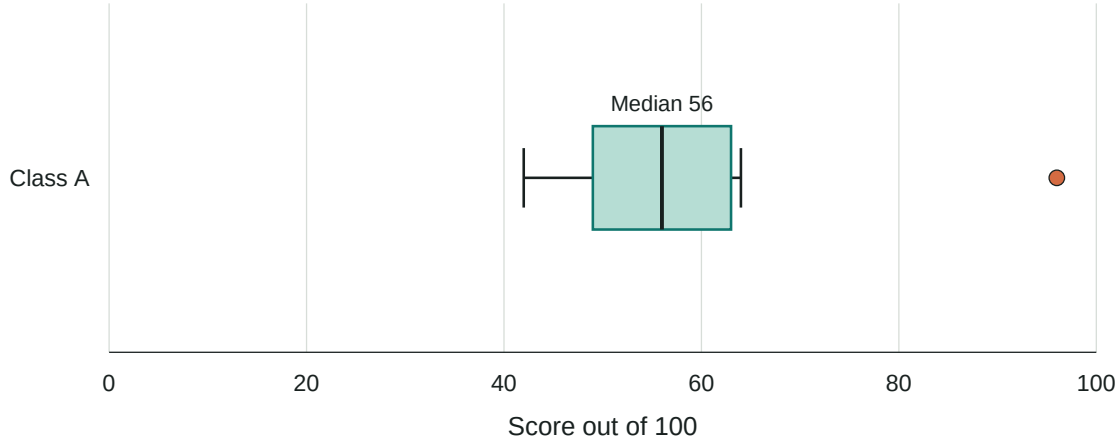
Box plots: worked examples

Name: _____ Class: _____ Date: _____

A box plot summarises a numerical dataset using its median, quartiles and whiskers. The box shows the middle 50% of values. In a modified box plot, observations beyond the 1.5 x IQR fences appear as separate potential outliers.

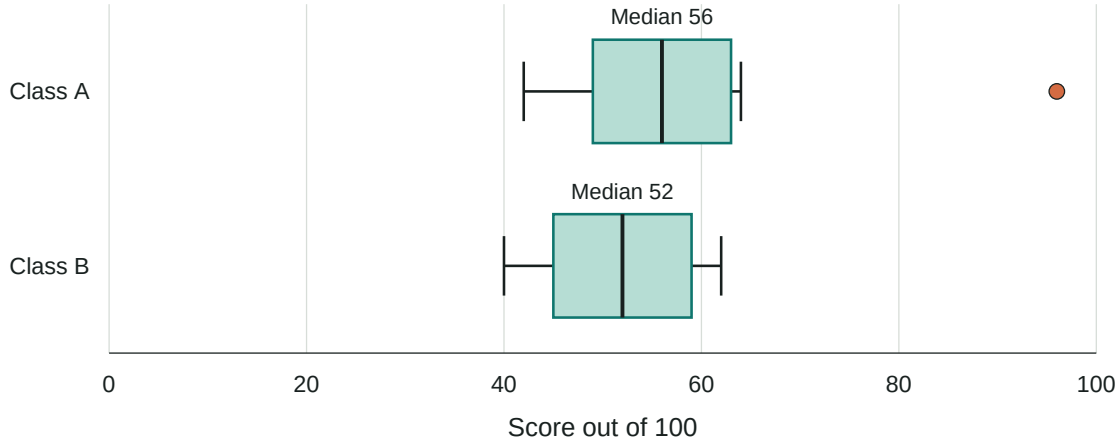
Read one class's scores



These nine fictional scores are out of 100. They are already sorted: 42, 48, 50, 52, 56, 60, 62, 64, 96.

Quartile method: exclusive median of halves; outlier fences: Q1 - 1.5 x IQR and Q3 + 1.5 x IQR.

Compare two classes fairly



A separate fictional class has scores 40, 44, 46, 48, 52, 56, 58, 60, 62. Both groups use the same assessment and the same horizontal scale.

Quartile method: exclusive median of halves; outlier fences: Q1 - 1.5 x IQR and Q3 + 1.5 x IQR.

Original fictional data. Full explanations and copyable datasets: chartmaker.tools/lessons/how-to-read-a-box-plot

Five practice questions

Name: _____ Class: _____

1. What is the median score for Class A? Explain how to locate it in the raw data.

2. Calculate Class A's IQR using the stated quartile method.

3. Is 96 a potential outlier in Class A? Show the upper-fence calculation.

4. Which class has the higher median, and which has the larger IQR?

5. Why does Class A's upper whisker stop at 64 instead of 84 or 96?

Teacher answers and working

How to Read a Box Plot: Worked Examples and Practice Questions

Keep this page separate when handing out student pages 1-2.

Question 1

56. There are nine sorted values, so the fifth value is the median.

Question 2

Q1 = 49 and Q3 = 63, so IQR = 63 - 49 = 14 points.

Question 3

Yes. The upper fence is 63 + 1.5 x 14 = 84. Since 96 > 84, it is a potential outlier.

Question 4

Class A has the higher median, 56 versus 52. Neither has a larger IQR: both are 14.

Question 5

64 is the largest observed value within the upper fence. 84 is only a calculated cutoff; 96 is outside it and is drawn separately.

Teaching notes

Calling the upper whisker the maximum when a separate outlier is present.

Comparing boxes drawn on different scales without checking the axes.

Treating a potential outlier as an automatic data-entry error.

All data is fictional. Accept equivalent notation and explanations. Encourage students to show calculations, units and the conventions used.