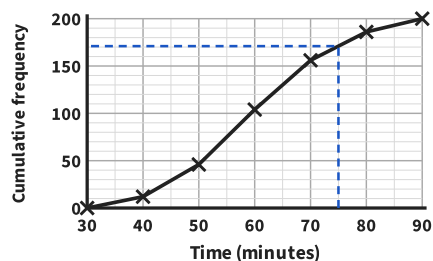


Cumulative Frequency *extend*

1

The graph shows the times of 200 runners in a 10 km race. Estimate the percentage of the runners whose average speed was less than 8 km/h.

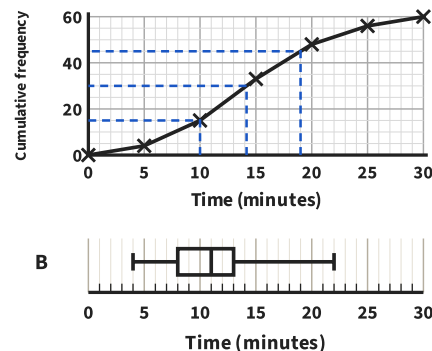


8 km/h: 75 minutes; $200 - 171 = 29$
took longer

Percentage about 15% (12 to 17)

2

Group A's times on a puzzle (60 people) are in the graph, group B's in the box plot. Compare the groups.

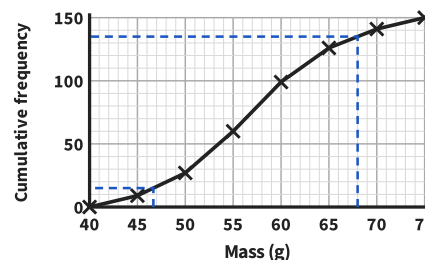


Medians A 14, B 11; IQRs A 9, B 5

Compare B quicker, more consistent

3

The graph shows the masses of 150 eggs. The lightest 10% and the heaviest 10% are taken out. Estimate the range of the rest.

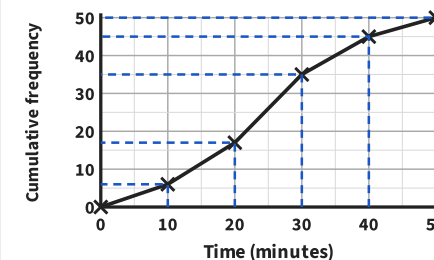


Read at 15 and 135: 47 g to 68 g

Answer about 21 g (19 to 24)

4

The graph shows how long 50 students spent on homework one evening. Estimate the mean time.



Frequencies 6, 11, 18, 10, 5

Mean $1220 \div 50 = 24.4$ minutes

5

The table shows the times of 100 people. Their cumulative frequency graph, with points joined by straight lines, gives a median of 25 minutes. Find a and b .

Time (min)	Frequency
$0 < t \leq 10$	8
$10 < t \leq 20$	a
$20 < t \leq 30$	30
$30 < t \leq 40$	b
$40 < t \leq 50$	12

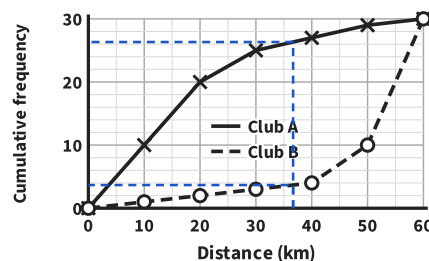
Median at 50: halfway through $20 < t \leq 30$ is 15

$$8 + a + 15 = 50; b = 100 - 50 - 27$$

Answer $a = 27, b = 23$

6

The graphs show how far 30 riders in club A and 30 in club B rode one weekend. Estimate the median of all 60 riders.

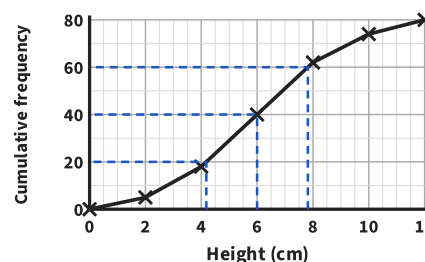


Find where $A + B = 30$: at 37, $26 + 4$

Answer about 37 km (34 to 39)

7

The graph shows the heights of 80 seedlings. A week later each one is 1.5 times as tall. Estimate the new median and IQR.



Now median 6, IQR $7.8 - 4.2 = 3.6$; both $\times 1.5$

Answer 9 cm and about 5.5 cm

8

From a cumulative frequency graph of this table, Jo reads that 9 people took between 22 and 25 minutes. Why is this only an estimate? What is the least and the most it could be?

Time (min)	Frequency
$0 < t \leq 10$	12
$10 < t \leq 20$	14
$20 < t \leq 30$	30
$30 < t \leq 40$	4

The 30 times in $20 < t \leq 30$ could be anywhere in the class

The graph shares them out evenly: 3 tenths of 30 = 9

Answer anything from 0 to 30