**Chapter 7 Notes -** Collecting, Displaying, Analyzing Data

**7-1 Mean, Median and Mode**

The **mode** is the data number that occurs **MOST OFTEN.** There can be more than one mode in a set of data.

The **median** is the number in the **MIDDLE**.

The **mean** is the **average**: the sum of the data divided by the number of data items.

The **range** is the **difference** between the greatest and least data value.

 An **outlier** is an **extreme** value, far from the rest of the data.

The first step in dealing with a set of data is to write them in order from LEAST to GREATEST.

|  |  |
| --- | --- |
| **Measure** | **Most Useful When** |
| **mean** | The data are fairly evenly spread apart |
| **median** | There is an outlier |
| **mode** | Many data points of one value are necessary, like in an election |

Ex: Find the mean, median, mode, range and outliers of the following data set:

22, 8, 9, 4, 9, 11, 4, 5, 3, 12, 6, 7, 10

Mean:\_\_\_\_\_\_\_\_\_\_\_\_\_\_

Median:\_\_\_\_\_\_\_\_\_\_\_\_

Mode:\_\_\_\_\_\_\_\_\_\_\_\_\_

Range:\_\_\_\_\_\_\_\_\_\_\_\_\_

Outliers:\_\_\_\_\_\_\_\_\_\_\_\_

**7-2 Box – and – Whisker Plots**

1. Order data from east to greatest
2. Find the **least, greatest, median, lower quartile, upper quartile** of the data set. Lower/Upper quartiles are MIDWAY between the median and the end data points.
3. Draw a number line and mark the points from #2 on it
4. Draw a box from the lower to upper quartile.
5. Draw a line through the median.
6. Draw the “whiskers” to the least and greatest values.

Ex: Make a box and whisker plot for this data set:

 26, 17, 21, 23, 19, 28, 17, 20, 29

Comparing box and whisker plots:

**7-3 Populations and Samples**

When you gather information about a group,

 The entire group is called the **population,**

A small part of the group is called a **sample.**

If the sample members are chosen at random, they are called a **random sample.** If you use a sample that is readily available, it is called a **convenience sample.** A **biased sample** does not fairly represent the entire population.

 If you have statistical data about a sample, you can use proportional relationships to predict data about the whole population.

 EX: A random sample of 50 elk shows that 8 of them are infected with lyme disease. How many elk would you predict have the disease from a population of 4,500?

 Ex: A sales rep asks the first 10 customers through the door at a car dealership if they would buy car mats for their car. Explain if this question is biased or not.