Calculating Frequency from a Histogram

Starter

1.   **(Review of last lesson)** Calculate the height of the bar of a histogram whose class interval is $6 \leq w < 10$ and whose frequency is 28.

    Working: Frequency density $= \dfrac{\text{Frequency}}{\text{Class width}} = \dfrac{28}{4} = 7$

2.   **(Review of last lesson)** The height of a bar on a histogram is 15. The interval goes from 125cm to 130cm. Calculate the frequency of the bar.

    Working: Frequency density $= \dfrac{\text{Frequency}}{\text{Class width}}$ so Frequency $= 15 \times 5 = 75$.

E.g. 1 This is a histogram showing the heights of a group of people. Calculate the frequency for each interval.
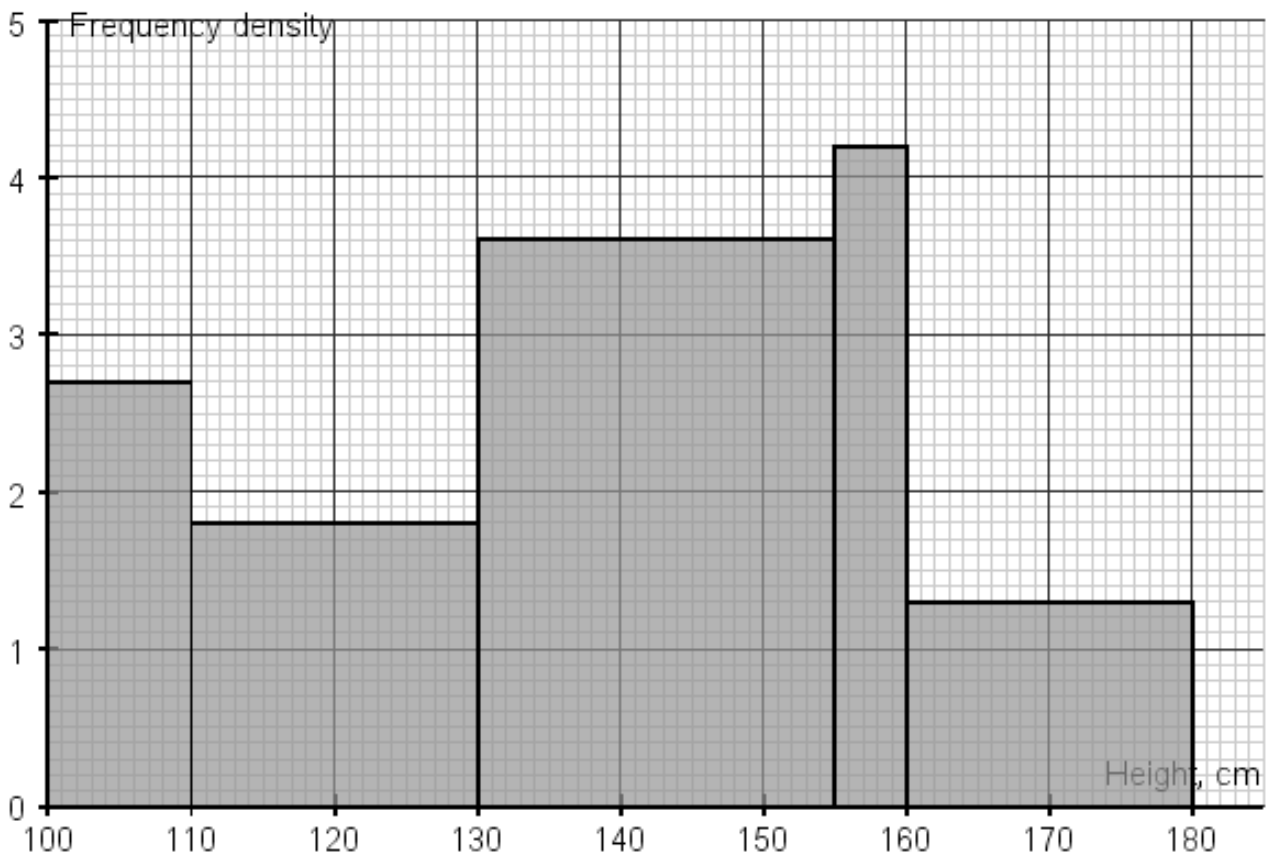
Working: Reading the vertical scale, the frequency density can be filled in.

Height, cm	Frequency	Frequency density
$100 \leq h < 110$		2.7
$110 \leq h < 130$		1.8

Height, cm	Frequency	Frequency density
130 ≤ h < 155		3.6
155 ≤ h < 160		4.2
160 ≤ h < 180		1.3

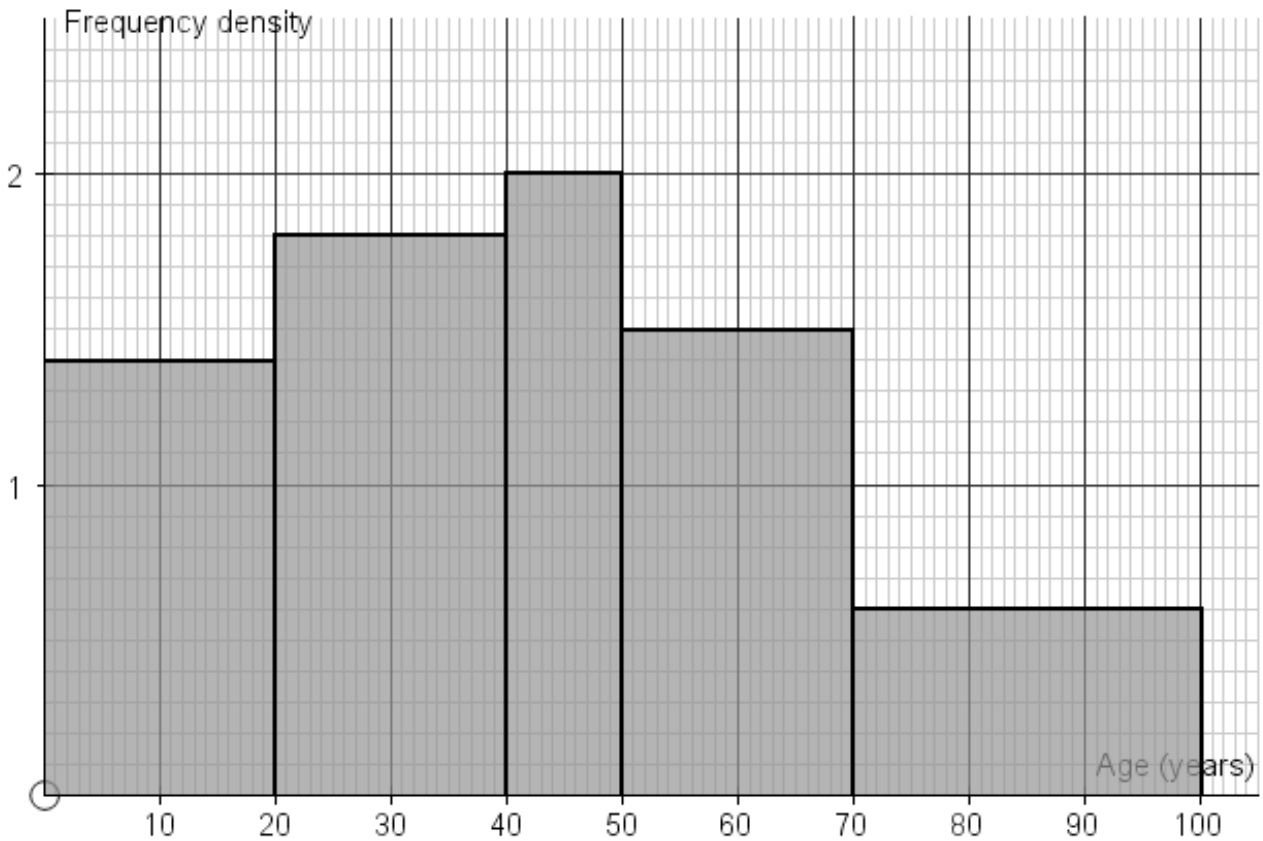Frequency = Frequency density × Class width
For $100 \leq h < 110$: Frequency = 2.7 × 10 = 27
For $110 \leq h < 120$: Frequency = 1.8 × 20 = 36 etc.

Height, cm	Frequency	Frequency density
100 ≤ h < 110	27	2.7
110 ≤ h < 130	36	1.8
130 ≤ h < 155	90	3.6
155 ≤ h < 160	21	4.2
160 ≤ h < 180	26	1.3

E.g. 2 This is a histogram showing the ages of passengers travelling on a flight to New York. Calculate the frequency for each class.

Working: Reading the vertical scale, the frequency density can be filled in.

Height, cm	Frequency	Frequency density
0 ≤ h < 20		1.4
20 ≤ h < 40		1.8
40 ≤ h < 50		2
50 ≤ h < 70		1.5
70 ≤ h < 100		0.6

Frequency = Frequency density × Class width
For $0 \leq h < 20$:   Frequency = 1.4 × 20 = 28
For $20 \leq h < 40$:   Frequency = 1.8 × 20 = 36 etc.

Height, cm	Frequency	Frequency density
0 ≤ h < 20	28	1.4
20 ≤ h < 40	36	1.8
40 ≤ h < 50	20	2
50 ≤ h < 70	30	1.5
70 ≤ h < 100	18	0.6

Video: **Finding frequencies from histograms**
Video: **Reading histograms**

Solutions to Starter and E.g.s

Exercise
9-1 class textbook: p489 E14.5 Qu 1-3
A*-G class textbook: p445 E14.2 Qu 1-3
9-1 homework book: p168 E14.5 Qu 1
A*-G homework book: p126 E14.2 Qu 1

Homework book answers (only available during a lockdown)