

AP Statistics - Five-Number Summary, Boxplots and Comparing Distributions - Worksheet

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

Name: _____ Class: _____ Date: ____/____/____

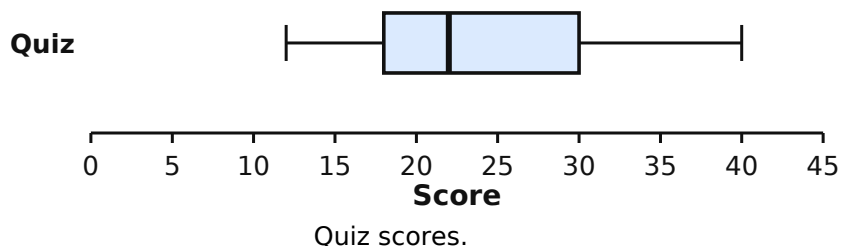
These 20 problems practice AP Statistics topics 1.8 and 1.9. You will compute five-number summaries, find outliers with the 1.5 IQR rule, draw and read boxplots, and write comparisons of two distributions in context.

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

Exercise 1 - Five-number summary

Eleven runners' times (minutes) in a 5K: 22, 25, 27, 30, 31, 34, 36, 38, 41, 45, 60. Find the five-number summary.

Exercise 2 - Read a boxplot



Find (a) the median, (b) the range, (c) the IQR, and (d) the percent of scores between 18 and 30.

Exercise 3 - Draw a boxplot

A data set has minimum 4, Q1 9, median 13, Q3 20, and maximum 31. Check for outliers and draw the boxplot.

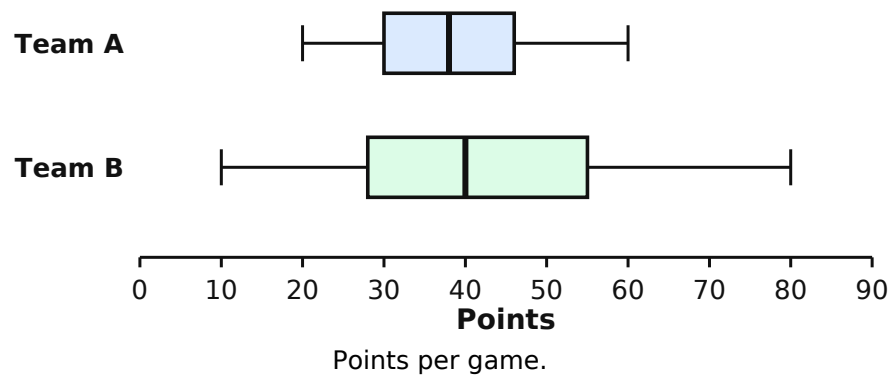
Exercise 4 - Outliers and whiskers

Eleven daily sales (hundreds of dollars) are 6, 8, 9, 10, 11, 12, 13, 14, 15, 16, 35. Find any outliers and say where the upper whisker ends.

Exercise 5 - Quarters of the data

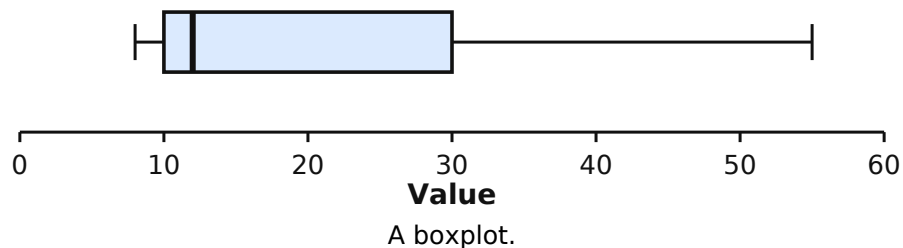
A boxplot summarizes 48 students' reading times. About how many students are in each of these parts: below Q1, between Q1 and the median, between the median and Q3, above Q3?

Exercise 6 - Compare in context



The boxplots show points per game for two teams. Compare the center and spread.

Exercise 7 - Skew from a boxplot



A boxplot has $Q1 = 10$, median = 12, $Q3 = 30$, minimum 8, maximum 55. Describe the likely shape and explain.

Exercise 8 - Which has more spread?

Class 1 has IQR 14 and range 40. Class 2 has IQR 9 and range 52. Which class has more variability? Explain which measure is more reliable.

Exercise 9 - Limits of a boxplot

Two data sets have identical boxplots. Does this mean their histograms are identical? Explain.

Exercise 10 - Percent above Q3

The 75th percentile of 120 exam scores is 84. About how many students scored above 84, and about how many scored between the median 72 and 84?

Exercise 11 - Build two boxplots

Homework minutes for two classes of 10 students. Class 1: 14, 16, 17, 19, 20, 22, 23, 25, 26, 40. Class 2: 15, 18, 19, 21, 22, 23, 24, 26, 28, 30. Find both five-number summaries and any outliers.

Exercise 12 - Overlapping boxes

The boxes for two groups overlap, but the medians differ by 3. Does this prove the groups differ? Explain.

Exercise 13 - Find a missing quartile

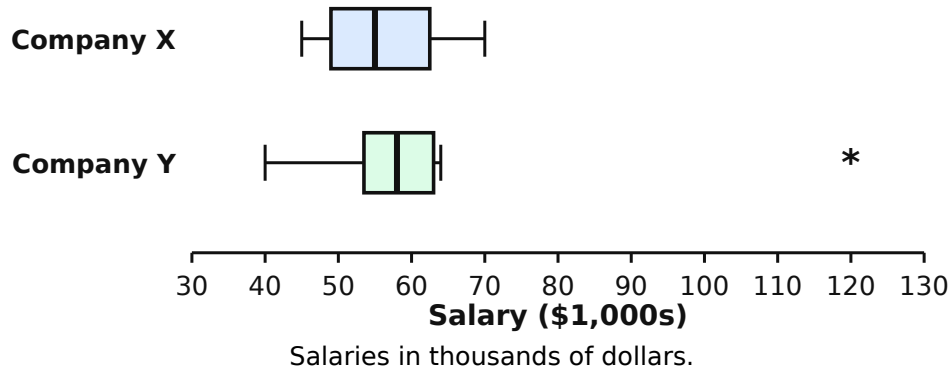
The IQR of a data set is 18 and Q3 is 52. Find Q1 and the fences.

Exercise 14 - Delivery times



A pizza shop records delivery times (minutes): 18, 20, 22, 25, 25, 27, 29, 33, 34, 38, 41, 70. Find the five-number summary, decide whether 70 is an outlier, and describe the shape.

Exercise 15 - Salaries at two companies



Compare the two salary distributions.

Exercise 16 - Fix the comparison

A student writes: "Class A has a median of 72 and Class B has a median of 78." Rewrite this into a good comparison sentence and add a spread comparison given IQR 10 for A and 18 for B.

Exercise 17 - Percentiles from the box

Maya scored 84 on a test. The five-number summary for the class is 51, 68, 76, 83, 97. In which quarter of the class does her score fall?

Exercise 18 - Multi-step

After a recount, the maximum score 97 in the previous problem is corrected to 90. Does the five-number summary change? Which statistics stay the same, and does the range change?

Exercise 19 - Median position

Boxplot A has $Q1 = 22$, median = 30, $Q3 = 38$ with whiskers 10 and 50. Boxplot B has $Q1 = 22$, median = 25, $Q3 = 50$ with whiskers 10 and 90. Describe the shape of each.

Exercise 20 - Interpret the IQR

The scores on a quiz have $Q1 = 61$ and $Q3 = 79$. Interpret the IQR in context.