

# Grade 7 - Comparing Two Populations - Worksheet

Common Core 7.SP.B.3, 7.SP.B.4 · maths-pdf.fr/en/

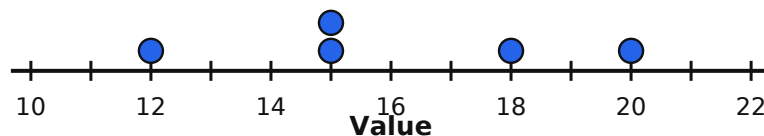
Name: \_\_\_\_\_ Class: \_\_\_\_\_ Date: \_\_\_\_/\_\_\_\_/\_\_\_\_

These 20 problems practice comparing two data distributions with dot plots and box plots using mean, median, mean absolute deviation, variability, and overlap (Common Core 7.SP.B.3-4). They start with the basic skill, move to different kinds of numbers and multistep work, and end with six word problems set in everyday situations such as shopping, sports, and travel.

Show every step of your work, and use the answer key only after you have tried each problem.

**Grade 7** · Common Core State Standards: **7.SP.B.3, 7.SP.B.4**

## Exercise 1 - Mean and median

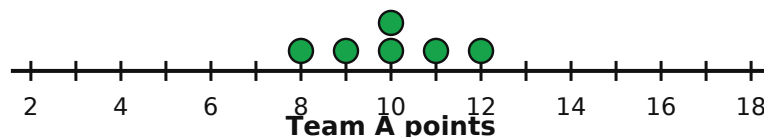


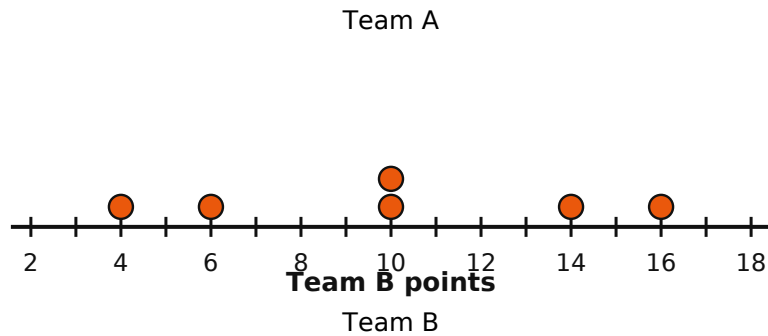
Find the mean and the median of 12, 15, 15, 18, 20.

## Exercise 2 - MAD

Find the mean absolute deviation of 4, 6, 8, 10, 12.

## Exercise 3 - Same mean, different spread





The dot plots show points scored by two teams in six games. Find the mean and MAD of each team and compare.

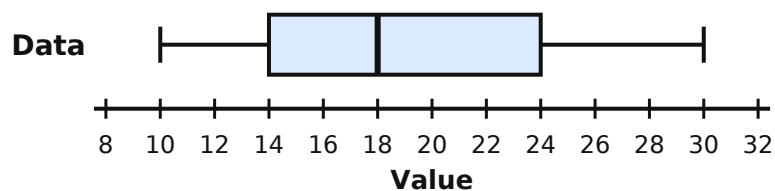
#### Exercise 4 - Difference in MADs

|         | Mean | MAD |
|---------|------|-----|
| Class A | 72   | 4   |
| Class B | 80   | 4   |

Class summaries.

Class A has a mean quiz score of 72 with a MAD of 4. Class B has a mean score of 80 with the same MAD. Express the difference of the means as a multiple of the MAD.

#### Exercise 5 - Read a box plot



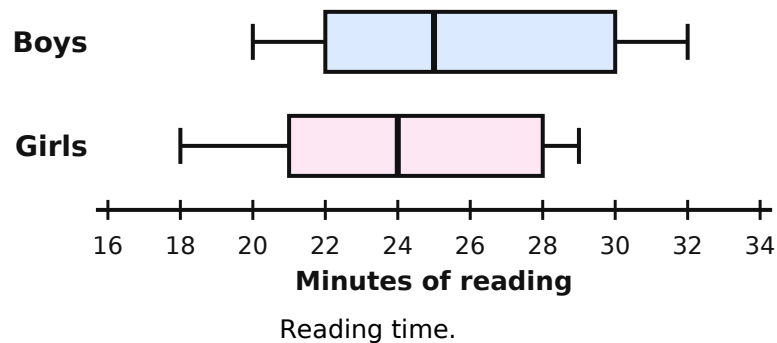
A box plot.

The box plot has minimum 10, Q1 14, median 18, Q3 24, and maximum 30. Find the range and the IQR.

#### Exercise 6 - Quartiles

Find Q1, the median, Q3, and the IQR of 3, 5, 7, 8, 9, 11, 13, 15.

## Exercise 7 - Compare medians

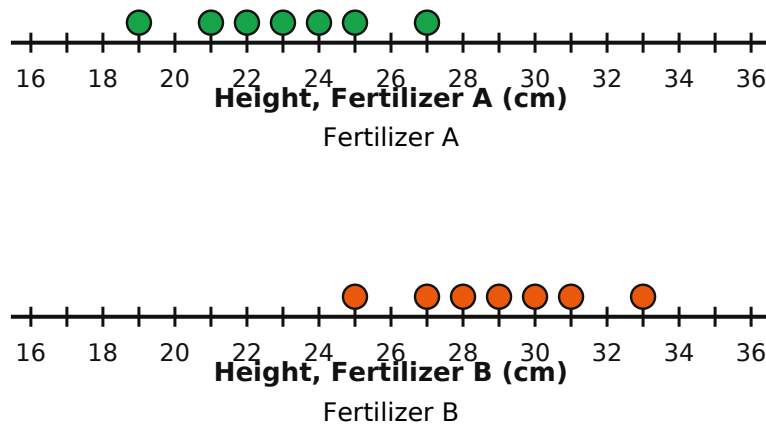


The box plots show nightly reading time in minutes for 7 boys and 7 girls. Compare the medians and the ranges.

## Exercise 8 - Mean of two samples

Two random samples of seventh graders give these heart rates per minute: Sample 1: 62, 65, 70, 70, 71, 75, 80. Sample 2: 55, 60, 63, 66, 68, 70, 72. Find each mean and the difference.

## Exercise 9 - Plant growth



Plant heights after 4 weeks are shown. Find the mean and MAD of each group and express the difference of the means in MADs.

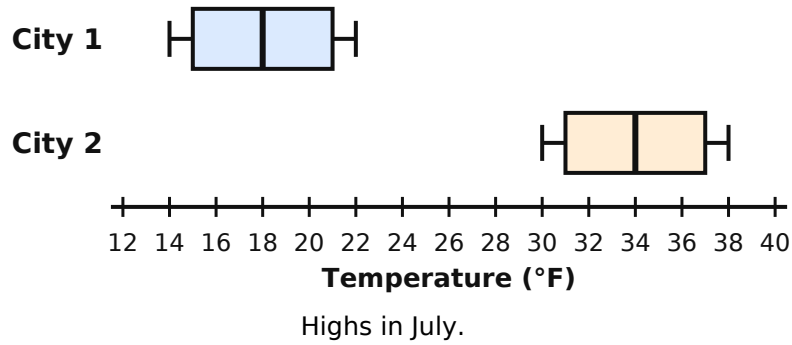
## Exercise 10 - Outlier

Daily commute times in minutes are 10, 12, 15, 15, 18, 20, 45. Find the mean and the median. Which better describes a typical commute, and why?

### Exercise 11 - Test scores

Two students each took five tests. Ava: 88, 90, 92, 94, 96. Leo: 76, 84, 100, 100, 100. Find each mean and MAD. Who is more consistent?

### Exercise 12 - Two cities



The box plots show daily highs for two cities. The two boxes do not overlap. Find the difference of the medians and explain what the lack of overlap suggests.

### Exercise 13 - Basketball

Players on two teams scored: Team Red 4, 6, 6, 7, 8, 8, 9 and Team Blue 2, 5, 6, 8, 9, 10, 12. Find the median and the range of each team.

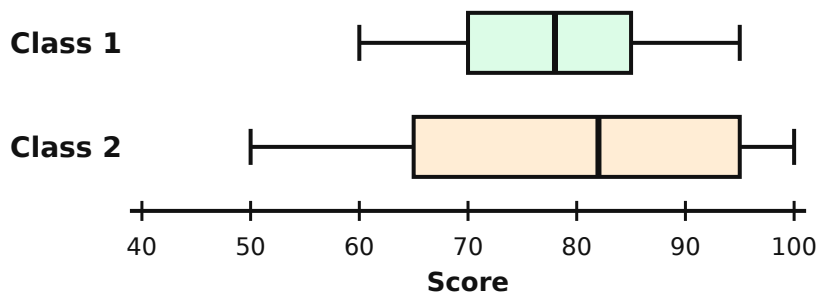
### Exercise 14 - Sleep

Seventh graders' sleep hours: Group 1: 8, 9, 9, 10, 10, 10, 11. Group 2: 6, 8, 9, 10, 11, 12, 14. Find the median and the range of each group. Which group has more variability?

### Exercise 15 - Reading speed

Sofia's class reads 120, 135, 140, 150, 155 words per minute, and Noah's class reads 100, 110, 140, 170, 180. Find the mean of each class and the difference of the means.

### Exercise 16 - Quartile comparison



Two classes (box plots).

Class 1 has  $Q1 = 70$ , median = 78,  $Q3 = 85$ . Class 2 has  $Q1 = 65$ , median = 82,  $Q3 = 95$ . Find each IQR and tell which class has the greater median and the greater variability.

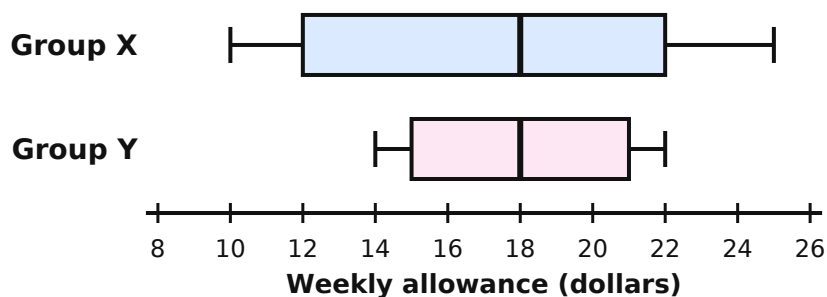
### Exercise 17 - Inference

A random sample of 20 seventh graders and a random sample of 20 eighth graders are asked how many text messages they send a day. The medians are 40 and 70, and both samples have an IQR of about 20. What can you say about the two populations?

### Exercise 18 - Bus times

Route A takes 20, 22, 25, 25, 28 minutes; Route B takes 18, 25, 25, 30, 32 minutes. Find the mean and MAD for each route and tell which route is more reliable.

### Exercise 19 - Allowance



Weekly allowance in two groups of seven students.

The box plots show the weekly allowance of two groups of seven students. Find each median and IQR, and compare.

### Exercise 20 - Heights of grades

Random samples of sixth graders and seventh graders have mean heights of 58 inches and 62 inches. Both samples have a MAD of 2 inches. Express the difference of the means as a

multiple of the MAD, and tell what you can infer.