

STATCRUNCH Click on **Open StatCrunch**, then enter or open a data set. Click on **Graphics**, then select **Boxplot**. Select the column containing the data. Click on **Create Graph**.

5-Number Summary

STATDISK, Minitab, and the TI-83/84 Plus calculator provide the values of the 5-number summary. Use the same procedure given at the end of Section 3-2. Excel provides the minimum, maximum, and median, and the quartiles can be obtained by clicking on fx , selecting the function category of Statistical, and selecting QUARTILE. (In Excel 2010, select QUARTILE.INC, which is the same as QUARTILE in Excel 2003 and Excel 2007, or select the new function QUARTILE.EXC, which is supposed to be “consistent with industry best practices.”)

Outliers

To identify outliers, sort the data in order from the minimum to the maximum, then examine the minimum and maximum values to determine whether they are far away from the other data values. Here are instructions for sorting data:

STATDISK Click on **Data** and select the menu item of **Sort Data**. Click on **Sort** after making the desired choices.

MINITAB Click on **Data** and select **Sort**. Enter the column in the “Sort column(s)” box and enter that same column in the “By column” box.

EXCEL In Excel 2003, click on the “sort ascending” icon, which has the letter A stacked above the letter Z and a downward arrow. In Excel 2013, 2010, or 2007, click on **Data**, then click on the “sort ascending” icon, which has the letter A stacked above the letter Z and a downward arrow.

TI-83/84 PLUS Press **STAT** and select **SortA** (for sort in ascending order). Press **ENTER**. Enter the list to be sorted, such as L1 or a named list, then press **ENTER**.

STATCRUNCH Click on **Open StatCrunch**. Enter or open a data set. Click on **Data**, then select the menu item of **Sort columns**. Click on the column to be sorted, then click on **Sort columns**.

3-4 Basic Skills and Concepts

Statistical Literacy and Critical Thinking

1. z Scores James Madison, the fourth President of the United States, was 163 cm tall. His height converts to the z score of -2.28 when included among the heights of all presidents. Is his height above or below the mean? How many standard deviations is Madison’s height away from the mean?

2. z Scores If your score on your next statistics test is converted to a z score, which of these z scores would you prefer: -2.00 , -1.00 , 0 , 1.00 , 2.00 ? Why?

3. Boxplots Shown below is a STATDISK-generated boxplot of the amounts of money (in millions of dollars) that movies grossed (based on data from the Motion Picture Association of America). What do the displayed values of 5, 47, 104, 121, and 380 tell us?



4. Measures of Location The values of P_{50} , Q_2 , and the median are found for the net incomes reported on all individual 1040 tax forms filed last year. What do those values have in common?

z Scores. In Exercises 5–8, express all z scores with two decimal places.

5. Obama’s Net Worth As of this writing, Barack Obama is President of the United States and he has a net worth of \$3,670,505. The 17 members of the Executive Branch have a mean net worth of \$4,939,455 with a standard deviation of \$7,775,948 (based on data from opensecrets.org).

- What is the difference between President Obama’s net worth and the mean net worth of all members of the Executive Branch?
- How many standard deviations is that (the difference found in part (a))?