

Comparing Two Data Sets with Variability

Grade 7 math · Worksheet · Standards: 7.SP.B.3, 7.SP.B.4

Name: _____ Date: _____ Class: _____

These 20 problems compare two data distributions using dot plots, box plots, the mean, the median, the mean absolute deviation and the interquartile range. Standards 7.SP.B.3 and 7.SP.B.4 are the focus.

Problems 1 to 7 review the basic statistics. Problems 8 to 14 use plots and quartiles. Problems 15 to 20 are multi-step comparisons set in real situations.

Standards: 7.SP.B.3, 7.SP.B.4 · **Level:** Grade 7

Problem 1 Find the mean (easy)

Five students recorded the minutes they read last night: 12, 15, 9, 14 and 10. Find the mean.

Problem 2 Median and range (easy)

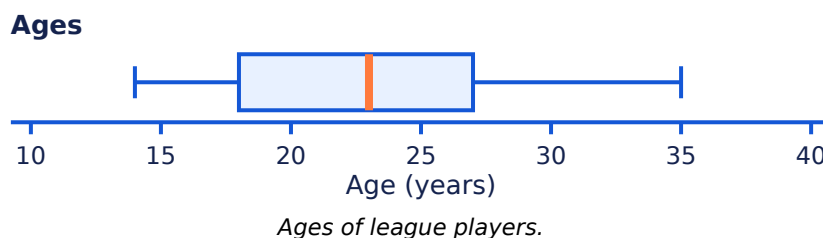
A hiking club logged these trail lengths in miles: 22, 18, 25, 30, 17, 20, 28. Find the median and the range.

Problem 3 Mean absolute deviation (easy)

Find the mean absolute deviation of 5, 9, 7, 7.

Problem 4 Read a box plot (easy)

The box plot shows the ages of the players in a youth league. Find the median, the IQR and the range.



Problem 5 Compare two means (easy)

Class A has a mean quiz score of 78 and Class B has a mean of 84, and the spreads are similar. Which class has the higher typical score, and by how many points?

Problem 6 Which set is more spread out (easy)

Set P is 3, 4, 5, 6, 7 and Set Q is 1, 3, 5, 7, 9. Both have a mean of 5. Which set has the greater range and which is more spread out?

Problem 7 Gap in MADs (easy)

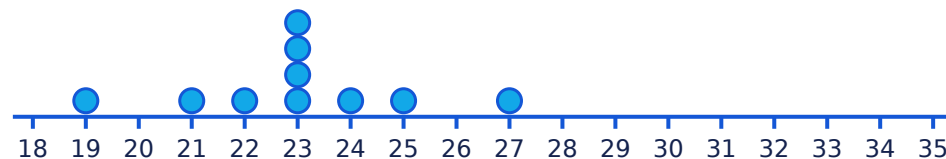
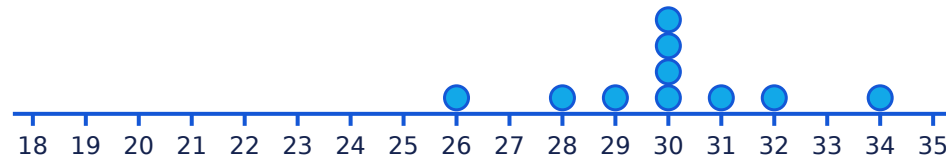
Two data sets have means of 15 and 21 and each has a MAD of 2. The difference of the means is how many times the MAD?

Problem 8 MAD of eight values (medium)

Find the mean and the mean absolute deviation of 12, 15, 9, 14, 10, 12, 16, 8.

Problem 9 Seedling heights (medium)

Ten seedlings were grown with Fertilizer P and ten with Fertilizer Q. The dot plots show heights in cm. Find each mean and the MAD of Fertilizer P (Fertilizer Q has the same shape). Then express the difference of the means as a multiple of the MAD.

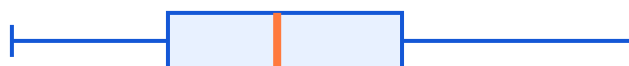
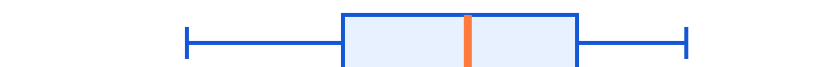
Fertilizer P**Fertilizer Q**

Height (cm)

Heights of seedlings.

Problem 10 Two classes in box plots (medium)

The box plots show test scores for two classes. Find each median and IQR, then express the difference of the medians as a multiple of the IQR.

Class A**Class B**

Score

Scores for two classes.

Problem 11 Small gap (medium)

Runners in Group 1 have a mean of 48 minutes and Group 2 has a mean of 52 minutes. Each group has a MAD of 6 minutes. Find the difference of the means as a multiple of the MAD and decide whether the groups differ noticeably.

Problem 12 Quartiles from a list (medium)

Find the median, Q1, Q3 and IQR of 5, 7, 8, 8, 10, 12, 13, 15, 16, 20, 21.

Problem 13 Build a box plot (medium)

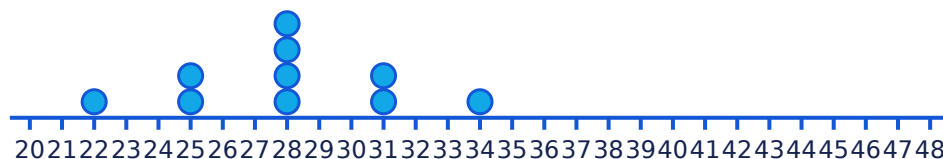
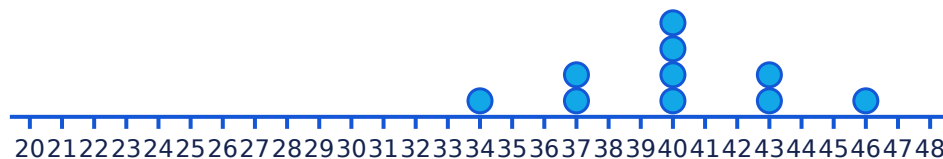
Draw a box plot for a data set with least value 3, Q1 6, median 9, Q3 12 and greatest value 18. Then find the range and the IQR.

Problem 14 Check a statement (medium)

Set A has a mean of 30 and a MAD of 4. Set B has a mean of 36 and a MAD of 4. Maya says that the mean of Set B is about 1.5 MADs greater than the mean of Set A. Is she correct?

Problem 15 Pizza delivery times (hard)

Two pizza shops tracked ten delivery times in minutes, shown in the dot plots. Shop Y has the same spread as Shop X. Find both means, the MAD of Shop X, the difference of the means as a multiple of the MAD, and say which shop is faster.

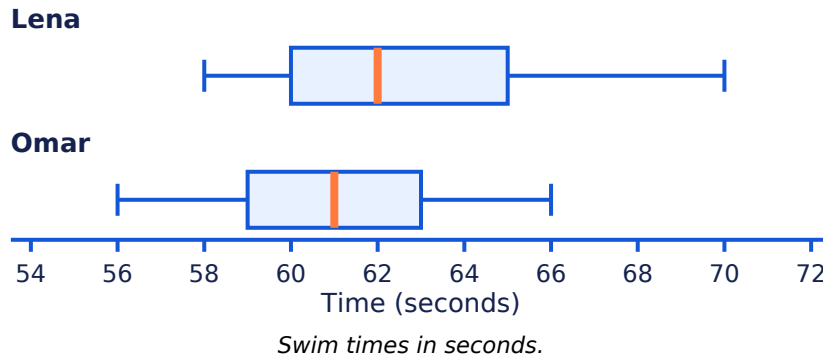
Shop X**Shop Y**

Delivery time (minutes)

Delivery times for two shops.

Problem 16 Swim times (hard)

The box plots show 50-meter swim times, in seconds, for Lena and Omar. Find each median and IQR. Compare the medians as a multiple of the larger IQR, and decide whether one swimmer is clearly faster.



Problem 17 Two weeks of weather (hard)

Daily high temperatures in °F for one week in May were 66, 70, 72, 68, 74, 70. The next week they were 72, 76, 78, 74, 80, 76. Find each mean and each MAD, then say how many MADs the means differ.

Problem 18 Quiz scores of two classes (hard)

Quiz scores out of 10 for Class P were 5, 6, 7, 7, 8, 9. Class Q scored 6, 7, 8, 8, 9, 10. Find the means and MADs. Is the difference between the classes large compared with the variability?

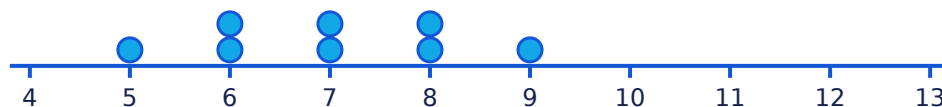
Problem 19 Medians and spread (hard)

Group 1 has a minimum of 30, Q1 of 34, median of 40, Q3 of 46 and maximum of 52. Group 2 has a minimum of 44, Q1 of 50, median of 58, Q3 of 64 and maximum of 70. Find both IQRs and the difference of the medians as a multiple of the IQR of Group 1.

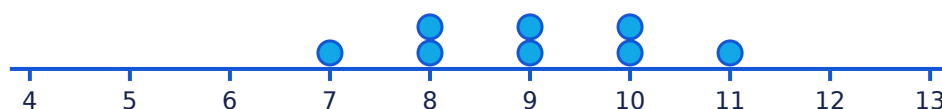
Problem 20 Tomato plots (hard)

Weights of tomatoes in ounces from two garden plots are shown. Plot 1 has the same shape as Plot 2. Find the mean and MAD of each plot and the difference of the means as a multiple of the MAD. Is the difference noticeable?

Plot 1



Plot 2



Weight (ounces)

Tomato weights from two plots.