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

School name

Given name/s

Family name

Attach your
barcode ID label here

Book of books used

External assessment

Question and response book

General Mathematics SEE

SEE 2 Paper 1

Time allowed

- Perusal time — 5 minutes
- Working time — 90 minutes

General instructions

- Answer all questions in this question and response book.
- QCAA-approved scientific calculator permitted.
- QCAA formula sheet provided.
- Planning paper will not be marked.

Section 1 (15 marks)

- 15 multiple choice questions

Section 2 (45 marks)

- 11 short response questions

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Queensland Government | QCAA Queensland Curriculum & Assessment Authority

Section 1

Instructions

- Choose the best answer for Questions 1–15.
- This section has 15 questions and is worth 15 marks.
- Use a 2B pencil to fill in the A, B, C or D answer bubble completely.
- If you change your mind or make a mistake, use an eraser to remove your response and fill in the new answer bubble completely.

	A	B	C	D
Example:	●	○	○	○

	A	B	C	D
1.	○	○	○	○
2.	○	○	○	○
3.	○	○	○	○
4.	○	○	○	○
5.	○	○	○	○
6.	○	○	○	○
7.	○	○	○	○
8.	○	○	○	○
9.	○	○	○	○
10.	○	○	○	○
11.	○	○	○	○
12.	○	○	○	○
13.	○	○	○	○
14.	○	○	○	○
15.	○	○	○	○

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Section 2

Instructions

- Write using black or blue pen.
- 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.
- This section has 11 questions and is worth 45 marks.

DO NOT WRITE ON THIS PAGE

THIS PAGE WILL NOT BE MARKED

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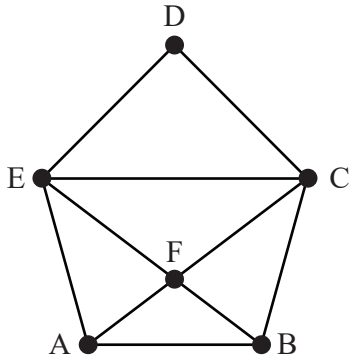
QUESTION 16 (3 marks)

Use the graph to identify whether each of the following is a cycle, an open walk, an open trail or a closed trail.



a) AFCFB *[1 mark]*

b) AFCEFBA *[1 mark]*

c) ABCDEFA *[1 mark]*

Do not write outside this box.

QUESTION 17 (3 marks)

Calculate the distance along the parallel of latitude between Mount Gambier, South Australia (37° 50' S, 140° 47' E) and Bairnsdale, Victoria (37° 50' S, 147° 37' E) to the nearest kilometre.

Do not write outside this box.

QUESTION 18 (4 marks)

Exhibition organisers believe that the number of attendees increases each day as an arithmetic sequence. The organisers know that 353 people attended the first day and 439 people attended the third day.

a) Determine the common difference. *[2 marks]*

b) Use the result from 18a) to predict the number of people who will attend the sixth day. *[2 marks]*

Do not write outside this box.

QUESTION 19 (4 marks)

Data was collected relating the number of hours spent fishing and the total number of fish caught. The linear model for this data was found to be $y = 2.3x + 31.4$, where x is the number of hours spent fishing, and y is the total number of fish caught.

a) Use the model to predict the number of fish caught if 12 hours were spent fishing. *[1 mark]*

b) The correlation coefficient for this data is 0.688 and the coefficient of determination is 0.473. Use each of these to describe the strength of the linear association between the two variables and decide if your prediction is valid. *[3 marks]*

Do not write outside this box.

QUESTION 20 (4 marks)

Determine the monthly repayment on a $350 000 home loan over 25 years with 6.5% p.a. fixed interest compounded monthly.

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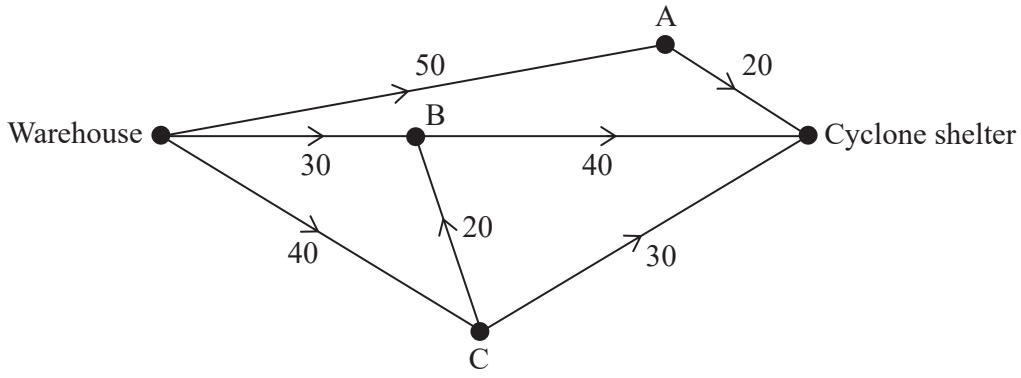
QUESTION 21 (5 marks)

This network shows the maximum number of supplies (in tonnes) that can be transported from a warehouse to a cyclone shelter along each road each day during an emergency.



Note: If you make a mistake in the network, cancel it by ruling a single diagonal line through your work and use the additional network on page 18 of this question and response book.

a) Use the 'maximum flow, minimum cut' theorem to determine the maximum amount of supplies that can reach the cyclone shelter each day. *[3 marks]*

b) During a cyclone, the intersection at vertex A is damaged and no longer allows for any supplies to pass through it. What is the new maximum amount of supplies each day that can reach the cyclone shelter? *[2 marks]*

Do not write outside this box.

QUESTION 22 (4 marks)

A store asked its junior and senior staff whether or not they would like to change the store uniform. The results are in the frequency table.

	Change uniform	Do not change uniform
Junior staff	92	28
Senior staff	23	67

a) Convert the two-way table into a percentaged two-way frequency table using column totals. *[2 marks]*

b) Explain whether there is an association between staff groups and a desire to change the store uniform. *[2 marks]*

Do not write outside this box.

QUESTION 23 (4 marks)

A plane leaves Brisbane (UTC +10) at 10:45 pm on Monday and takes 14 hours and 35 minutes to fly to Dubai (UTC +4).

Determine the local time and day in Dubai when the plane arrives.

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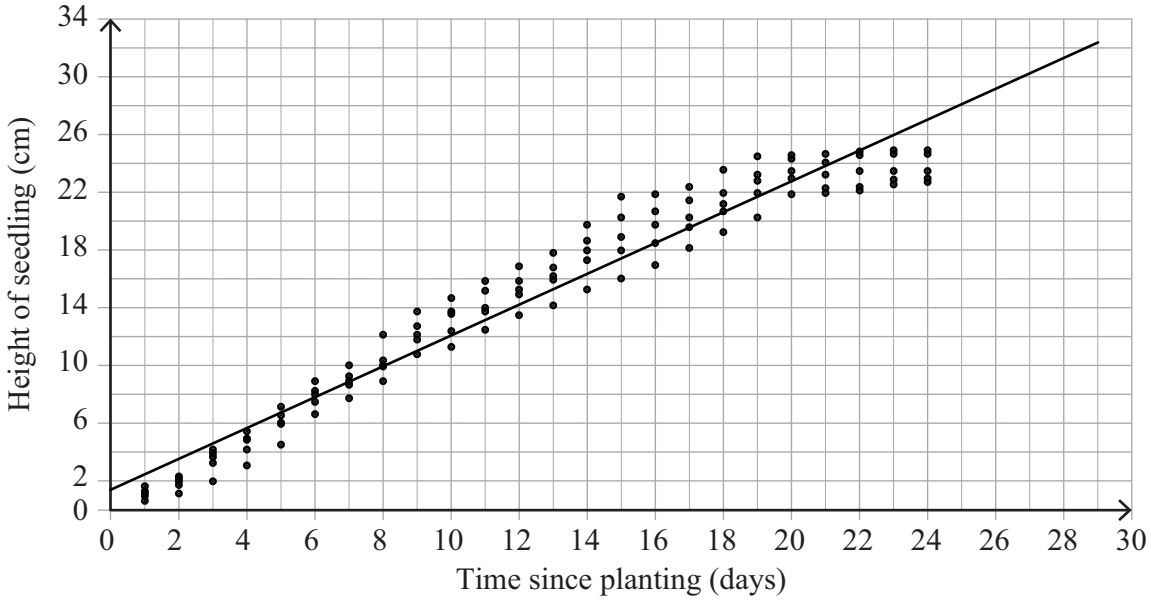
QUESTION 24 (4 marks)

The following data for the height of five seedlings was collected and the least-squares line was developed and graphed.



a) Use the least-squares line to estimate the height of a nine-day-old seedling. *[1 mark]*

b) Classify the prediction for 24a) as either interpolation or extrapolation. *[1 mark]*

c) Based on the graph, the following statement was made:
'A seedling will reach a height of about 32 cm by day 29.'
Comment on the reasonableness and the possible dangers of this statement. *[2 marks]*

Do not write outside this box.

QUESTION 25 (5 marks)

A financial institution offers two investment options:

Option 1: 7% p.a. compounding quarterly

Option 2: 6.8% p.a. compounding monthly

Use the effective interest rate formula to determine the option that will provide the better return.

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QUESTION 26 (5 marks)

A scientist observed that the population of a specific bird species is decreasing by 17% each year and that at the beginning of 2016, there were 483 birds.

a) Use a geometric sequence to model the bird population. *[2 marks]*

b) Using the model from 26a), predict the number of birds remaining at the beginning of 2021. *[3 marks]*

END OF PAPER

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ADDITIONAL PAGE FOR STUDENT RESPONSES

Write the question number you are responding to.

Do not write outside this box.

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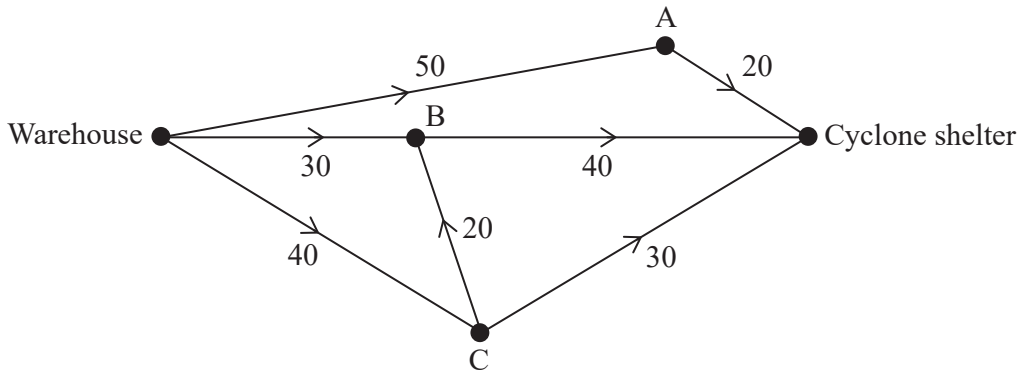
Write the question number you are responding to.

Do not write outside this box.

ADDITIONAL RESPONSE SPACE FOR QUESTION 21

If you want this network to be marked, rule a diagonal line through the network provided on page 8.



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