



INTERNATIONAL SECONDARY CERTIFICATE EXAMINATION
MAY 2025

QUANTITATIVE REASONING: 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.

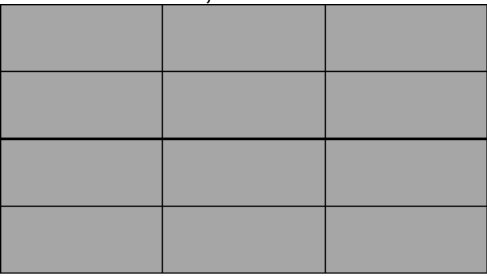
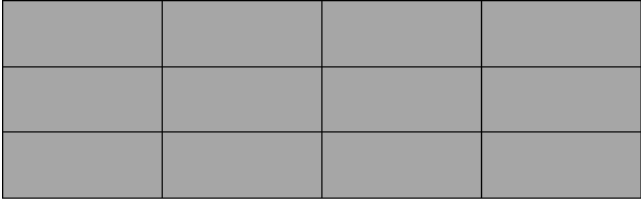
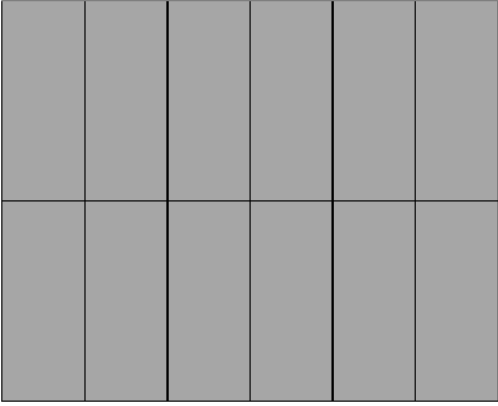
Q1	Marking guidelines	
KEY	a accuracy m method mca method continued accuracy MOPV (Measure of printed version)	ca continued accuracy ma method accuracy r rounding
1.1.1	Travel Africa Facebook or Instagram	
1.1.2	Location where pictures were taken (any 1 correct answer) Any photo manipulation techniques employed Other options: Equipment used; Name and Surname	
1.1.3	24 May 2025	
1.1.4	Your photos can be featured in the travel magazine or on their website.	
1.2.1	(a) C (b) A (c) B	
1.2.2	$\frac{1920:1080}{1920 \div 120 = \frac{16}{9}}$ $\therefore 16:9$	

Q2	Marking guidelines	
KEY	a accuracy m method mca method continued accuracy MOPV (Measure of printed version)	ca continued accuracy ma method accuracy r rounding
2.1.1	15:40 or 3:40 pm	
2.1.2	(Hand luggage) = 7 kg and (Hold luggage) = 30 kg	
2.1.3	1 h 35 min	
2.1.4	$\begin{array}{r} 23 \text{ h } 60 \text{ min} \\ - 17 \text{ h } 40 \text{ min (working with time)} \\ \hline 6 \text{ h } 20 \text{ min} \end{array}$ $\begin{array}{r} 11 \text{ h } 45 \text{ min} \\ - 6 \text{ h } 20 \text{ min} \\ \hline 5 \text{ h } 25 \text{ min} \end{array}$ $\begin{array}{r} 5 \text{ h } 25 \text{ min} \\ + 9 \text{ h } 00 \text{ min} \\ \hline 14 \text{ h } 25 \text{ min} \end{array}$ The local time in Sydney is 14:25 and not 13:25 OR $\begin{array}{l} 17:40 + 11:45 + 9:00 \\ = 38:25 \\ 38:25 - 24:00 \\ = 14:25 \end{array}$ The local time in Sydney is 14:25 and not 13:25	
2.1.5	$11 \text{ h } 45 \text{ min} + 1 \text{ h } 30 \text{ min} + 1 \text{ h } 35 \text{ min} + 14 \text{ h } 05 \text{ min (working with time)}$ $= 28 \text{ h } 55 \text{ min}$ $= 28,92 \text{ h}$	
2.2.1	Domestic Terminal	
2.2.2	3	
2.2.3	Bus, train or taxi (any 2)	
2.3.1	$287 + 110 + 288 + 335$ $= 1020 \text{ km}$	
2.3.2	NW (North West)	
2.3.3	This answer will have to be measured off the final printed version – MOPV (Measure of printed version) 1,8–2 cm (Range) on the map is equal to 100 km in real life.	

2.3.4	Yes, whale watching takes place from late May to November and she is there in June.
2.3.5	Swim with humpback whales, Fraser Island drive with off-road vehicle, drive on the beach, see hatching turtles, must see rainbow beach, ferry ride, rum distillery and Capricorn Caves. (Any 2)
2.4.1	$\frac{17}{26} \times 100$ $= 65,4\%$
2.4.2	$\frac{750\,000}{35\,000\,000} = \frac{3}{140}$
2.4.3	2 600 000 m

Q3	Marking guidelines	
KEY	a accuracy m method mca method continued accuracy MOPV (Measure of printed version)	ca continued accuracy ma method accuracy r rounding
3.1.1	Mariental —————→ Windhoek Maun —————→ Francistown	Route number B1 Route number A3
3.1.2	Zeerust and Lobatse	
3.1.3	Windhoek and Pretoria	
3.1.4	East	
3.1.5	Shakawe	
3.2.1	$68 + 1288 + 41$ $= 1\,397 \text{ km}$	
3.2.2	$33 \times 1,60934$ $= 53,10822 \text{ km}$ $\frac{53,10822}{3,78541} \approx 14,029 \dots$ $\therefore 14 \text{ km/litre}$	
3.2.3	$15,85 \text{ gallons} \times 3,78541$ $= 59,9987 \dots$ $\approx 60 \text{ litre fuel tank}$ $60 \div 7,1 \times 100$ $= (842 - 857) \text{ km}$ OR $60 \times 14 = 840 \text{ km}$ Fill up at Kang (806 km from start), next stop 966 km from start.	
3.3.1	$2 \text{ cm} = 150 \text{ km}$ OR $2 \text{ cm} = 15\,000\,000 \text{ cm}$ $1 \div 2 \times 15\,000\,000$ $= 7\,500\,000 \text{ cm}$ $\therefore 1:7\,500\,000$	
3.3.2	MOPV (Measure of printed version) Measure 14,5 – 14,7 (range) $14,2 \div 2 \times 150$ $= 1\,087,5 \text{ km or } 1\,095 \text{ km or } 1\,102,5 \text{ km}$	
3.4.1	Part A: ave speed = $\frac{400}{4,5} = 88,9 \text{ km/h}$ Part C: ave speed = $\frac{400}{5} = 80 \text{ km/h}$ $\therefore 89 - 80 = 9 \text{ km/h difference}$	
3.4.2	After 4,5 h the car stopped $\pm 400 \text{ km}$ from Buitepos. The car stopped for 1 hour.	

Q4	Marking guidelines				
KEY	a accuracy m method mca method continued accuracy MOPV (Measure of printed version)	ca continued accuracy ma method accuracy r rounding			
4.1.1	The main entry is seen from the eastern side from a possible road, over some paving onto the porch and enter directly into living room. The second entry is from the north facing porch into the kitchen to the right of the dining area window.				
4.1.2	Complied Yes/No				
	Small house. Floor area ± 130 m²	X	Yes	☐	No
	Patio/porch facing North and East	X	Yes	☐	No
	2 Bedrooms, one with en-suit bathroom.	X	Yes	☐	No
	One bathroom with bath and one with shower.	☐	Yes	X	No
	One bathroom easily accessible from living room.	X	Yes	☐	No
	Big sliding doors must connect the dining area and living room to a porch/patio.	X	Yes	☐	No
	Open plan living, dining and kitchen	X	Yes	☐	No
4.2.1	900 ÷ 30 = 30 30 ÷ 5,5 = 5,4545... 5,4545... × 1 000 5454,545... 5454,545... ÷ 455 = 11,9880.. ≈ 12 panels				

4.2.2	Pattern 1: $11,5 \div 2,182 = 5,3$ panels $4,5 \div 0,998 = 4,5$ panels 3,992 m 6,546 m  Pattern 2: $11,5 \div 2,182 = 5,3$ panels $4,5 \div 0,998 = 4,5$ panels 2,994 m 8,728 m  Pattern 3: $11,5 \div 0,998 = 11,5$ panels $4,5 \div 2,182 = 2,06$ panels 4,364 m 5,988 m 
4.3	Volume = $3,142 \times 2,5^2 \times 2,03$ = 39,864125 $39,864125 \times 1\,000$ = 39 864,125 litres $\approx 40\,000$ litres
4.4.1	30 litre/minute
4.4.2	At 20 km/h the pumping rate is 20 litre per minute $40\,000 \div 20 = 2\,000$ minute $2\,000 \div 60 = 33,33333$ hours $\therefore 33$ h 20 minutes
4.4.3	The probability that the windmill will throw water decreases significantly in high winds. Highly Unlikely.

Q5	Marking guidelines	
KEY	a accuracy m method mca method continued accuracy MOPV (Measure of printed version)	ca continued accuracy ma method accuracy r rounding
5.1.1	$25,081 - 17,038 = 8,043$ ≈ 8 seconds	
5.1.2	Percentage increase = $\frac{7,021}{24,059} \times 100$ $= 29,1824\%$	
5.1.3	$350 \div 5 \times 17,038$ $= 1192,66$ seconds $= 19,87$ minutes ≈ 20 minutes	
5.1.4	$20 \text{ minutes} \times 7 \text{ days} + 20 \text{ minutes}$ $= 140 + 20$ $= 160 \text{ minutes}$ $160 \div 60$ or $20 \text{ minutes} \times 8 = 160 \text{ min}$ $= 2,667 \text{ h}$ $= 2 \text{ h } 40 \text{ min}$	
5.2.1	$(14 \times 2,54) \times (14 \times 2,54) \times (1,75 \times 2,54)$ $= 35,56 \times 35,56 \times 4,445$ $= 5620,8 \text{ cm}^3$	
5.2.2	$35 \div 4,445$ $= 7,8$ ≈ 7 boxes on top of each other $120 \div 35,56$ $= 3,37$ ≈ 3 across $\therefore 7 \times 3 = 21$ boxes on one shelf	
5.2.3	$21 \times 6 \times 3$ $= 378$ boxes He has enough space (but not on Saturdays).	

Total: 150 marks