

AP Statistics - Five-Number Summary, Boxplots and Comparing Distributions - Test Answer Key

Common Core AP STAT 1.8, AP STAT 1.9, HSS-ID.A.1, HSS-ID.A.2 · maths-pdf.fr/en/

Each solution includes a scoring guide. Award points for correct quartiles, a correct outlier decision, and a comparison that uses comparison words and the context of the data.

AP Statistics · Common Core State Standards: **AP STAT 1.8, AP STAT 1.9, HSS-ID.A.1, HSS-ID.A.2**

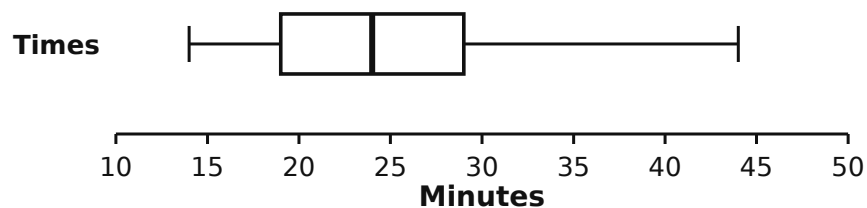
Question 1 - Five-number summary [3 pts]

Median 24; $Q_1 = 19$, $Q_3 = 29$, $IQR = 10$, upper fence $29 + 15 = 44$.

14, 19, 24, 29, 44; IQR 10; upper fence 44.

Scoring: 1 point for the five numbers, 1 point for IQR, 1 point for the fence.

Question 2 - Outlier decision [2 pts]



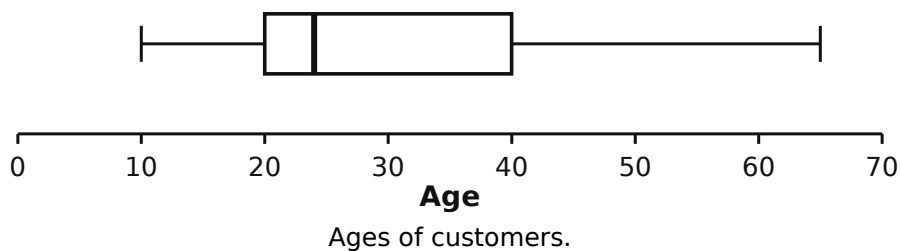
Boxplot of the delivery times.

The upper fence is $29 + 1.5(10) = 44$. The value 44 equals the fence, not beyond it.

44 is not an outlier under the 1.5 IQR rule, because it is not greater than 44.

Scoring: 1 point for the fence, 1 point for the correct conclusion.

Question 3 - Read a boxplot [3 pts]



(a) Range $65 - 10 = 55$, IQR $40 - 20 = 20$.

(b) The median is close to Q1 and the upper part is stretched, so the shape is skewed right.

(c) About 25%.

55 and 20; skewed right; about 25%.

Scoring: 1 point per part.

Question 4 - Compare two stores [4 pts]

Medians: 18 and 19. IQRs: $25 - 12 = 13$ and $22 - 15 = 7$. Ranges: 28 and 20.

The centers are about the same (median 19 items per hour at Store 2, 18 at Store 1), but Store 1 is more variable (IQR 13 compared with 7, range 28 compared with 20).

Scoring: 1 point for each median, 1 point for IQR comparison, 1 point for a sentence with comparison words and context.

Question 5 - Percent in a section [2 pts]

Between Q1 and Q3: 50% of 200 = 100. Above the median: 50% = 100.

100 and 100.

Scoring: 1 point each.

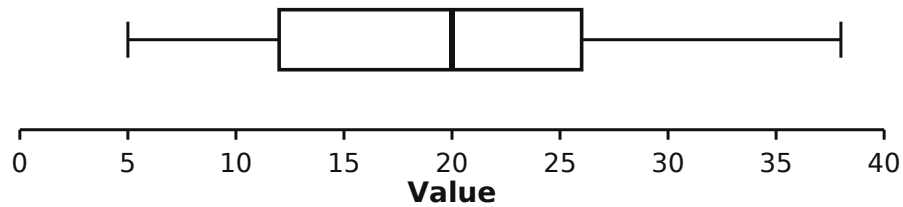
Question 6 - Find a quartile [2 pts]

$Q_3 = 30 + 14 = 44$. Upper fence: $44 + 21 = 65$.

$Q_3 = 44$; fence = 65.

Scoring: 1 point each.

Question 7 - Draw a boxplot [2 pts]



Boxplot of the summary.

$IQR = 26 - 12 = 14$. Fences are $12 - 21 = -9$ and $26 + 21 = 47$, so there are no outliers.

IQR 14; no outliers.

Scoring: 1 point for a correct boxplot, 1 point for IQR 14.

Question 8 - Limits of a boxplot [2 pts]

A boxplot cannot show the number of peaks or gaps.

It hides bimodality or gaps; a histogram or dotplot shows them.

Scoring: 1 point for the feature, 1 point for a suitable graph.

Total

20 points