

# — Public use —

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Venue code

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School name

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Given name/s

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Family name

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Attach your  
barcode ID label here

Sample assessment 2020

Question and response book

# 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 calculator permitted.
- QCAA formula sheet provided.
- Planning paper will not be marked.

### Section 1 (40 marks)

- 9 short response questions



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**DO NOT WRITE ON THIS PAGE**

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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.
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## QUESTION 1 (4 marks)

Sara departs from Sydney, Australia, on Saturday at 6:15 am on a flight to Johannesburg, South Africa. The flight takes 14 hours and 18 minutes.

Her friend Marcus arrives in Johannesburg from Lima, Peru, at the same time, on a flight that took 18 hours and 15 minutes.

The time zones are shown in the following table.

City	Country	UTC
Sydney	Australia	+10
Lima	Peru	-5
Johannesburg	South Africa	+2

Determine the local time and day that Marcus left Lima.

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## QUESTION 2 (4 marks)

A cable company is calculating the cost of laying cable between five houses (A, B, C, D and E). The unit cost of laying the cable is \$2.50 per metre.

The shortest distances (in metres) between the houses are shown below.

	A	B	C	D	E
A	0	20	400	35	8000
B	20	0	800	70	3000
C	400	800	0	500	2000
D	35	70	500	0	8000

- a) Construct a network diagram to represent the distances between the houses in the space provided below.

[1 mark]

- b) Determine the minimum cost to connect all of the houses.

[3 marks]

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**QUESTION 5 (8 marks)**

Kate, Luca and Marcel are carpenters. Each carpenter needs to build one piece of furniture: a bookcase, a chair or a desk.

As each carpenter works at a different rate, the table below shows the total cost for each carpenter to build each piece of furniture.

	Bookcase	Chair	Desk
Kate	\$196	\$62	\$203
Luca	\$150	\$60	\$147
Marcel	\$127	\$77	\$111

- a) Use the Hungarian algorithm to determine who should build each piece of furniture to minimise the total cost.

[5 marks]

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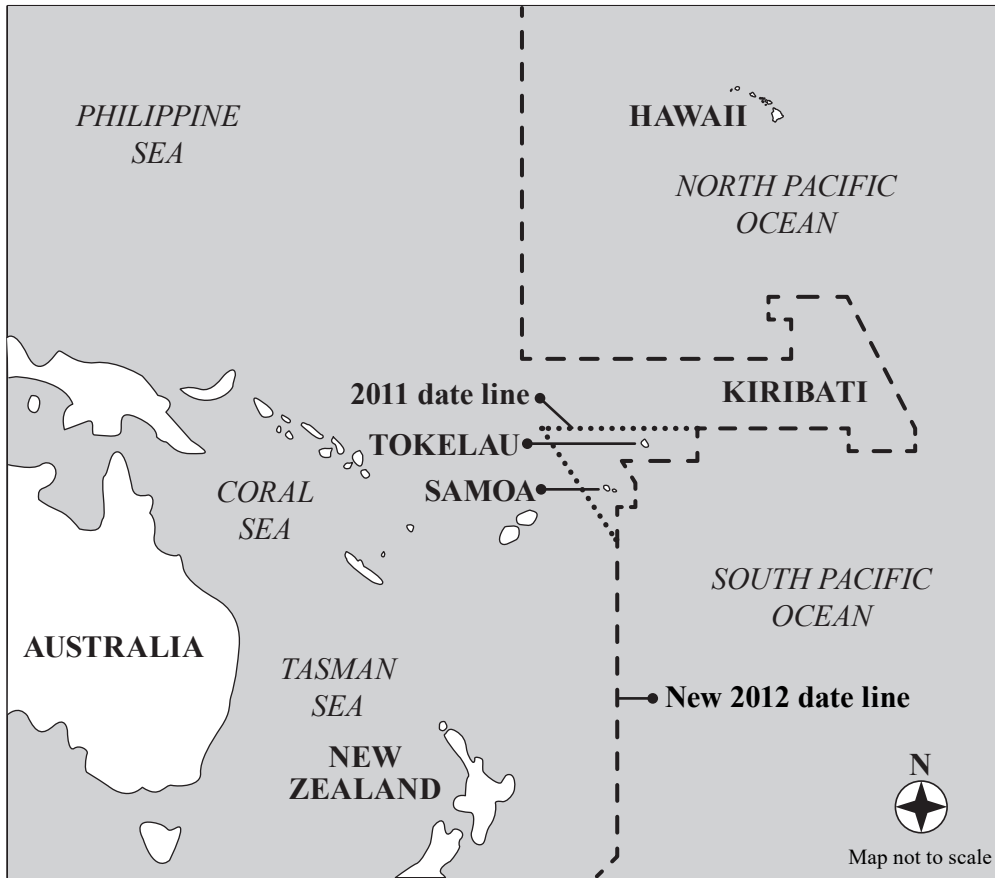
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**QUESTION 6 (3 marks)**

At midnight on 29 December 2011, the International Date Line was moved. This resulted in Samoa and Tokelau changing from the eastern side of the date line to the western side (see map below).



Determine what time, date and year it was in Samoa one minute after this change.

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## QUESTION 9 (4 marks)

The table below shows the seasonally adjusted rainfall data (in mm) for a town in Australia.

	2015	2016
Summer	96.77	101.61
Autumn	98.04	101.96
Winter	100.00	101.39
Spring	100.97	102.91

The seasonal indices are shown in the table below.

Summer	1.24
Autumn	1.02
Winter	0.72
Spring	1.03

In 2017, the actual rainfall in summer was 127 mm, autumn was 106 mm, winter was 75 mm and spring was 107 mm.

Analyse the data to predict the total rainfall for each season in 2025.

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