

Given name/s

Family name

Teacher

Class

School name

Common internal assessment 2025 — Phase 2

Question and response book

Essential Mathematics

Time allowed

- Perusal time — 5 minutes
- Working time — 60 minutes

General instructions

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

Part A: Simple (40 marks)

- 9 short response questions

Part B: Complex (10 marks)

- 2 short response questions



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

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.

Part A: Simple

- This part has nine questions and is worth 40 marks.
-

DO NOT WRITE ON THIS PAGE

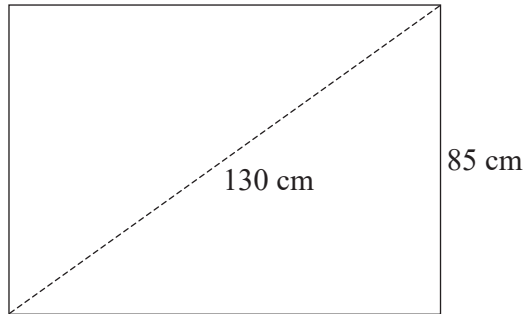
THIS PAGE WILL NOT BE MARKED

Do not write outside this box.

QUESTION 1 (6 marks)

A builder is constructing a rectangular frame with a diagonal brace, as shown.

Not to scale



- a) Use Pythagoras' theorem to calculate the width of the frame, rounded to the nearest centimetre.

[3 marks]

- b) Calculate the perimeter of the rectangular frame in metres.

[3 marks]

Do not write outside this box.

QUESTION 2 (2 marks)

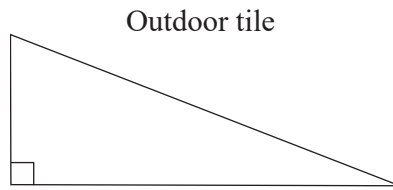
One glass of milk contains 305 mg of calcium. The recommended daily amount of calcium for teenagers is 1300 mg.

Determine how many glasses of milk are required for the recommended daily amount of calcium, to the nearest whole number.

Do not write outside this box.

QUESTION 3 (4 marks)

A landscaper is hired to install outdoor tiles of the shape shown.



Scale 1:20

- a) Determine the actual base length of the outdoor tile in centimetres. *[1 mark]*

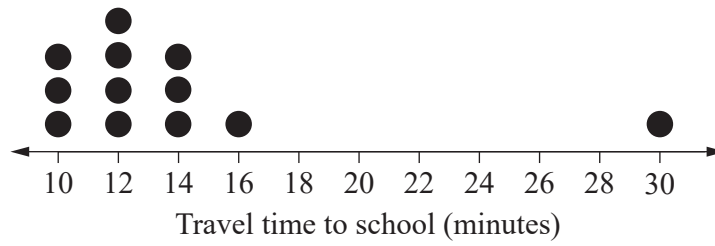
- b) Determine the actual height of the outdoor tile in centimetres. *[1 mark]*

- c) Determine the actual area of the outdoor tile in square centimetres. *[2 marks]*

Do not write outside this box.

QUESTION 4 (3 marks)

The travel time to school (minutes) for 12 students is shown.



a) Identify the mode travel time to school.

[1 mark]

b) Describe two different features of the spread of this data.

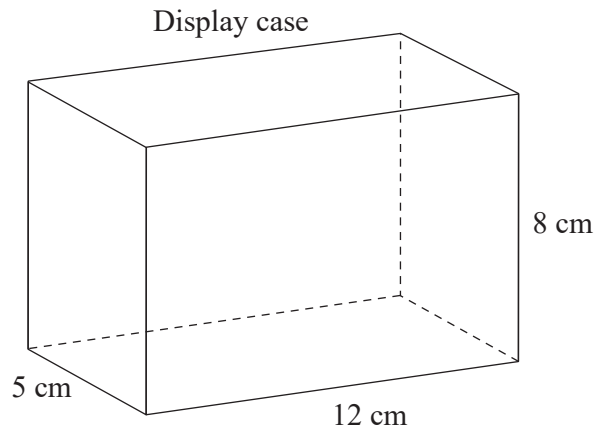
[2 marks]

Do not write outside this box.

QUESTION 5 (6 marks)

A baker displays a cake in a rectangular prism display case, as shown.

Not to scale



- a) How many faces does the display case have?

[1 mark]

The frame of the display case is made from metal rods.

- b) Calculate the total length of all metal rods used to construct the frame of the display case in centimetres.

[2 marks]

- c) Calculate the volume of the display case in cubic centimetres.

[2 marks]

Do not write outside this box.

A cake inside the display case has a volume of 400 cm^3 .

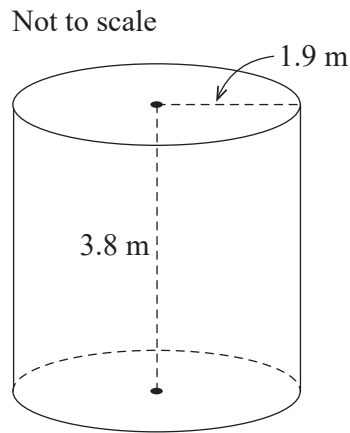
d) Determine what fraction of the display case's volume is occupied by the cake.

[1 mark]

Do not write outside this box.

QUESTION 6 (5 marks)

A farmer stores animal feed in storage tanks with the internal dimensions shown.



- a) Use leading-digit approximation to estimate the volume of the storage tank, rounded to the nearest cubic metre.

[2 marks]

Animal feed weighs approximately 800 kilograms per cubic metre (kg/m^3).

- b) Determine the approximate mass of animal feed in a full storage tank in kilograms.

[1 mark]

Do not write outside this box.

- c) Convert the approximate mass of animal feed in a full storage tank from kilograms to tonnes.

[1 mark]

The cost for delivering the animal feed is \$80 per tonne.

- d) Determine the approximate total cost for delivering enough animal feed for a full storage tank.

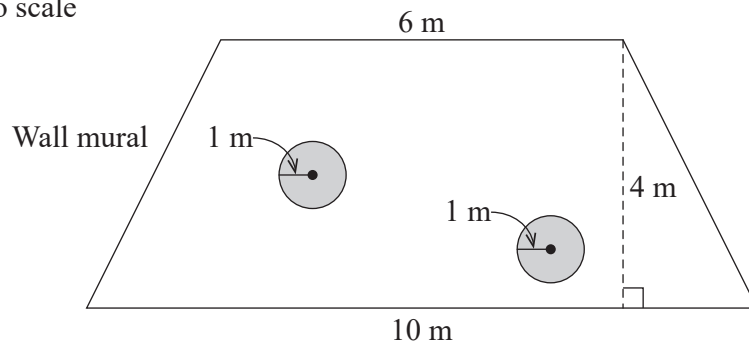
[1 mark]

Do not write outside this box.

QUESTION 7 (5 marks)

A painter plans a wall mural in the shape of a trapezium that features two circular panels, as shown.

Not to scale



- a) Calculate the area of the entire wall mural in square metres. [2 marks]

- b) Calculate the area of the two circular panels in square metres. [2 marks]

The painter estimates that the two circular panels cover more than a quarter of the mural area.

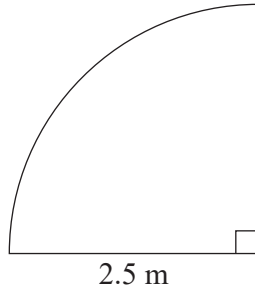
- c) Explain why the painter's estimate is not reasonable. Your response must include mathematical reasoning. [1 mark]

Do not write outside this box.

QUESTION 8 (3 marks)

A concrete slab is in the shape of a quarter circle, as shown.

Not to scale



- a) Calculate the arc length of the concrete slab in metres, rounded to two decimal places. [2 marks]

- b) Determine the perimeter of the concrete slab in metres. [1 mark]

Do not write outside this box.

QUESTION 9 (6 marks)

A basketball coach records successful free throws for each player on the team, as shown.

Player	A	B	C	D	E	F	G	H	I	J	K	L	M
Free throws	9	8	10	10	14	20	16	9	11	12	8	14	10

a) Calculate the mean number of successful free throws. *[2 marks]*

b) Determine the median number of successful free throws. *[2 marks]*

c) Complete the five-number summary table for the number of successful free throws by writing an appropriate label or value in each empty cell of the table. *[2 marks]*

Minimum	Q ₁		Q ₃	
	9		14	

Do not write outside this box.



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

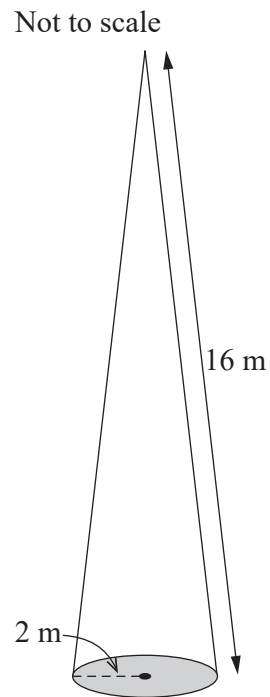
CONTINUE TO THE NEXT PAGE

Part B: Complex

- This part has two questions and is worth 10 marks.

QUESTION 10 (5 marks)

A painter wants to paint the exterior surface of a sculpture in the shape of a cone, except for the base, as shown.



One litre of paint costs \$53.80 and covers 6.5 m^2 . The painter has budgeted \$900 for the paint.

Determine if the painter has budgeted enough money to paint the exterior surface of the sculpture, except for the base.

Do not write outside this box.



© State of Queensland (QCAA) 2024

Licence: <https://creativecommons.org/licenses/by/4.0> | Copyright notice: www.qcaa.qld.edu.au/copyright — lists the full terms and conditions, which specify certain exceptions to the licence. | Attribution: © State of Queensland (QCAA) 2024