

Write your name here

Surname

Other Names

# AS/A Level Mathematics

## Histograms

**Candidates may use any calculator allowed by the regulations of the Joint Council for Qualifications. Calculators must not have the facility for symbolic algebra manipulation, differentiation and integration, or have retrievable mathematical formulae stored in them.**

### Instructions

- Use **black** ink or ball-point pen.
- If pencil is used for diagrams/sketches/graphs it must be dark (HB or B).
- **Fill in the boxes** at the top of this page with your name.
- Answer **all** questions and ensure that your answers to parts of questions are clearly labelled..
- Answer the questions in the spaces provided  
– there may be more space than you need.
- You should show sufficient working to make your methods clear.  
Answers without working may not gain full credit.
- Answers should be given to three significant figures unless otherwise stated.

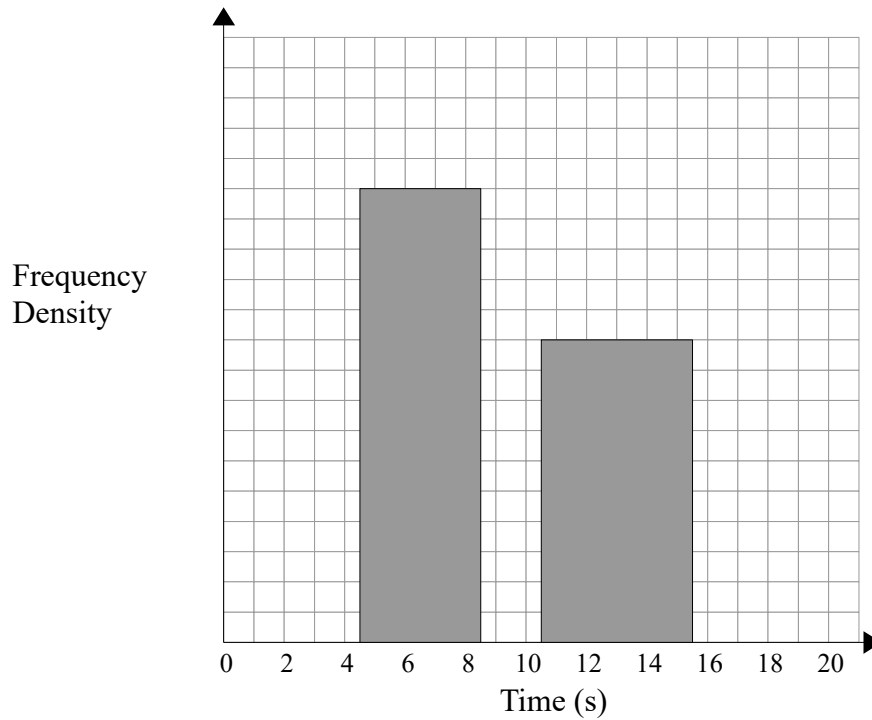
### Information

- The marks for **each** question are shown in brackets  
– use this as a guide as to how much time to spend on each question.

### Advice

- Read each question carefully before you start to answer it.
- Try to answer every question.
- Check your answers if you have time at the end.

- 1 The partially completed histogram and the partially completed table show the times taken, to the nearest second, for a group of people to complete a puzzle.



Time (seconds)	Frequency
1 – 4	2
5 – 8	12
9 – 10	8
11 – 15	
16 – 20	3

(a) Complete the table.

(b) Complete the histogram

One of the participants is selected at random.

(c) Estimate the probability that this participant completed the puzzle in under 10 seconds.

**(Total for question 1 is 5 marks)**

- 2 A variable  $x$  was measured to the nearest whole number. 50 observations are given in the table below.

$x$	5 – 8	9 – 13	14 – 20	21 – 24
Frequency	10	9	14	17

A histogram was drawn and the bar representing the 9 – 13 class has a width of 2 cm and a height of 2.7 cm.

Find the width and height of the bar representing the 14 – 20 class.

**(Total for question 2 is 3 marks)**

- 3 A variable  $y$  was measured to the nearest whole number. 40 observations are given in the table below.

$y$	10 – 19	20 – 24	25 – 28	29 – 30
Frequency	13	7	15	5

A histogram was drawn and the bar representing the 10 – 19 class has a width of 2.5 cm and a height of 2.6 cm.

- (a) Find the width and height of the bar representing the 20 – 24 class. **(3)**
- (b) Find the width and height of the bar representing the 25 – 28 class. **(3)**

**(Total for question 3 is 6 marks)**

- 4 The distance travelled by 100 people to an event is summarised below.

Distance (nearest mile)	Frequency
0 – 9	4
10 – 14	19
15 – 18	41
19 – 20	26
21 – 25	9

A histogram was drawn and the bar representing the 10 – 14 class has a width of 3 cm and a height of 1.9 cm.

- (a) Find the width and height of the bar representing the 15 – 18 class. **(3)**
- (b) Find the width and height of the bar representing the 19 – 20 class. **(3)**

**(Total for question 4 is 6 marks)**