



South Australian
Certificate of Education

Essential Mathematics

2022

Question booklet

Topic 2: Measurement (Questions 1 to 3) 30 marks

Topic 4: Statistics (Questions 4 to 6) 30 marks

Topic 5: Investments and loans (Questions 7 to 9) 30 marks

- Answer **all** questions
- Write your answers in this question booklet
- You may write on pages 12 and 24 if you need more space
- Allow approximately 40 minutes for **each** topic

Examination information

Materials

- Question booklet
- SACE registration number label

Instructions

- Show appropriate working and steps of logic in this question booklet
- Use black or blue pen
- You may use a sharp dark pencil for diagrams and graphical representations
- Approved calculators may be used — complete the box below

Total time: 130 minutes

Total marks: 90

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Attach your SACE registration number label here

Graphics calculator

1. Brand _____

Model _____

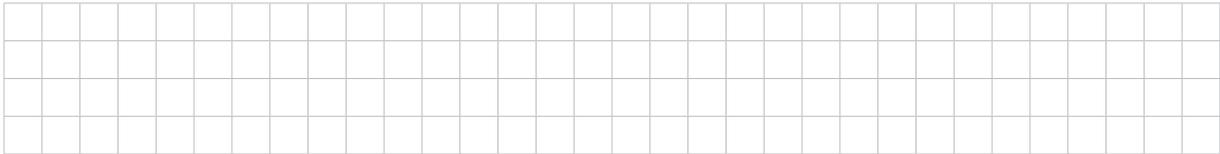
2. Brand _____

Model _____



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- (ii) Calculate the area of the square panel of material not covered by the star pattern (the shaded area in Diagram 1).



(1 mark)

The square panels of material are joined together to make *square quilts*.

- (d) Nine square panels of material are used to make a square quilt, as shown in Diagram 3.

Calculate the area of this square quilt, in square metres (m^2).

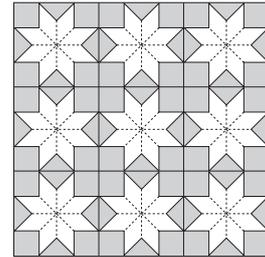
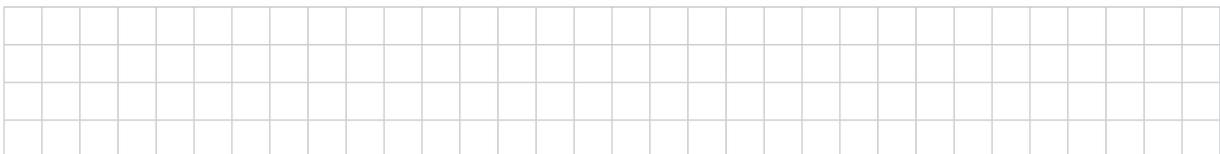
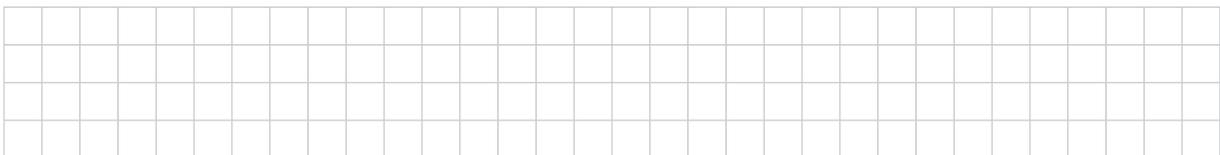


Diagram 3



(2 marks)

- (e) Calculate the minimum number of square panels of material that would be needed to make another square quilt that has an area of at least $4m^2$.



(2 marks)

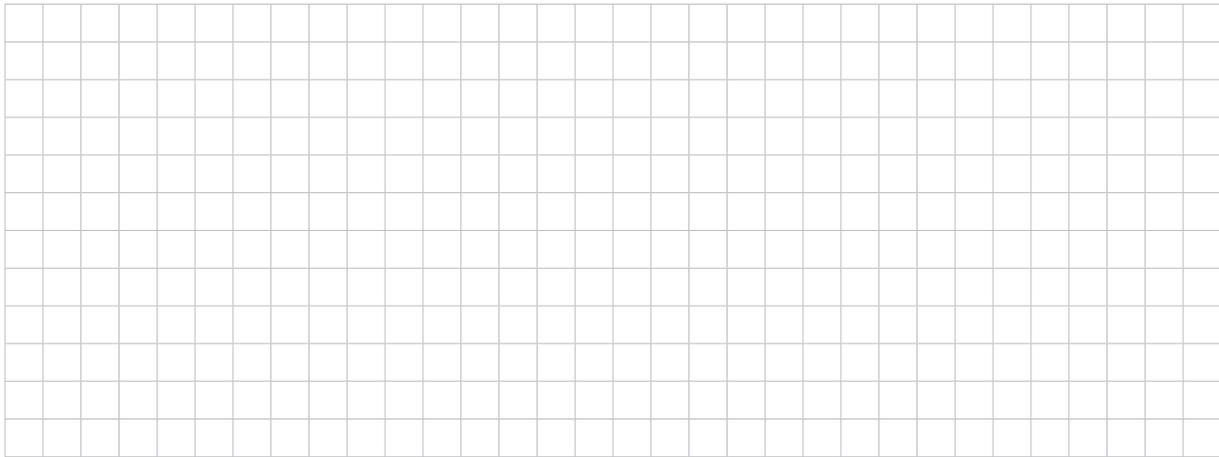
The following measurements are also known for Diagram 4.

Angle $GHF = 44^\circ$

Angle $GFH = 30^\circ$

(b) (i) On Diagram 4, write the values for angle GHF and angle GFH . (1 mark)

(ii) Show that the length of GH is approximately 0.73 km.

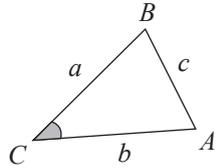


(3 marks)

(iii) Show that the area of triangle FGH is approximately 0.35 km^2 .

Note:

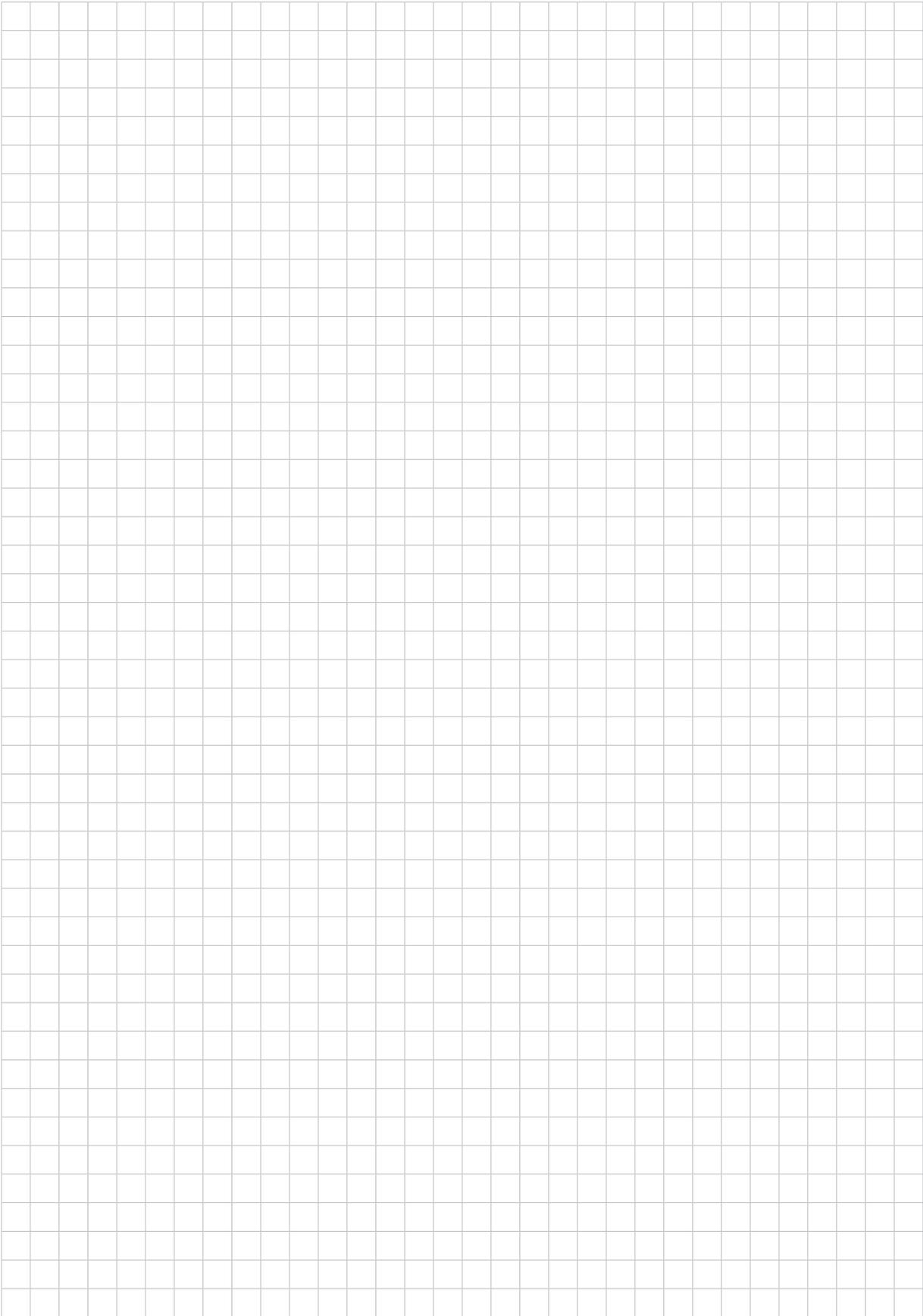
Area of triangle ABC ,

$$\text{Area} = \frac{1}{2} ab \sin C$$




(1 mark)

You may write on this page if you need more space to finish your answers to any questions.
Make sure to label each answer carefully (e.g. 3(c)(ii) continued).



Question 5 (15 marks)

A research group investigated the average amount of money (in dollars) spent on single takeaway food purchases for different age groups.

Table 1 shows the data for the amount of money (in dollars) spent on a single purchase by 12 individuals from the Gen Z age group who were aged 18 to 25 years.

Table 1

70	86	65	50	73	62	56	74	49	68	81	90
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(a) Using the data in Table 1, complete the **ordered** stem plot below for the Gen Z age group.

Amount of money spent on a single takeaway food purchase (\$)

Boomers (58 to 65 years)								Stem	Gen Z (18 to 25 years)							
							1	3								
			9	6	2	1	1	4								
						4	0	5								
					9	5	2	6								
								7								
								8								
							7	9								

Key: stem **3** leaf **1** = 31 (2 marks)

(b) The *three* statements below compare the data for the Boomers to the data for Gen Z. Circle the appropriate highlighted word to make each statement correct.

(i) The data for the Boomers are **less / more** symmetrical than the data for Gen Z. (1 mark)

(ii) The data for the Boomers have a **larger / smaller** range than the data for Gen Z. (1 mark)

(iii) One of the **Boomers / Gen Z** has spent the lowest amount on a single takeaway food purchase. (1 mark)

You may write on this page if you need more space to finish your answers to any questions.
Make sure to label each answer carefully (e.g. 9(d)(iii) continued).

