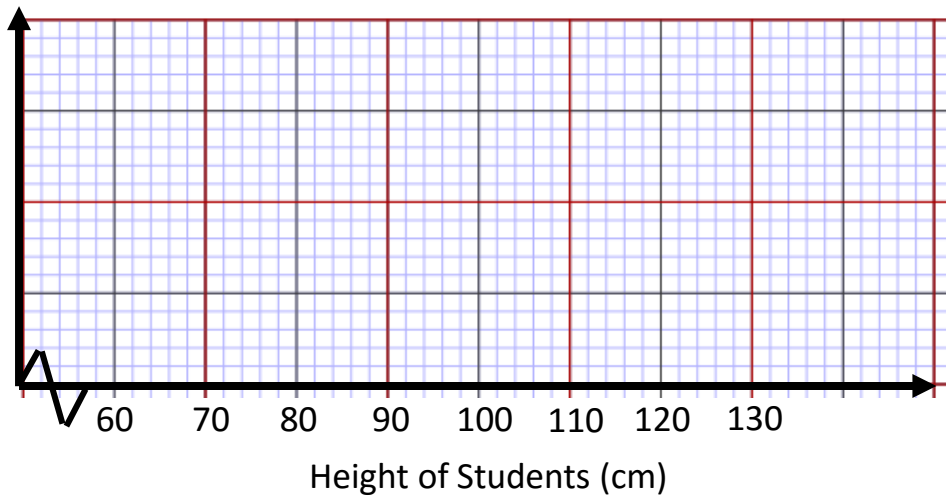
Histograms

The table gives some information about the height, in cm, of 50 students.

Height (h cm)	Frequency	Frequency Density
$60 < h \leq 70$	12	
$70 < h \leq 80$	24	
$80 < h \leq 100$	28	
$100 < h \leq 130$	36	

1. Complete the table by calculating the frequency density. /1

2. On the grid, draw a histogram for the information above.

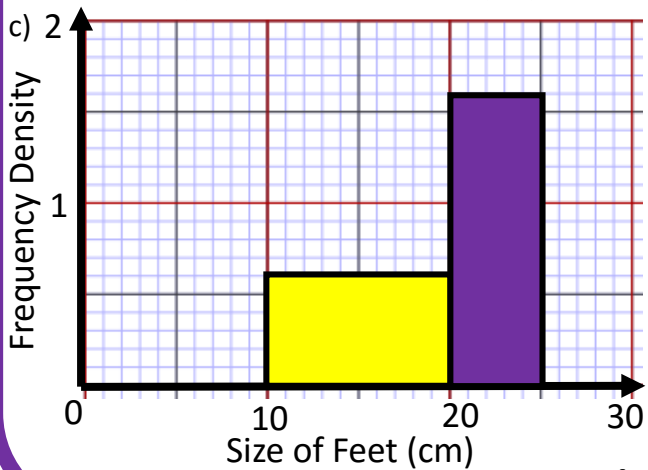


/2

3. Work out an estimate for the number of people taller than 110cm.

/2

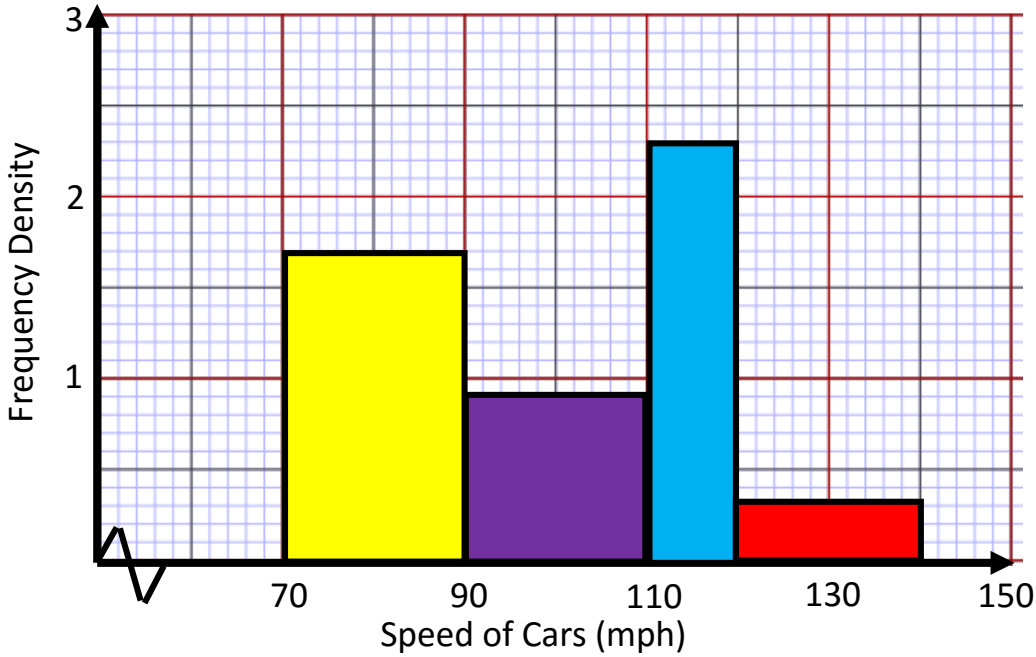
4. Complete the table and graph for the size of people's feet, in cm.



	Foot size(s cm)	Frequency	Frequency Density
a)	$5 < s \leq 10$	7	
b)			0.6
b)			1.6
a)	$25 < s \leq 30$	1	

a) Calculate FD /1
b) Calculate Freq /2
c) Complete Graph /1

The histogram shows the speed, in mph, of 81 cars.



5. Estimate the proportion of cars that travel between 100mph and 120mph.

/3

6. How many cars have a top speed less than 100mph?

/2

7. Calculate what the median top speed of the cars is.

/3

Skill	Questions	Score	Available Marks
Calculate the frequency density	1, 4a		**2**
Calculate the frequency from a histogram	4b		**2**
Accurately draw a histogram	2, 4c		**3**
Interpret a histogram.	3, 5, 6, 7		**10**
	Total Marks		**17**

Answers

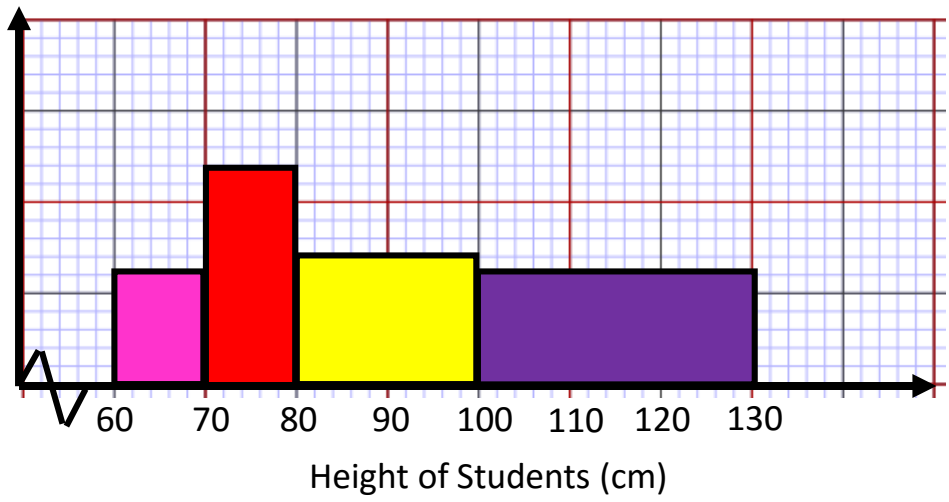
Histograms

The table gives some information about the height, in cm, of 50 students.

Height (h cm)	Frequency	Frequency Density
$60 < h \leq 70$	12	1.2
$70 < h \leq 80$	24	2.4
$80 < h \leq 100$	28	1.4
$100 < h \leq 130$	36	1.2

1. Complete the table by calculating the frequency density. /1

2. On the grid, draw a histogram for the information above.



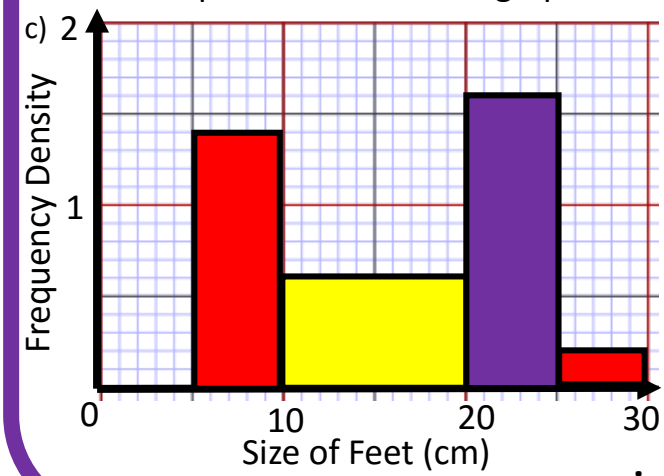
/2

3. Work out an estimate for the number of people taller than 110cm.

$\frac{20}{30} \times 36 = 24\ people$

/2

4. Complete the table and graph for the size of people's feet, in cm.

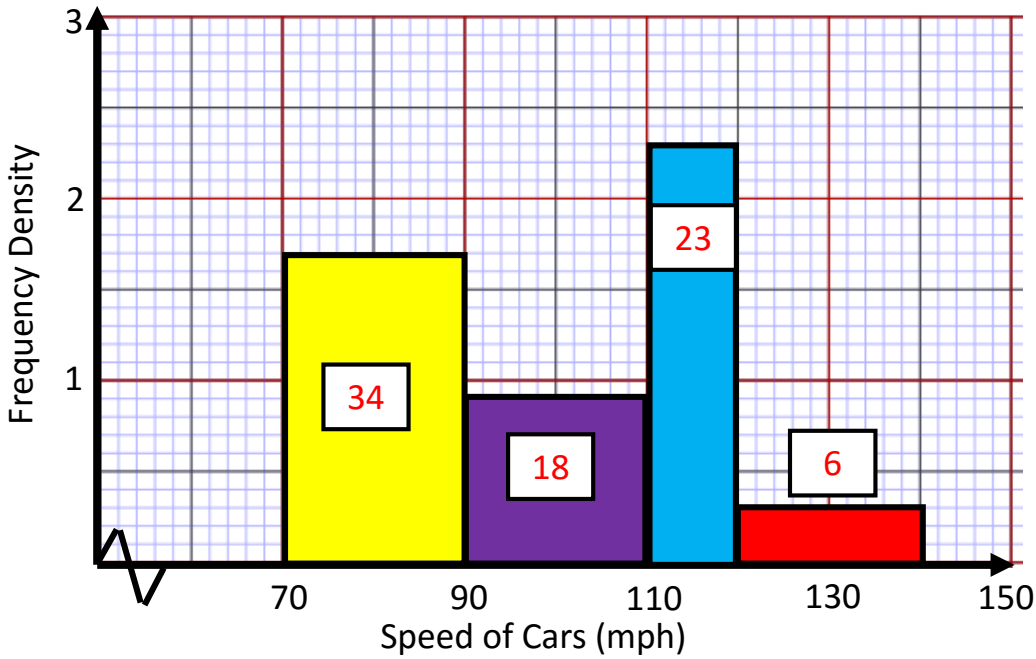


	Foot size(s cm)	Frequency	Frequency Density
a)	$5 < s \leq 10$	7	1.4
b)	$10 < s \leq 20$	6	0.6
b)	$20 < s \leq 25$	8	1.6
a)	$25 < s \leq 30$	1	0.2

a) Calculate FD /1
b) Calculate Freq /2
c) Complete Graph /1

Answers

The histogram shows the speed, in mph, of 81 cars.



5. Estimate the proportion of cars that travel between 100mph and 120mph.

$\frac{10}{20}$ *of* $18 = 9$ $\quad 9 + 23 = 32$ $\quad$ Proportion = $\frac{32}{81}$

/3

6. How many cars have a top speed less than 100mph?

$\frac{10}{20}$ *of* $18 = 9$ $\quad 9 + 34 = 43$ $\quad$ 43 cars

/2

7. Calculate what the median top speed of the cars is.

81 cars Median car = $\frac{81+1}{2} = 41st\ car$

Is in the $90 < s \leq 110$ *band* $(34 + 18 = 52)$ 7 cars left to go to get to 41 after the 34 cars in the first group.

$\frac{7}{18}$ *of* 20 is 7.8mph (1 dp) So the **median** is $90 + 7.8 = \mathbf{97.8\ mph}$

/3

Skill	Questions	Score	Available Marks
Calculate the frequency density	1, 4a		**2**
Calculate the frequency from a histogram	4b		**2**
Accurately draw a histogram	2, 4c		**3**
Interpret a histogram.	3, 5, 6, 7		**10**
	Total Marks		**17**