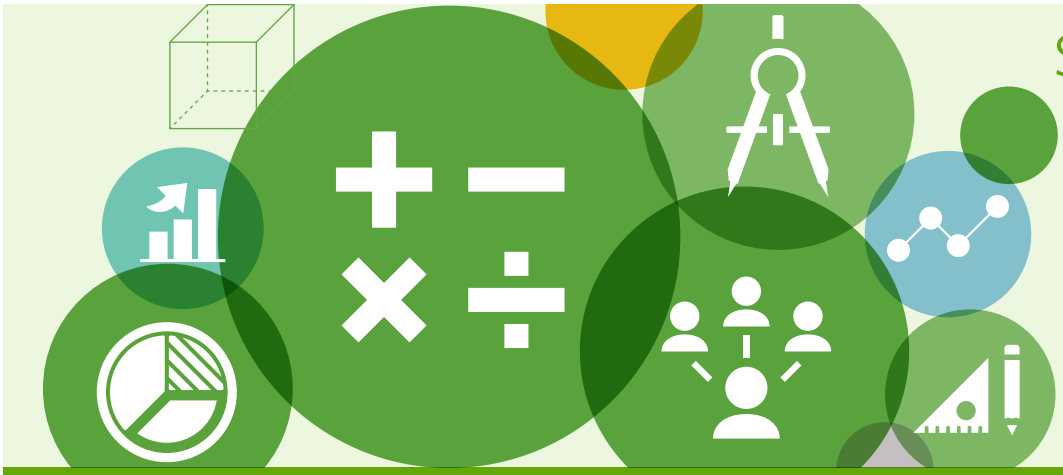


STUDENT VERSION

INTERPRETING BOX PLOTS – DATA ON SPORTING GOODS BY STATE

Activity Item

The following item is part of this activity and appears at the end of this student version.

- Item 1: Group A and Group B Data Strips

Student Learning Objectives

- I will be able to create and interpret a box plot of census data.
- I will be able to display numerical data on a number line.
- I will be able to identify measures of center (median) and variability (interquartile range).

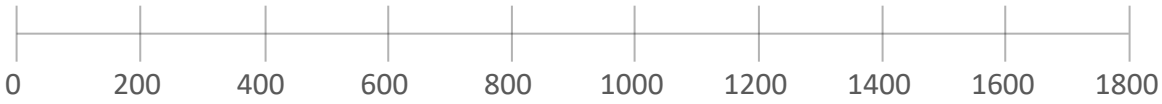
NAME:_____ DATE:_____

1. Follow these steps to help you fill in the blanks for the 5-number summary and to create a box plot, adding a title and horizontal axis label, of the data in **Item 1: Group A and Group B Data Strips**:

   Fold a strip in half to find the median. Then fold it in half again to find the lower quartile (Q_1) and upper quartile (Q_3). If these folds are ever between two numbers, average those two numbers to calculate the value you need, rounding to one decimal place.

   Group A (excludes California)

   Minimum = _____ Q_1 = _____Median = _____ Q_3 = _____ Maximum = _____



Group B (includes California)

Minimum = _____ Q_1 = _____ Median = _____ Q_3 = _____ Maximum = _____



2. Why must the data be in numerical order before you start folding your paper to find the 5-number summary?

3. Which quarters of the data sets have the most states?
   - **Group A:**
   - **Group B:**

4. Calculate the range for each quarter by filling in the following table (showing your work).

Quarter and Its Range Formula	Group A	Group B
First (lowest) = Q_1 - minimum		
Second = median - Q_1		
Third = Q_3 - median		
Fourth (highest) = maximum - Q_3		

5. The interquartile range (IQR) is the difference between Q_3 and Q_1. Find the IQR for both data sets (showing your work):
   - **Group A:**
   - **Group B:**

6. Three things to examine in a data distribution are center, shape, and spread. Look at your box plot to describe those three characteristics for both sets of data in the following table.

Characteristic	Group A	Group B
Center – most of the data are centered at:		
Shape – the quarter where the data values are more spread out is:		
Spread (show your work) – the range of the data is:		

7. The data point for California is considered an outlier in this data set. Why do you think that is?

8. Describe the main differences between the box plots for Groups A and B.

9. When looking at a data distribution, it is helpful to know what pieces of the data set you can see. Which of the following values and measures does a box plot show? (Check all that apply.)

   _____ the minimum

   _____ the mean

   _____ the maximum

   _____ the seventh data point

   _____ the median

   _____ the mode

10. Now apply what you've learned to interpret the distribution of a new data set. Calculate the 5-number summary and make a box plot for these values: 4, 7, 16, 23, 27.

    Minimum = _____ Q_1 = _____ Median = _____ Q_3 = _____ Maximum = _____



11. Use what you found in question 10 to interpret the distribution of the data set.

Item 1: Group A and Group B Data Strips

Number of Sporting Goods Stores in 2021 for Each U.S. State including DC and Puerto Rico (from least to greatest)

Group A (excludes California)

State	Number of Discount Stores
District of Columbia	17
North Dakota	58
Delaware	70
Rhode Island	73
Alaska	79
South Dakota	84
Wyoming	99
West Virginia	105
Vermont	116
Hawaii	118
Nebraska	124
Mississippi	126
Maine	131
New Mexico	139
Kansas	153
New Hampshire	167
Nevada	172
Arkansas	194
Montana	194
Iowa	207
Louisiana	217
Oklahoma	217
Idaho	221
Kentucky	242
Connecticut	249
Alabama	256
Maryland	263
South Carolina	290
Utah	337
Missouri	356
Tennessee	373
Indiana	392
Oregon	416
Arizona	423
Massachusetts	435
New Jersey	447
Virginia	462
Wisconsin	465
Minnesota	471
Georgia	482
Washington	542
Illinois	595
Ohio	635
North Carolina	648
Michigan	706
Colorado	739
Pennsylvania	770
New York	965
Texas	1195
Floria	1567

Group B (includes California)

State	Number of Discount Stores
District of Columbia	17
North Dakota	58
Delaware	70
Rhode Island	73
Alaska	79
South Dakota	84
Wyoming	99
West Virginia	105
Vermont	116
Hawaii	118
Nebraska	124
Mississippi	126
Maine	131
New Mexico	139
Kansas	153
New Hampshire	167
Nevada	172
Arkansas	194
Montana	194
Iowa	207
Louisiana	217
Oklahoma	217
Idaho	221
Kentucky	242
Connecticut	249
Alabama	256
Maryland	263
South Carolina	290
Utah	337
Missouri	356
Tennessee	373
Indiana	392
Oregon	416
Arizona	423
Massachusetts	435
New Jersey	447
Virginia	462
Wisconsin	465
Minnesota	471
Georgia	482
Washington	542
Illinois	595
Ohio	635
North Carolina	648
Michigan	706
Colorado	739
Pennsylvania	770
New York	965
Texas	1195
Florida	1567
California	2174

Source: 2021 County Business Patterns, NAICS 451110