LUI								School code	
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Given	name	e/s						Attach your	
Famil	y nam	ie						barcode ID label here	
Exte	rnal	asse	ssme	nt 20)24			Book of books us	ed
								Question and response book	ζ.

General Mathematics

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



DO NOT WRITE ON THIS PAGE THIS PAGE WILL NOT BE MARKED

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.

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QUESTION 1 (5 marks)

Each of the 60 performers in a music and dance concert is either a Year 11 or Year 12 student and either a musician or a dancer.

There are four more Year 11 students than Year 12 students. One quarter of the Year 11 students are dancers and half of the Year 12 students are dancers.

Complete the two-way frequency table to calculate the percentage of students who are musicians.

	Year 11	Year 12	Total
Musician			
Dancer			
Total			60

QUESTION 2 (4 marks)

The table shows the travel time (minutes) between five islands in the Torres Strait for a ferry service.

	Waiben	Palilug	Ngurapai	Keriri	Gealug
Waiben		_	18	_	14
Palilug			_	25	16
Ngurapai				20	28
Keriri					_
Gealug					

Construct a weighted graph and use it to calcula	ate the total travel time for a ferry that completes	a
Hamiltonian cycle beginning at Waiben.		

Note: If you make a mistake in the gra	aph, cancel it by ruling	g a single diagonal l	ine through your work
and use the additional response space a	at the back of this que	estion and response	book.

QUESTION 3 (5 marks)

Table 1 shows the latitude, x, and ultraviolet index, y, for Australian locations at noon on the first day of autumn. Table 2 categorises the ultraviolet index.

Table 1					
Location	Latitude (° S)	Ultraviolet index			
Brisbane	27	12			
Darwin	12	13			
Melbourne	38	6			
Perth	32	11			
Sydney	34	9			

Table 2			
Ultraviolet index	Category		
11+	extreme		
8, 9, 10	very high		
6, 7	high		
3, 4, 5	moderate		
1, 2	low		

A person in Hobart (43 $^{\circ}$ S 147 $^{\circ}$ E) at noon on the first day of autumn receives a phone app notification that the ultraviolet index is high.

Use the equation for the least-squares line for the data in table 1 and the information in table 2 to evaluate the reasonableness of the phone app notification.				

QUESTION 4 (5 marks)

A person completes the following activities to make a loaf of bread.

Activity	Task	Time (min)	Prerequisite
A	Measure ingredients	3	_
В	Mix ingredients and prepare tin	5	A
С	Leave dough to rise	20	В
D	Pre-heat oven and tin	15	В
Е	Knead dough	7	С
F	Bake dough	30	D, E

Use a project network diagram with completed forward and backward scanning to determine the float time for any non-critical activity.

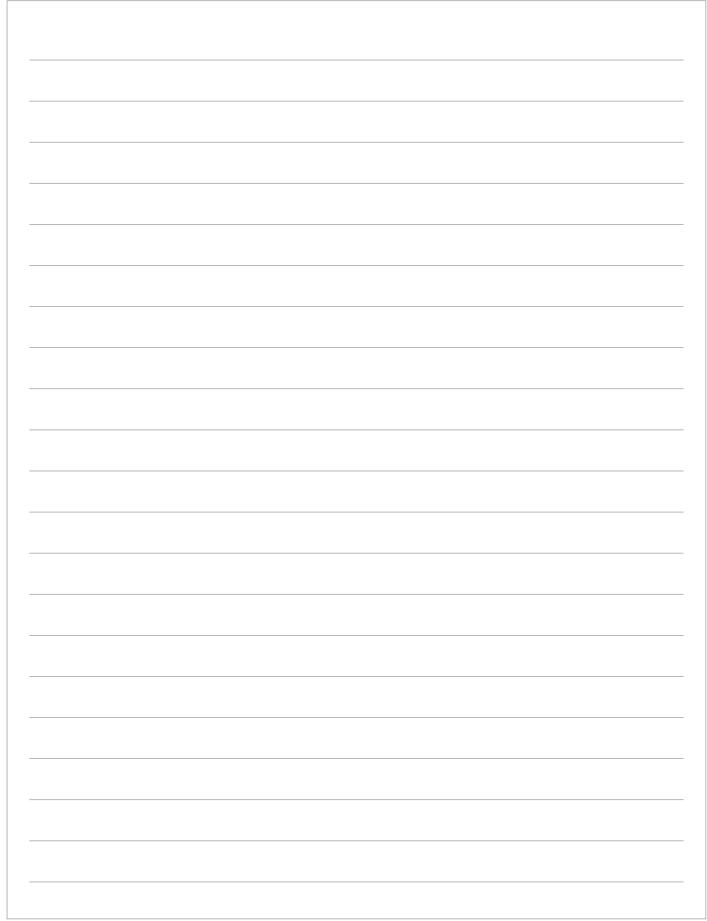
Note: If you make a mistake in the diagram, cancel it by ruling a single diagonal line through your work and use the additional response space at the back of this question and response book.					

QUESTION 5 (6 marks)

A flying doctor coordinator allocates a plane from each of three airbases, A, B and C, to fly to one of three sites, P, Q and R, to provide medical care. Distances (km) are shown in the table.

	P (28° S 136° E)	Q	R (20° S 147° E)
A (20° S 136° E)	x	600	y
В	445	485	340
С	980	1170	770

r	nal allocation for ea	1		



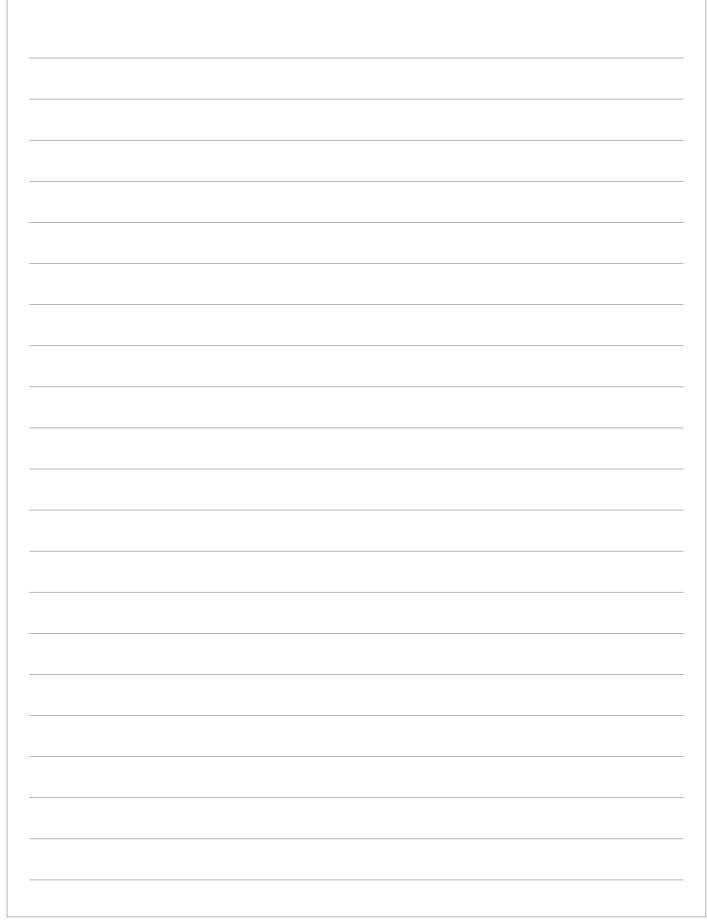
QUESTION 6 (6 marks)

The daily cost (\$) for a person for meals and accommodation is predicted to change according to the cost models shown.

Category 2021 daily cost (\$)		Cost model, where $n =$ number of years after 2020		
Meals	С	$m_n = m_1 + 3(n-1)$		
Accommodation	2 <i>c</i>	$a_n = a_1 \times 1.1^{(n-1)}$		

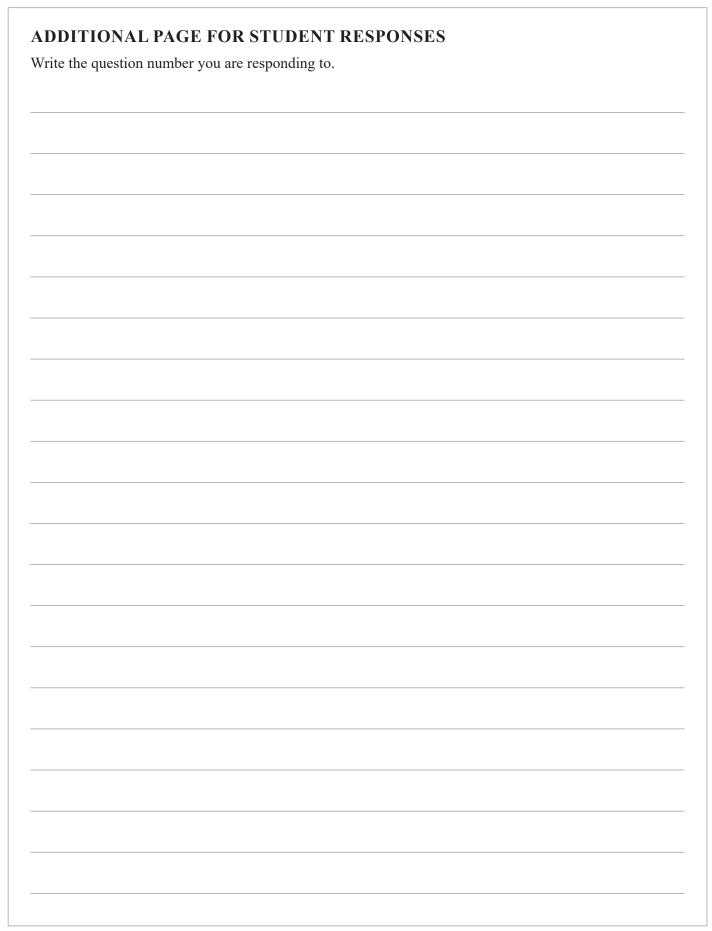
In	2021	the daily	cost for a	nerson's	meals was	\$60
Ш	4041,	tile dally	cost for a	DCISOH 8	ilicais was	DUU.

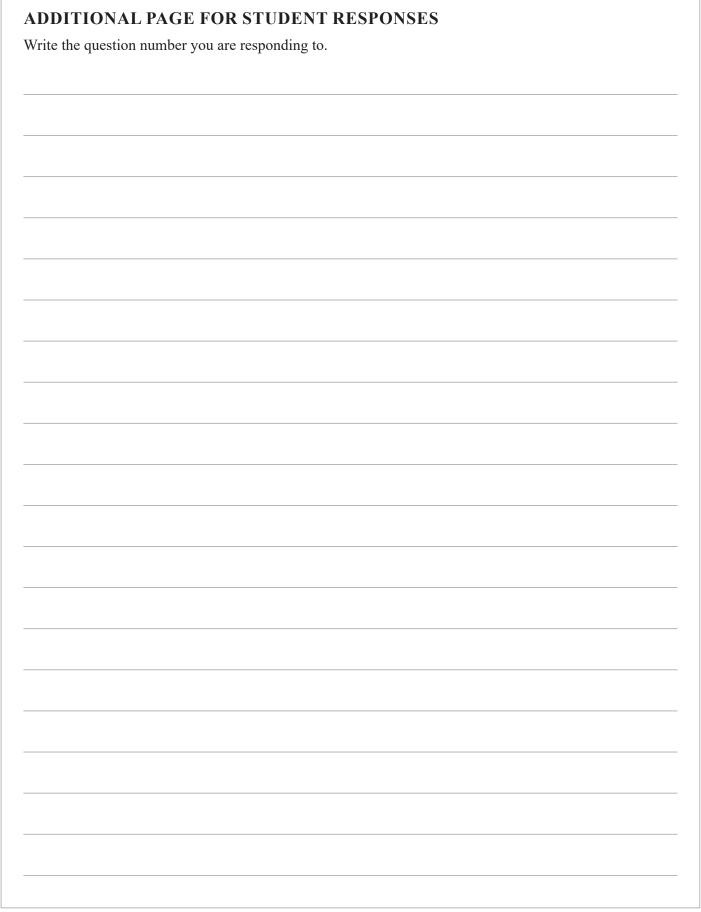
In 2025,	the total cost for a	person for seven	days for meals	and accommodati	on is estimated to	be
between	\$1500 and \$2000.	Evaluate the reason	onableness of tl	he estimate.		

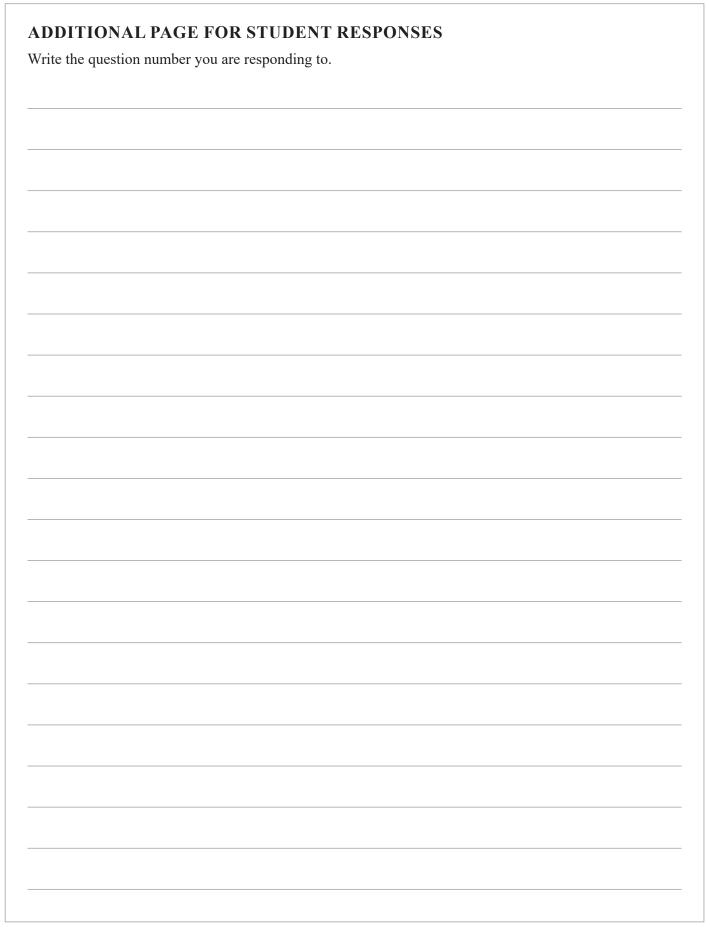


QUESTION 7 (7 marks)
A non-stop flight departs Sydney (UTC +10) at 9:50 pm Tuesday local time and arrives in Los Angeles (UTC -8) at 6:50 pm Tuesday local time. Flight speed is assumed to be constant.
Determine the local time and day in Sydney when the flight distance travelled is 4828 km, with 7242 km remaining.

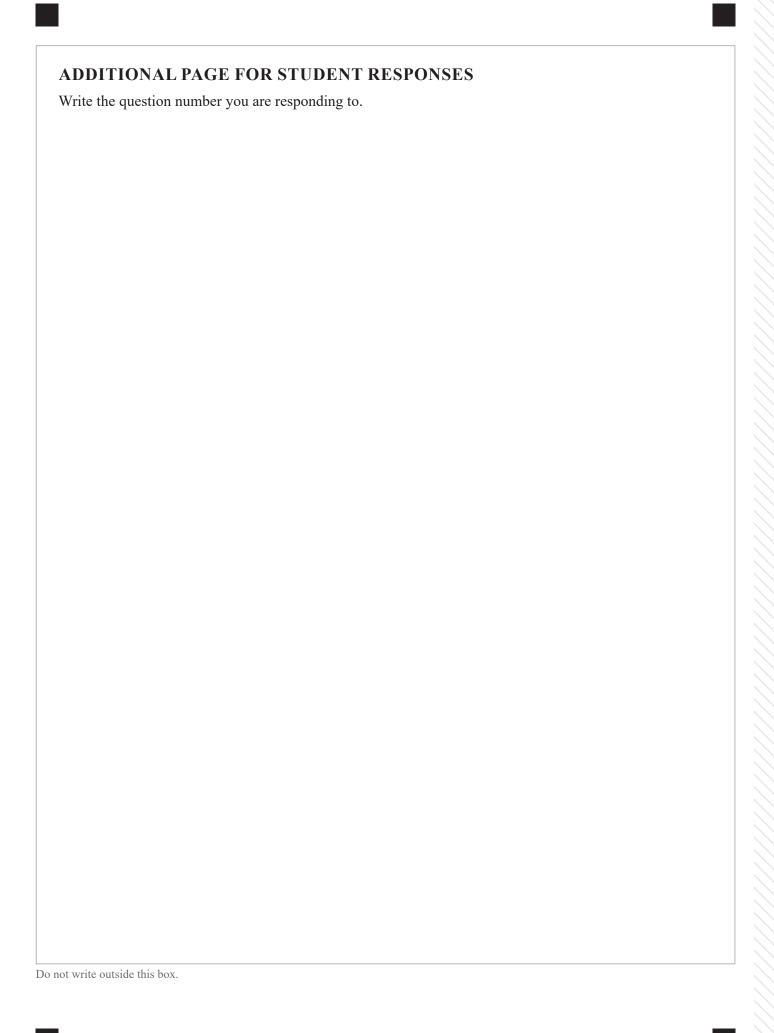


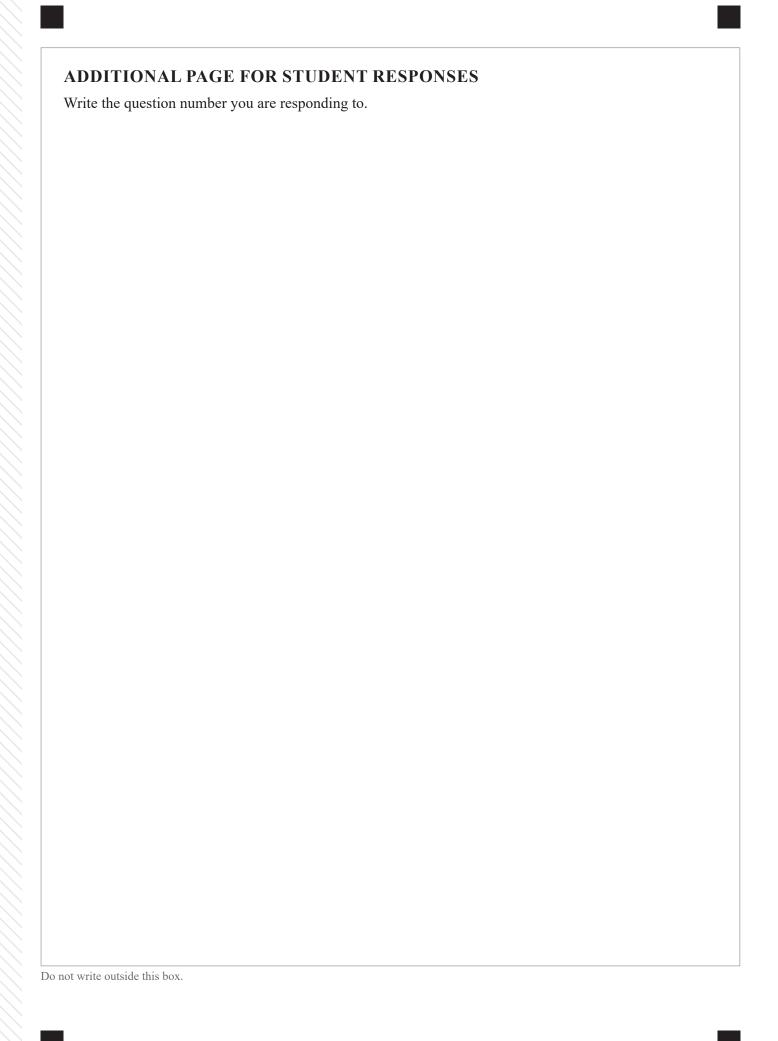














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