

Algebra II

Section 12.3 - Analyzing Data

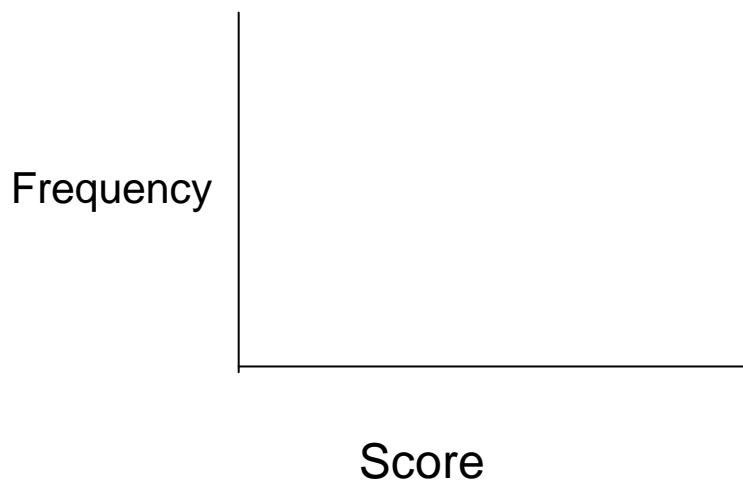
- Obj:** -To find the mean, median, and mode of a set of data
-To construct a histogram from a frequency distribution
-To construct a Box-and-Whisker plot for data

Use the following set of quiz scores for all problems:

7, 8, 5, 6, 6, 7, 9, 2, 5, 5, 6, 6, 7, 8, 8, 9, 6, 9, 10, 10, 6, 6

1. Construct a **frequency distribution.**
2. Construct a **histogram.**

Score x	Frequency f



3. Find the **mean**

$$\frac{\text{sum of all data}}{\text{\# of items}}$$

$$\bar{x} =$$

4. Find the **median**

- put data in order
- median is the middle
- if there are two middles,
take the average

5. Find the **mode**

- the item that occurs most often

6. Find the **range**

(the difference between the largest and the smallest).

Range = Largest value – smallest value

7. Given the data 91, 95, 88, 85, 90, 97, 94, 100, 81

a) find the **Quartiles** Q_1 , Q_2 , Q_3

- Q_2 is the median of the whole set of data:

- Q_1 is the median of the lower part:

- Q_3 is the median of the upper part:

b) find the **interquartile range**

$$Q_3 - Q_1 =$$

c) Draw the **box-and-whisker plot**

Definition:

A **percentile** is a number from 0 to 100 that you can associate with x to indicate the percent of the data that are less than or equal to x .

e.g. If you are at the 83rd percentile on your SAT, then 83% of the other students' scores are below your score.

8. Find the values at the 30th and 65th percentiles for the values: 54 98 45 87 98 64 21 61 71 82 93 65 62 98
87 24 65 97 31 47

-order the values:

a) find the 30th percentiles

-of the 20 values, 30th percentile would be the lowest 30%

$$.30(20) = 6$$

find 30% of 20 students

- find the 6th from the bottom:

b) find the 65th percentile

Definition: An **outlier** is an item of data with a value substantially different from the rest of the data. (this is an approximate definition)