Write your name, centre number and candidate number in the boxes below.

Surname	Other names

Centre number | | | | | |

Candidate number | | | | |

STEM | Exam Builder

Estimating the mean from grouped data

Time allowed: 1 hour 10 minutes

Subject code **0580**

Mathematics

Questions from Paper 2 and Paper 4

You must have: a ruler marked in centimetres and millimetres, a protractor, compasses, a pen, an HB pencil and an eraser.
You may use a calculator.

Total marks

/ 58

Instructions

- Answer every question in the space provided on this paper.
- Write in black or dark blue ink. Pencil may be used for diagrams and graphs.
- Fill in your name, centre number and candidate number above.
- Show your working: a correct method can earn marks even if the answer is wrong.
- Unless a question says otherwise, give answers that are not exact to 3 significant figures, and angles in degrees to 1 decimal place.

Information

- This paper has 10 questions worth 58 marks in total.
- The marks for each question or part are shown in brackets, for example [3].

Advice

- Read every question through once before you write anything.
- Use the marks in brackets to judge how long to spend on each part.
- If you finish early, go back and check your working.

STEM | Exam Builder

Print at 100% (Actual size) so diagrams keep their real measurements.

1 The table shows some information about the heights of 50 plants.

Height (h cm)	$5 < h \leqslant 10$	$10 < h \leqslant 12$	$12 < h \leqslant 20$
Frequency	3	24	23

Calculate an estimate of the mean height.

..... cm [4]

Averages from grouped data Click for more variations

2 The height of each of 200 people is measured.
The table shows the results.

Height (h cm)	$100 < h \leqslant 120$	$120 < h \leqslant 130$	$130 < h \leqslant 150$	$150 < h \leqslant 190$
Frequency	32	55	64	49

Calculate an estimate of the mean height.

STEM | Exam Builder

..... cm [4]

Averages from grouped data Click for more variations

3 Raj measures the height, h cm, of 70 plants.
The table shows the information.

Height (h cm)	$10 < h \leqslant 20$	$20 < h \leqslant 40$	$40 < h \leqslant 50$	$50 < h \leqslant 60$	$60 < h \leqslant 90$
Frequency	7	15	27	13	8

Calculate an estimate of the mean height of the plants.

..... cm [4]

Averages from grouped data Click for more variations

4 The table shows the amount of money, $\$x$, given to a charity by each of 60 people.

Amount ($\$x$)	$0 < x \leqslant 20$	$20 < x \leqslant 25$	$25 < x \leqslant 35$	$35 < x \leqslant 50$	$50 < x \leqslant 100$
Frequency	21	16	6	10	7

Calculate an estimate of the mean.

$ ..... [4]

Averages from grouped data Click for more variations

STEM | Exam Builder

5 The table shows information about the times, t seconds, taken by each of 100 students to solve a puzzle.

Time (t seconds)	$0 < t \leqslant 10$	$10 < t \leqslant 15$	$15 < t \leqslant 20$	$20 < t \leqslant 40$	$40 < t \leqslant 75$
Frequency	9	18	22	30	21

(a) Calculate an estimate of the mean time.

..... s [4]

(b) Emmanuel draws a histogram to show this information.
The table shows the heights, in cm, of some of the bars for this histogram.

Complete the table.

Time (t seconds)	$0 < t \leqslant 10$	$10 < t \leqslant 15$	$15 < t \leqslant 20$	$20 < t \leqslant 40$	$40 < t \leqslant 75$
Height of bar (cm)	3.6	14.4	17.6		

[3]

(a) Averages from grouped data (b) Histograms Click for more variations

STEM | Exam Builder

6 The table shows some information about the mass of each of 200 oranges.

Mass (m grams)	$180 < m \leqslant 200$	$200 < m \leqslant 210$	$210 < m \leqslant 215$	$215 < m \leqslant 230$
Frequency	32	64	74	30

(a) Calculate an estimate of the mean mass of an orange.

..... g [4]

(b) Sarah draws a histogram to show this information.
The table shows the height of one of the bars for this histogram.

Complete the table.

Mass (m grams)	$180 < m \leqslant 200$	$200 < m \leqslant 210$	$210 < m \leqslant 215$	$215 < m \leqslant 230$
Height of bar (cm)			7.4	

[3]

(a) Averages from grouped data (b) Histograms Click for more variations

STEM | Exam Builder

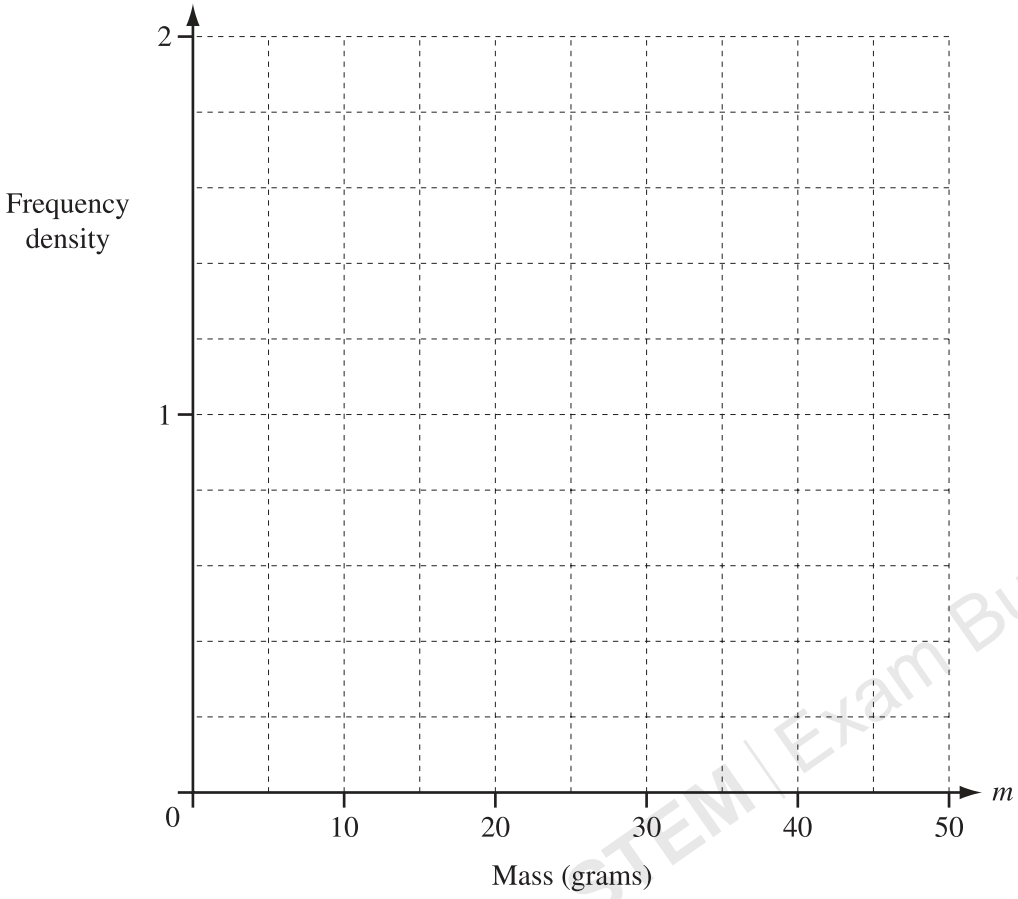
7 The masses of 60 potatoes are measured.
The table shows the results.

Mass (m grams)	$10 < m \leqslant 20$	$20 < m \leqslant 40$	$40 < m \leqslant 50$
Frequency	10	30	20

(a) Calculate an estimate of the mean.

Answer(a) ..... g [4]

(b) On the grid, draw an accurate histogram to show the information in the table.



[3]

STEM | Exam Builder

(a) Averages from grouped data (b) Histograms Click for more variations

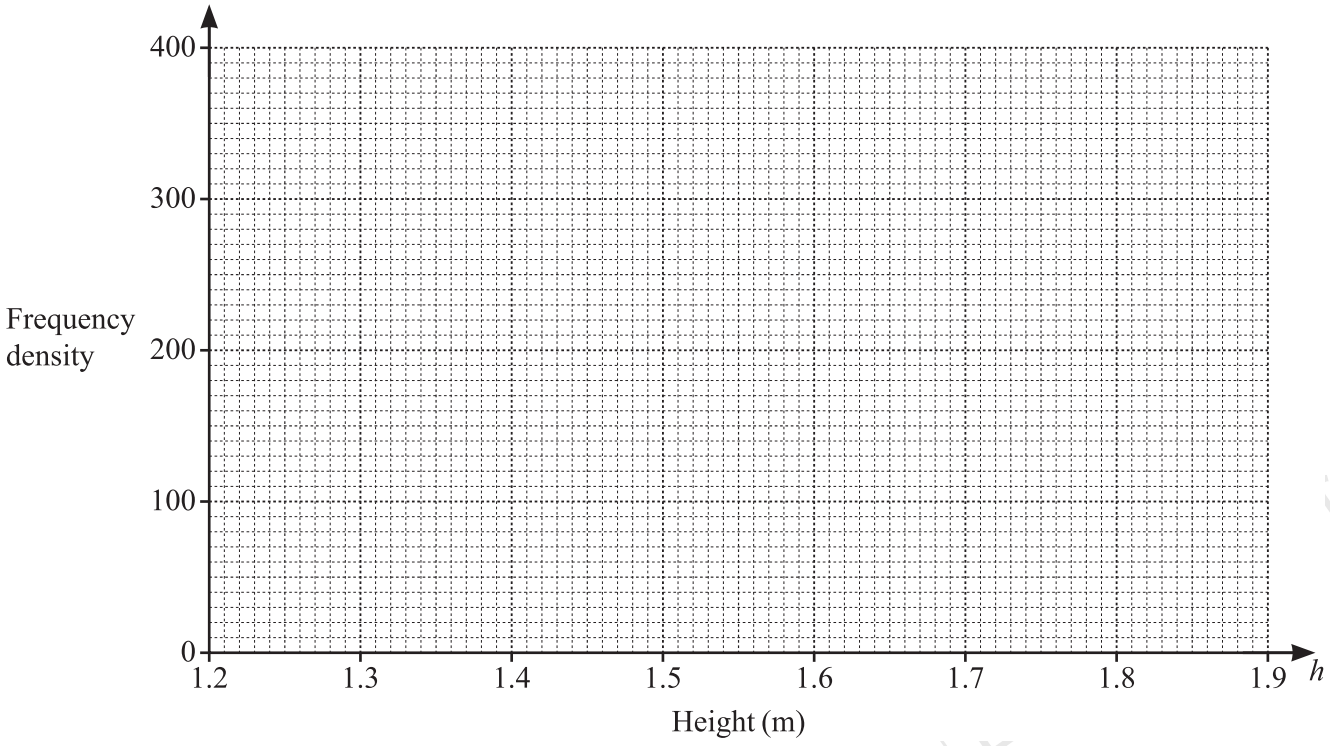
8 Virat records the height of each of 80 sunflowers.
The results are shown in the table.

Height (h m)	$1.2 < h \leq 1.5$	$1.5 < h \leq 1.6$	$1.6 < h \leq 1.7$	$1.7 < h \leq 1.9$
Frequency	12	20	34	14

(a) Calculate an estimate of the mean height.

..... m [4]

(b) Draw a histogram to show the information in the table.



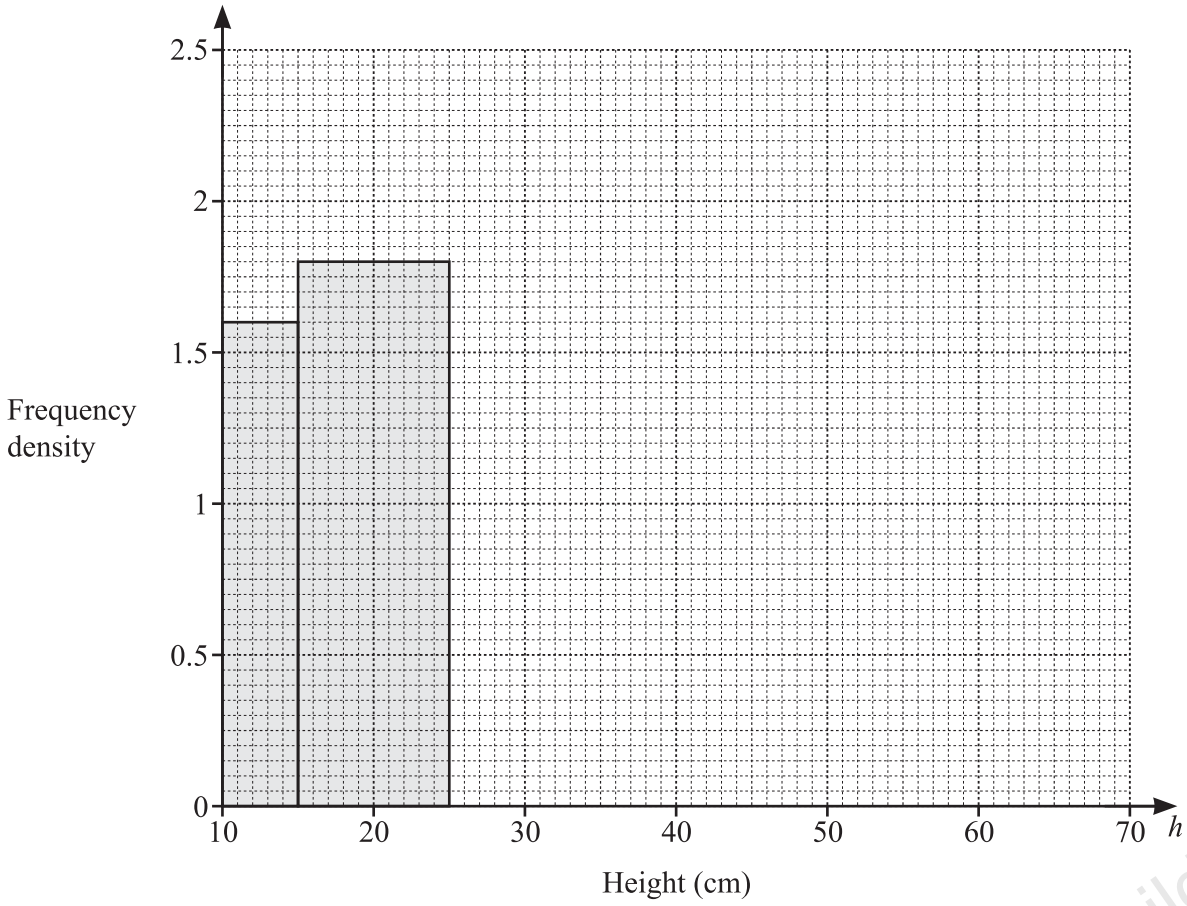
[3]

(a) Averages from grouped data (b) Histograms Click for more variations

9 The height, h cm, of each of 100 plants is recorded.
The table shows information about the heights of these plants.

Height (h cm)	$10 < h \leqslant 15$	$15 < h \leqslant 25$	$25 < h \leqslant 40$	$40 < h \leqslant 60$	$60 < h \leqslant 70$
Frequency	8	18	28	33	13

(a) Complete the histogram to show this information.
The first two blocks have been drawn for you.



[3]

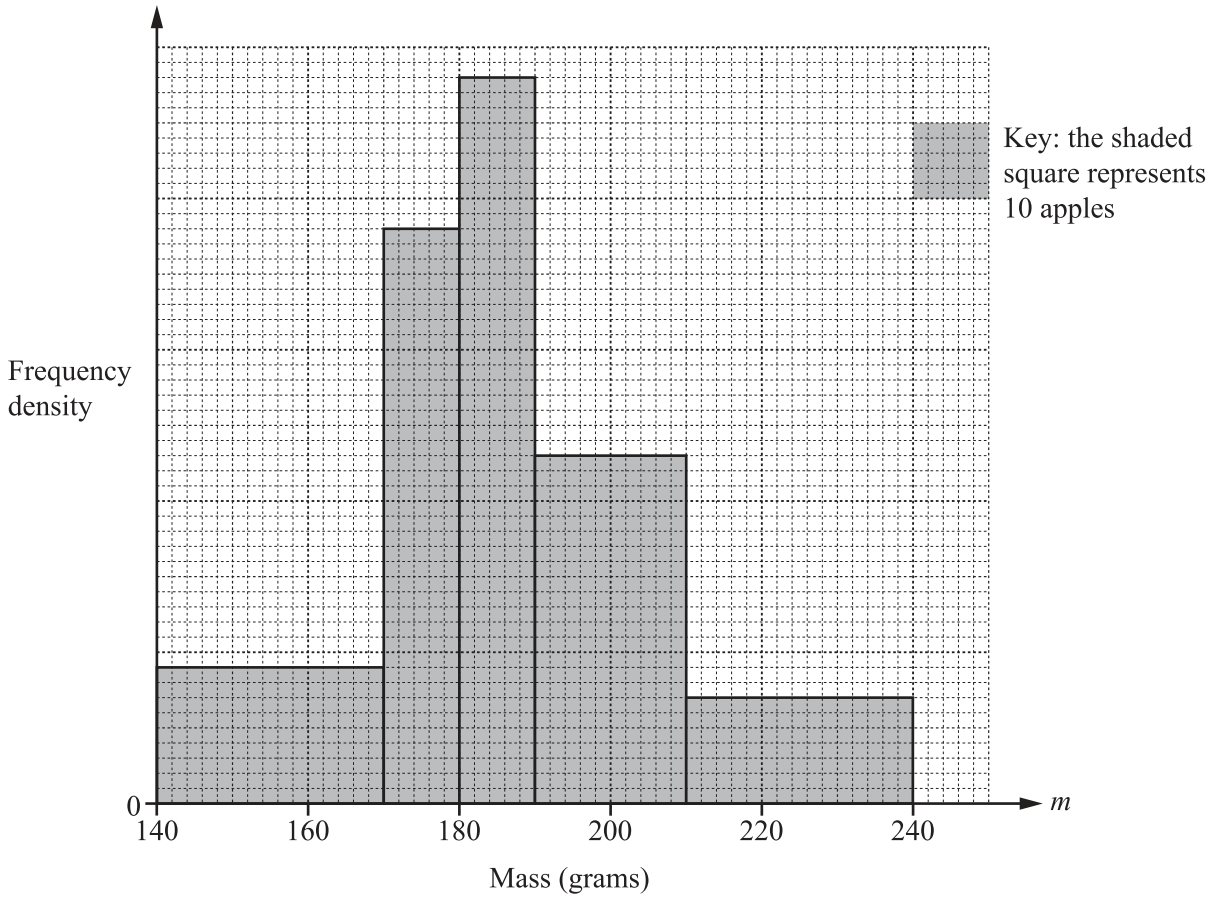
(b) Calculate an estimate of the mean height.

..... cm [4]

(a) Histograms (b) Averages from grouped data Click for more variations

STEM | Exam Builder

10 The histogram shows the distribution of the masses, m grams, of 360 apples.



(a) Use the histogram to complete the frequency table.

Mass (m grams)	Number of apples
$140 < m \leqslant 170$	
$170 < m \leqslant 180$	
$180 < m \leqslant 190$	
$190 < m \leqslant 210$	92
$210 < m \leqslant 240$	42

[3]

STEM | Exam Builder

(b) Calculate an estimate of the mean mass of the 360 apples.

..... g [4]

(a) Histograms (b) Averages from grouped data Click for more variations

STEM | Exam Builder