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General Mathematics SEE

SEE 2 Paper 2

Time allowed

- Perusal time 5 minutes
- Working time 90 minutes

General instructions

- Answer all questions in this question and response book.
- Write using black or blue pen.
- QCAA-approved scientific calculator permitted.
- · QCAA formula book provided.
- Planning paper will not be marked.

Section 1 (38 marks)

• 7 short response questions



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Section 1

Instructions

- Questions worth more than one mark require mathematical reasoning and/or working to be shown to support answers.
- If you need more space for a response, use the additional pages at the back of this book.
 - On the additional pages, write the question number you are responding to.
 - Cancel any incorrect response by ruling a single diagonal line through your work.
 - Write the page number of your alternative/additional response, i.e. See page ...
 - If you do not do this, your original response will be marked.

QUESTION 1 (4 marks)

The table shows a swimwear company's seasonally adjusted swimsuit sales (in thousands).

	Season					
	Spring	Summer	Autumn	Winter		
Seasonally adjusted swimsuit sales (in thousands)	33.3	34.8	36.4	35.8		

The long-term seasonal indices for spring, summer and winter are 1.11, 1.42 and 0.62 respectively.					
Determine the actual swimsuit sales for autumn.					

QUESTION 2 (5 marks)
Tam deposits a fixed amount at the end of each month into an account paying 8.6% p.a. compounding monthly. From an initial zero balance, she accumulates \$51343.85 in four years.
A financial planner has advised Tam that she would have been at least \$3000 better off if she had instead deposited half of the fixed amount at the end of each fortnight into an account paying 7.9% p.a. compounding fortnightly.
Evaluate the reasonableness of this advice.
Dividuale the reasonableness of this advice.

In a company's first 10 years of operation, the average annual profit (\overline{y}) was \$9660 with a standard deviation (s_y) of \$3010. Fitting a least-squares line to the data comparing annual profit (y) to the year of operation (x) produced a correlation coefficient of 0.9987.								
Show that the predicted profit, to the nearest dollar, for this company in the 11th year of operation will be \$15 121.								

QUESTION 4 (5 marks)

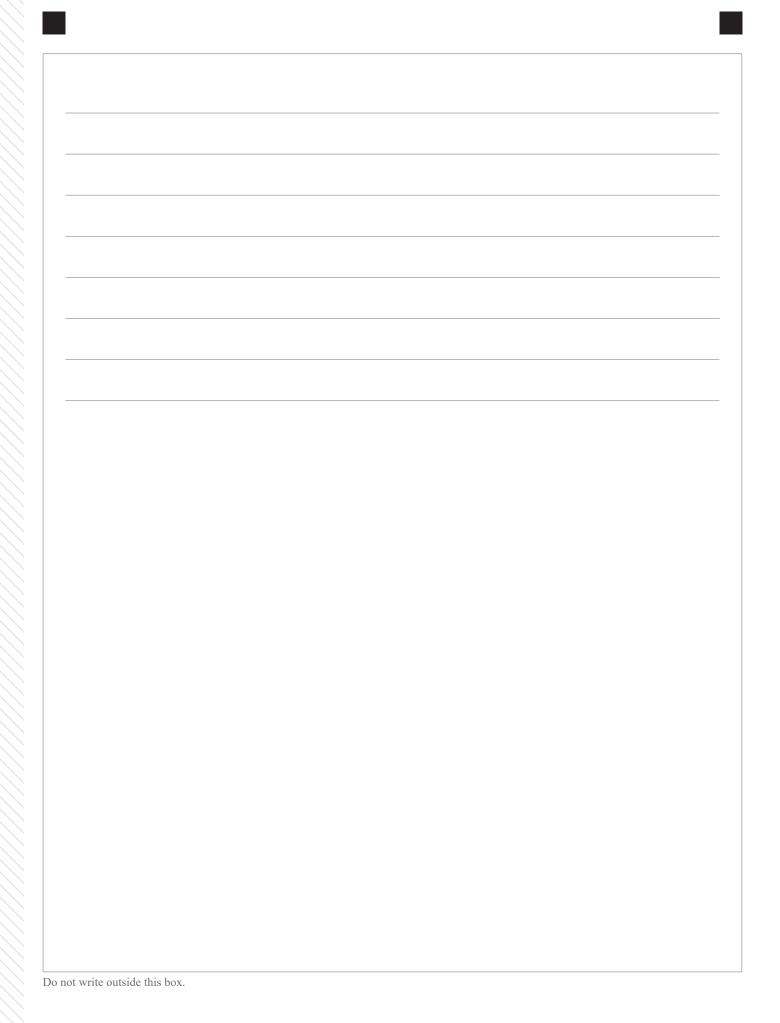
The table shows the current road length (in kilometres) between six towns.

	Manon	Veria	Bolint	Farra	Recen	Alin
Manon		16	34	_	_	33
Veria			12	_		15
Bolint				_	10	_
Farra					15	23
Recen						15
Alin						

The government plans to build a direct road between Manon and Farra.

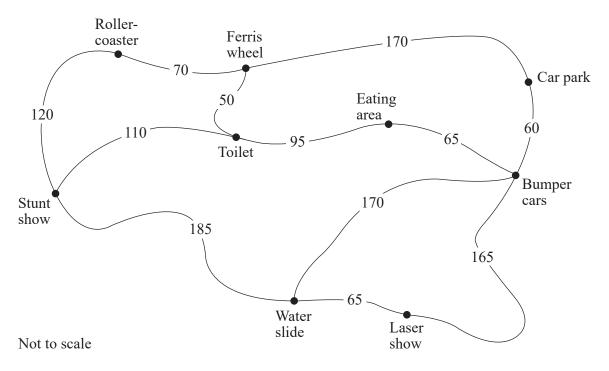
Use a network diagram to determine the length of the direct road if it is to be 4 km shorter than the length of the current shortest road route between Manon and Farra.

Note: If you make a mistake in the diagram, cancel it by ruling a single diagonal line through your work and use the additional response space at the back of this question and response book.



QUESTION 5 (5 marks)

The map details the length (in metres) of paths between nine key locations in a theme park. The annual cost to maintain the paths is \$214 per metre. The theme park manager believes at least \$138 000 can be saved each year if some paths are removed, while still allowing visitors to access every key location using paths.

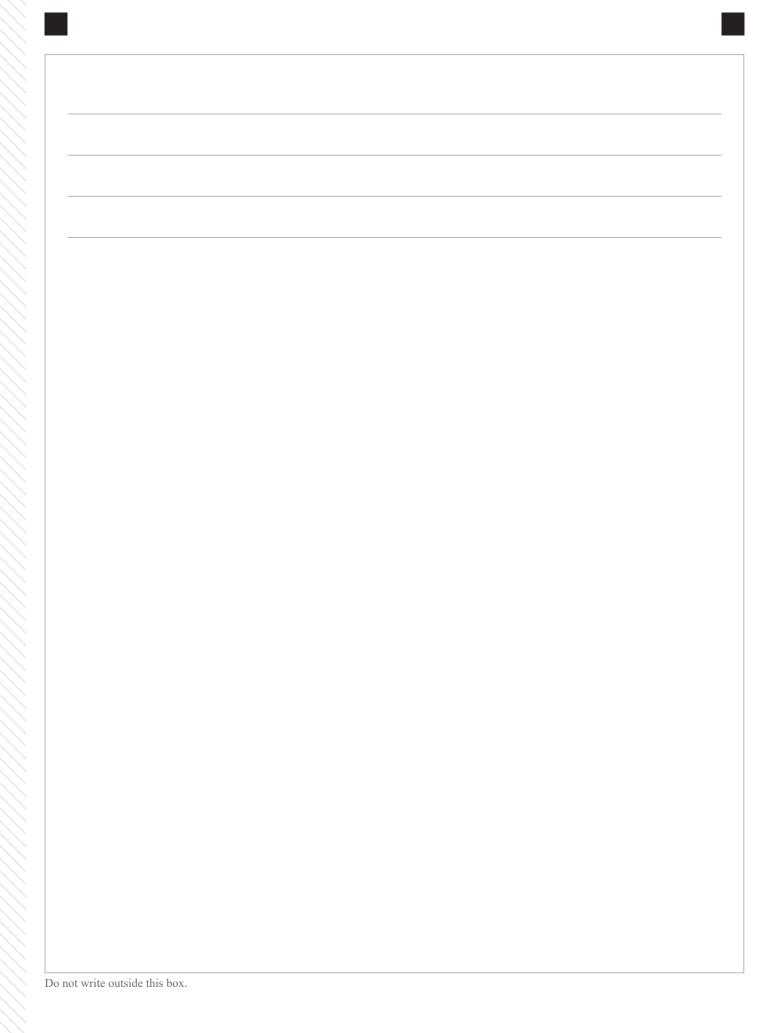


Evaluate the reasonableness of the manager's belief.					

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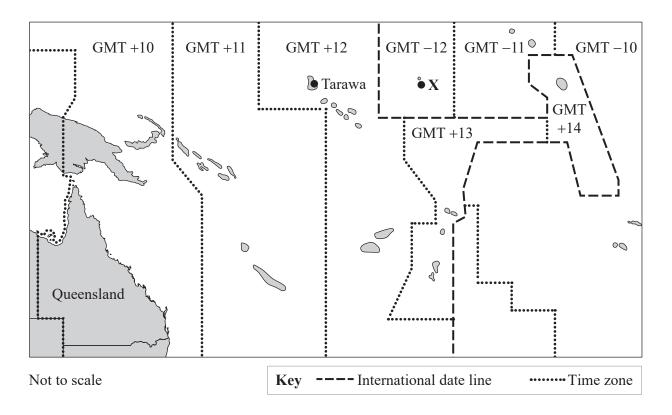
QUESTION 6 (7 marks)								
The first three lines in a pattern have the equations given. Their slopes form the terms of one sequence and their <i>y</i> -intercepts form the terms of another sequence. Each sequence is either arithmetic or geometric.									
Line 1: $y = -0.8x + 1.2$ Line 2: $y = 0.4x + 2.7$ Line 3: $y = -0.2x + 4.2$									
									linates of the point where Line 5 in the pattern intersects Line 1.



QUESTION 7 (7 marks)

You live in Queensland and your friend is on a cruise ship holiday.

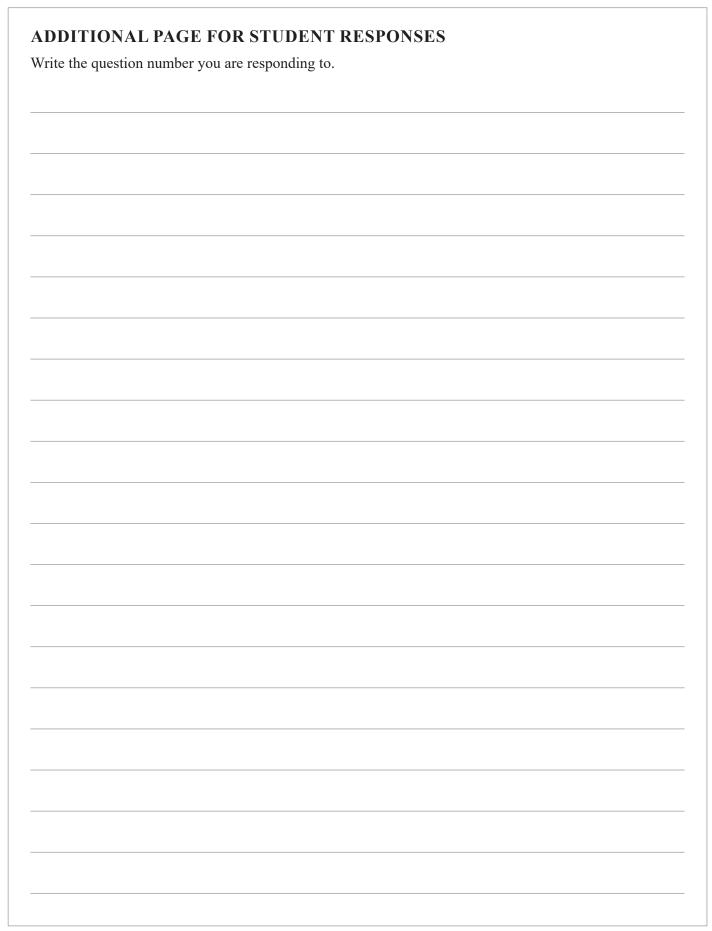
As their ship departs from **X** to travel 1350 km due west to Tarawa, your friend sends you a message saying 'Local time 6:12 am Wednesday and enjoying the sunrise as our ship begins its trip to Tarawa'.



You plan to phone your friend as soon as they arrive in Tarawa.

Assuming their ship is travelling at 50 km/h, determine the time in Queensland when you will phone your friend.



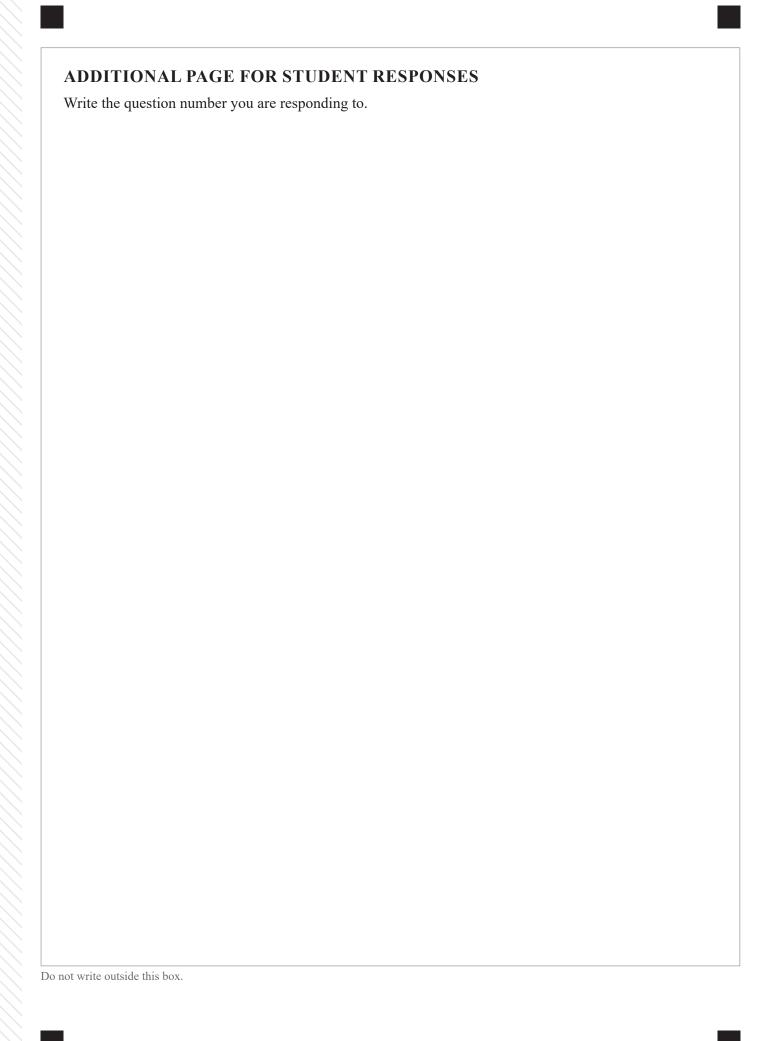














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