

CW# _____

Name: _____

Math 3 / One-Variable Data / Boxplots & Outliers

Period: A1 A2 A3 B1 B3

How many concerts have you been to?



How many concerts have you been to? We will use this data to investigate outliers and boxplots.

1. Record the data for the class here (eliminate all of the zeros from the data set).

2. List the data below in order from least to greatest. Find the following values.

Minimum = _____ Q1 = _____ Median = _____ Q3 = _____ Maximum = _____

Use the applet at www.stapplet.com to check your answers. All correct?

3. Are there outliers? Here is one way you can determine if there are really outliers:

- Calculate the IQR: _____
- Calculate $Q1 - (1.5 \times IQR)$: _____
Any number less than this is a low outlier. Any low outliers? _____
- Calculate $Q3 + (1.5 \times IQR)$: _____
Any number more than this is a high outlier. Any high outliers? _____

4. Use the applet to make a boxplot of the data and copy below. Make sure to copy down horizontal axis with the scale.

Compare the boxplot to your answers above. What do you notice?

Boxplots & Outliers

Important Ideas:

Check for Understanding:

Which is best in reducing stress?

If you are a dog lover, having your dog with you may reduce your stress level. Does having a friend with you reduce stress? To examine the effect of pets and friends in stressful situations, researchers recruited 45 women who said they were dog lovers. Fifteen women were assigned at random to each of three groups: to do a stressful task alone, with a good friend present, or with their dogs present. The stressful task was to count backward by 13s or 17s. The woman's average heart rate during the task was one measure of the effect of stress. The table below shows the data.

Pet 58 64 65 68 69 69 69 70 70 72 76 79 85 86 **99**

Friend 76 80 81 83 87 88 89 91 92 97 98 99 100 101 102

Alone 62 70 73 75 77 80 84 84 84 87 87 87 90 91 99

1. Use the rule to show that 99 is an outlier for the Pet group.

2. Use the applet to make parallel boxplots to compare the heart rates in the three groups.

3. Based on the data, does it appear that the presence of a pet or friend reduces heart rate during a stressful task? Justify your answer.