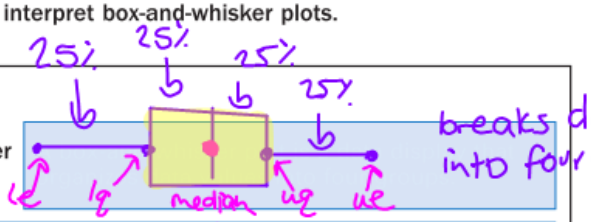
11.2 Box-and-Whisker Plots

Goal: Make and interpret box-and-whisker plots.

Vocabulary

Box-and-whisker plot:



breaks data into four groups

Lower quartile: lq

median of the lower half (middle)

Upper quartile: uq

median of the upper half

Lower extreme: le

smallest #

Upper extreme: ue

largest #

Interquartile range:

the difference of the upper & lower quartiles

Example 1 *Making a Box-and-Whisker Plot*

Store Visits A supermarket manager recorded the number of store visits for the last 7 days. The data are given below.

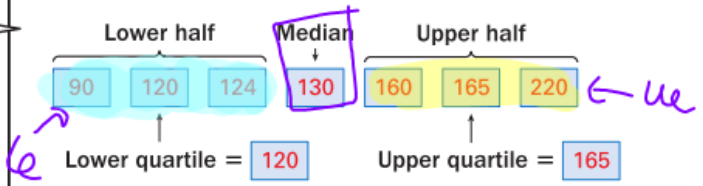
160, 124, 90, 130, 120, 165, 220

Display the data in a box-and-whisker plot.

Solution

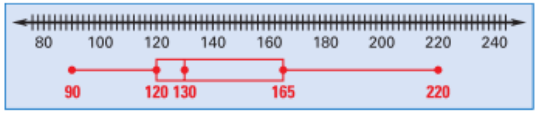
First order the data to find the median, the quartiles, and the extremes.

When a data set has an odd number of values, do not include the median in either half of the data when determining the lower and upper quartiles.



Plot the median, the quartiles, and the extremes below the number line.

Plot the extremes.

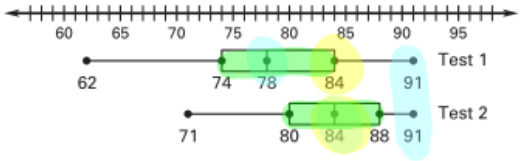


Draw a box from the lower quartile to the upper quartile. Then draw a vertical line through the median.

Draw a horizontal line (a "whisker") from the box to each of the extremes.

Example 2 *Comparing Box-and-Whisker Plots*

Test Scores The box-and-whisker plots below show a class's test scores for two tests. What conclusions can you make?



- The upper extremes are the same for both tests.
- The median for the second test is greater than the median for the first test.
- The upper quartile for the first test is the same as the median for the second test.
- The scores for the 1st test are more spread out than the scores for the 2nd test. Both the range $(91 - 62 = 29)$ and the interquartile range $(84 - 74 = 10)$ of the first test are greater than the range $(91 - 71 = 20)$ and the interquartile range $(88 - 80 = 8)$ of the second test.

Checkpoint

1. The parking cost (in dollars) at several baseball stadiums are given below.

6, 12, 7, 8, 6, 11, 10, 9, 15

Make a box-and-whisker plot of the data. About what percent of the stadiums charge \$9 or less?