5\text{kg} = R28,663... \times 10 = R286,63$	
	2.1.3	$A = R109,95$ Penalise for Rounding of Money (2 decimals) $B = R1\,222,80$ $C = R27,20$ OR $C = R27,12$	
	2.1.4	$R1\,222,88 \div 115\% = R1\,063,37$ $R1\,222,88 - R1\,063,37 = R159,51$ OR $15\% \div 115\% \times R1\,222,88 = R159,51$ OR $R1\,222,88 \div 1,15 = R1\,063,30$ $R1\,222,88 - R1\,063,37 = R159,51$ OR $R1\,222,88 \times \frac{15}{115} = R159,51$	
2.2	2.2.1(a)	$27,5\% \times R23\,000 = R6\,325$ OR $R3\,750 \times 12 = R45\,000$ OR $R3\,750 \div R23\,000 \times 100 = 16,3\%$ $\therefore$ amount of R3 750 is fully deductible	
	(b)	$R23\,000 - R3\,750 = R19\,250$ $R19\,250 \times 12 = R231\,000$ OR $R23\,000 \times 12 = R276\,000$ $R3\,750 \times 12 = R45\,000$ $R276\,000 - R45\,000 = R231\,000$	
	2.2.2	$R40\,680 + 26\% \times (R231\,000 - R226\,000)$ $= R40\,680 + 26\% \times \underline{R5\,000}$ $= R40\,680 + R1\,300$ $= R41\,980$ $R41\,980 - R16\,425$ $= \textbf{R25\,555}$	

2.3	2.3.1	$R275 \div 5 = R55$ OR $R550 \div 10 = R55 \text{ etc.}$	
	2.3.2	Can be different values from the table : $R325 - R150 = R175$ $R175 \div 5 = R35/m$ OR $R500 - R150 = R350$ $R350 \div 10 = R35/m$	
	2.3.3	Income start at zero Income graph Expenses graph start at R150 Expenses Graph Key	

A graph showing the Income and Expenses for Sibaya's business



	2.3.4	$7,5 = 8$	
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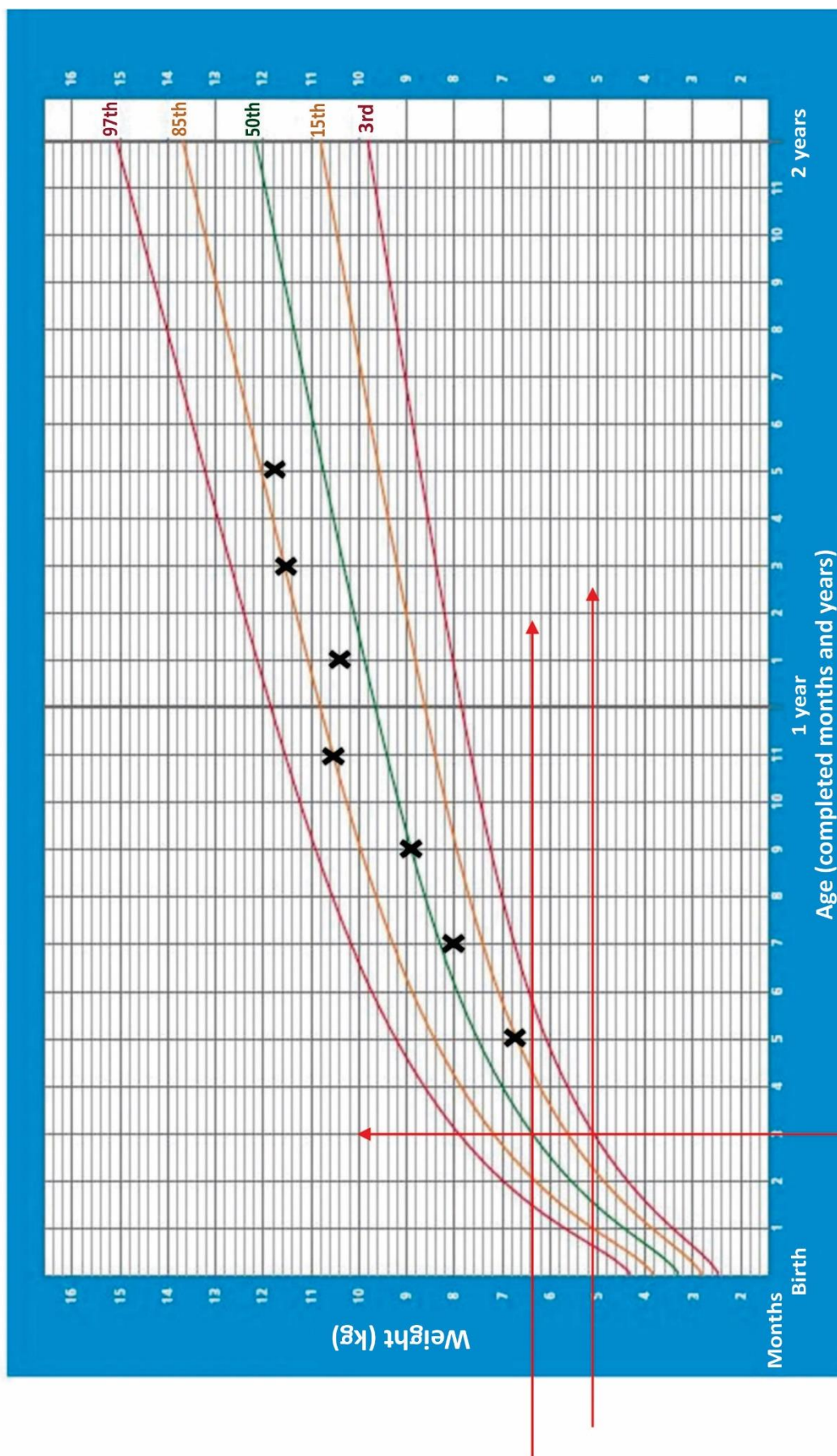
QUESTION 3

3.1	3.1.1	AGE OF BIRTH MOTHERS THAT GAVE BIRTH TO TWINS <table><tr><td>15 – 19</td><td> </td><td>17</td></tr><tr><td>20 – 24</td><td> </td><td>32</td></tr><tr><td>25 – 29</td><td> </td><td>29</td></tr><tr><td>30 – 34</td><td> </td><td>14</td></tr><tr><td>35 – 39</td><td> </td><td>6</td></tr><tr><td>40–44</td><td> </td><td>1</td></tr><tr><td>45 – 49</td><td> </td><td>1</td></tr></table>	15 – 19		17	20 – 24		32	25 – 29		29	30 – 34		14	35 – 39		6	40–44		1	45 – 49		1	
15 – 19		17																						
20 – 24		32																						
25 – 29		29																						
30 – 34		14																						
35 – 39		6																						
40–44		1																						
45 – 49		1																						
	3.1.2	20 – 24																						
	3.1.3	14 + 6 + 1 + 1 = 22 = 22%																						
	3.1.4 (a)	219 ÷ 6 = 36,5 years old (Accept 36/37)																						
	(b)	$\frac{36 + 37}{2} = 36,5$																						
3.2	3.2.1	R3 740 ÷ R50 000 × 100 = 7,48% R50 000 × 7,48% = R3 740 R3 740 + R50 000 = R53 740																						
	3.2.2	Compound Interest																						
	3.2.3	A = R66 723,78 B = R66 723,78 C = R71 714,72																						
	3.2.4	(R71 714,72 – R50 000) × 2 = R21 714,72 × 2 = R43 429,44 OR R71 714,72 × 2 = R143 429,44 R143 429,44 – R100 000 = R43 429,44 OR (R3 740 + R4 019,75 + R4 320,43 + R4 643,60 + R4990,94) = R21 714,72 R21 714,72 × 2 = R43 429,44																						

3.3	3.3.1	$15\% \times R8\ 999 = R1\ 349,85$ $R8\ 999 - R1\ 349,85 = R7\ 649,15$ $R7\ 649,15 \times 21,5\% \times 2 = R3\ 289,13$ $(R7\ 649,15 + R3\ 289,13) \div 24$ $R10\ 938,28 \div 24$ $= R455,76$	
	3.3.2	$R1\ 392 : 80\%$ $R1\ 740 : 100\% = R348$ OR $R1\ 392 : 80\%$ $R1\ 740 : 20\% = R348$ OR $R1\ 392 \div 0,8 = R1\ 740$ $R1\ 740 - R1\ 392 = R348$ OR $R1\ 392 \times \frac{20}{80} = R348$	
3.4	3.4.1	Points clearly indicated on the Growth Chart At 3 months, Dylan weighed 5,1 kg and lay on the <u>3rd</u> percentile while David weighed <u>6,4</u> kg and lay on the 50th percentile.	
	3.4.2	She should be happy as his growth is consistent and although he is gaining weight, he is doing it gradually over a few months. OR No, he starts off just below the 3rd percentile and by the age of 11 months he is on the 85th percentile which means he is chubby/fat.	

Weight-for-age BOYS

Birth to 2 years (percentiles)



QUESTION 4			
4.1		Rand	
	4.1.1	R40	
	4.1.2	Read-Again	
	4.1.3	$R130 - R75 = R55$ (Accept R74/R76)	
	4.1.4	$(3 \times R110) + (2 \times R140) = R610$	
	4.1.5	Choice Reason 1 Reason 2 Bongi's Books: Although their cheapest book is more expensive than Read-Again's, 50% of their books are between R75 and R130 compared to between R65 and R140. Their most expensive book is cheaper than Read-Again. Read-Again: They have the cheapest book. The median average price is cheaper than Bongi's Books. (Just under R100 compared to R110). They have a wider range of books priced between R65 and R140.	
4.2	4.2.1	$\frac{3}{30}$ $= \frac{1}{10}$	
	4.2.2	$\frac{14}{30} \times \frac{13}{29} = \frac{91}{435}$ OR $0,467 \times 0,448 = 0,21$	
	4.2.3	$\frac{2}{5} \times 75 = 30$	

QUESTION 5			
		1 South African rand = 0,068 American dollar 1 American dollar = 0,76 pound sterling 1 pound sterling = 1,20 euro 1 euro = 16,01 South African rand	
5.1		$€30 \times 4 = €120$ per day $€120 \times 3 = €360$ per week $€360 \times 4 = €1\,440$ per month	
5.2		America: $\$15,65 \div 0,068 = R230,15$ England: $£20 \div 0,76 = \$26,32$ $\$26,32 \div 0,068 = R387$ France: $€30 \times 16,01 = R480,30$ OR America: $\$15,65 \div 0,068 = R230,15$ England: $£20 \times 1,20 = €24$ $€24 \times 16,01 = R384,24$ France: $€30 \times 16,01 = R480,30$ OR America: $\$15,65 \times 4 \times 3 \times 4 = \$751,20$ $\$751,20 \div 0,068 = R11\,047,06$ France: $€30 \times 4 \times 3 \times 4 = €1\,440$ $€1\,440 \times 16,01 = R23\,054,40$ England: $£20 \times 4 \times 3 \times 4 = £960$ $£960 = \$1\,263,16$ OR $£960 = €1\,152$ $= R18\,575,85$ $= R18\,443,52$	
5.3		Any suitable answer e.g., preference, weather, etc.	

Total: 150 marks