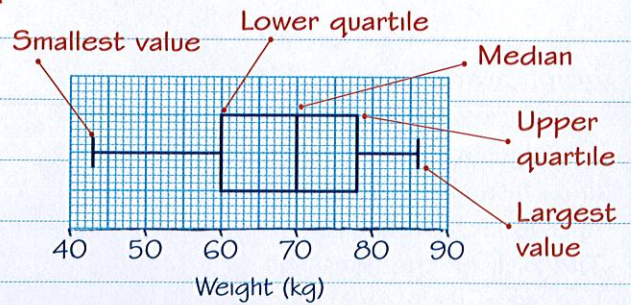


Box plots

Box plots show the median, upper and lower quartiles, and the largest and smallest values of a set of data. They are often used to compare distributions.

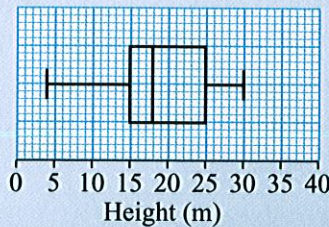
Half the weights were between 60 kg and 78 kg.
25% of the weights were greater than 78 kg.



Worked example

grade B

The box plot gives information about the heights, in metres, of some trees.



Fred says that exactly 50% of the trees have heights between 15 m and 30 m. Is Fred correct? You must give a reason.

15 m → lower quartile (25%)
30 m → largest value (100%)
No, Fred is not correct, because 75% of the trees have heights between 15 m and 30 m.

EXAM ALERT!

There was 1 mark available here but only one in four students got it. You have to give a reason for your answer. 'Yes' or 'No' would score no marks. Use the box plot to identify what the heights 15 m and 30 m represent. Then use these facts to decide whether Fred is correct.

This was a real exam question that caught students out – be prepared!

ResultsPlus

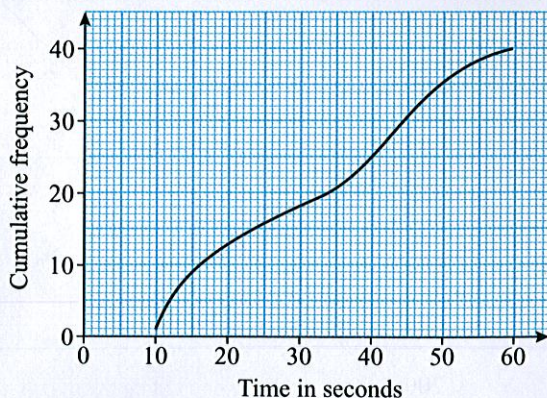
Comparing two distributions

When you are comparing box plots, you can use the range, the interquartile range, the largest and smallest values and the median. It is always best to compare measures of spread rather than medians or end points.

Now try this

grade B

The cumulative frequency graph below gives information about the times taken by 40 boys to complete a puzzle.



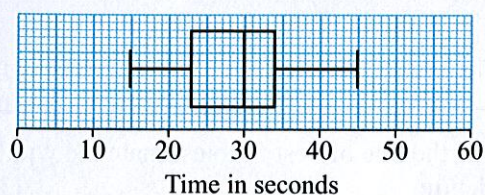
For the boys the minimum time to complete the puzzle was 9 seconds and the maximum time to complete the puzzle was 57 seconds.

Read off the largest and smallest values, the median and the quartiles from the graph.

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- (a) Use this information and the cumulative frequency graph to draw a box plot showing information about the boys' times. (3 marks)

The box plot below shows information about the times taken by 40 girls to complete the same puzzle.



- (b) Make two comparisons between the boys' times and the girls' times. (2 marks)