LUI | | | | | | | | | | | School code | | | | |

School name

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Family name

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Book of books used

External assessment 2024

Question and response book

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

Clear zone — margin trimmed off after completion of assessment

Queensland Government | QCAA Queensland Curriculum & Assessment Authority

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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

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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 calculate the total travel time for a ferry that completes a Hamiltonian cycle beginning at Waiben.

Note: If you make a mistake in the graph, 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.

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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° S 147° 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.

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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	—
B	Mix ingredients and prepare tin	5	A
C	Leave dough to rise	20	B
D	Pre-heat oven and tin	15	B
E	Knead dough	7	C
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.

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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
B	445	485	340
C	980	1170	770

Determine the optimal allocation for each plane and the minimum total distance flown.

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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	c	$m_n = m_1 + 3(n-1)$
Accommodation	$2c$	$a_n = a_1 \times 1.1^{(n-1)}$

In 2021, the daily cost for a person's meals was $60.

In 2025, the total cost for a person for seven days for meals and accommodation is estimated to be between $1500 and $2000. Evaluate the reasonableness of the estimate.

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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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ADDITIONAL PAGE FOR STUDENT RESPONSES

Write the question number you are responding to.

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