Good morning!

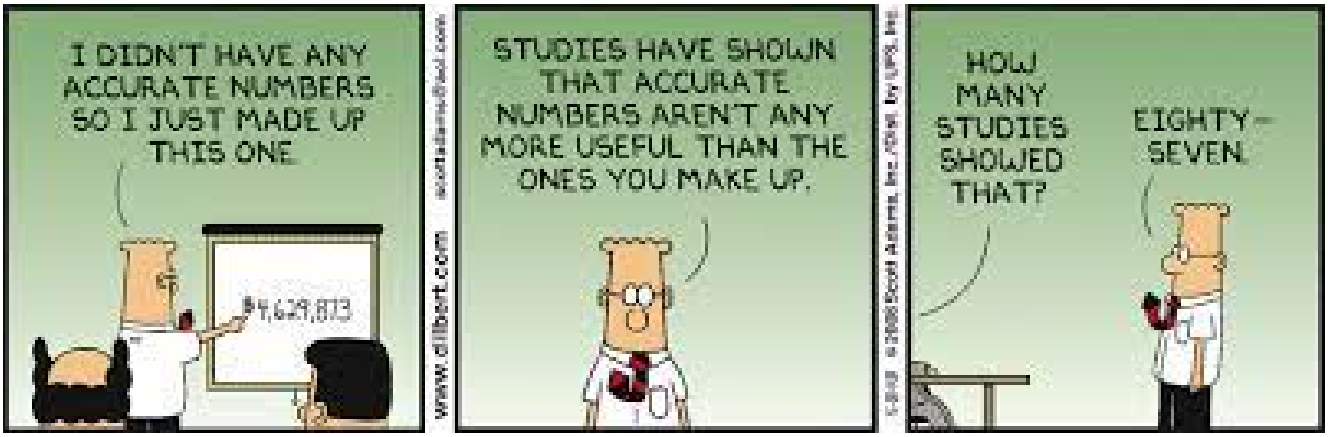
1. "Here"
2. Begin Unit 4: Describing Data
3. Upload Practice p. 6-7 to CTLS

Algebra 1

Unit 4

Describing Data

Monday	Tuesday	Wednesday	Thursday	Friday
			April 15th	April 16th
			Summary Statistics	
April 19th	April 20th	April 21st	April 22nd	April 23rd
Data Displays Data Distributions	Comparing Data **Unit 4 Quiz** **(due at midnight)**	Two Way Frequency Tables	Two Way Frequency Tables	
April 26th	April 27th	April 28th		
Linear Regression	Review **Unit 4 Test** **(opens)**	**Unit 4 Test** **(due at midnight)**		


I DIDN'T HAVE ANY ACCURATE NUMBERS SO I JUST MADE UP THIS ONE.
$4,629,873
www.dilbert.com scottadams@aol.com
STUDIES HAVE SHOWN THAT ACCURATE NUMBERS AREN'T ANY MORE USEFUL THAN THE ONES YOU MAKE UP.
HOW MANY STUDIES SHOWED THAT?
EIGHTY-SEVEN.

numbers categories likes/unlikes yes/no "words"

Summary Statistics

In Unit 4, we will be discussing data – both quantitative and categorical. First, we will begin with quantitative data. Quantitative data is data that is expressed numerically.

Some examples of quantitative data are:

height weight speed temperature
shoe size length distance

When given a list of data, there are several different calculations we can give to describe the data.

The Five Number Summary

The five number summary is a numerical summary of your data. It has five parts:

1. Minimum: Lowest number 0%
2. Lower Quartile: 25% of data (median of lower half)
3. Median: "middle" 50% of data
4. Upper Quartile: 75% of data (median of upper half)
5. Maximum: Greatest number 100%

least to greatest

Practice: Find the five number summary for each of the following data sets.
If you are calculating by hand, the first thing you must do is order your data from least to greatest

Q2 median

~~10~~ ~~18~~ ~~14~~ ~~13~~ ~~17~~ ~~12~~ ~~12~~ ~~18~~ ~~14~~
10 12 12 13 14 14 17 18 18

min ↗ max ↖

$\frac{12+12}{2} = 12$ Q1

$\frac{17+18}{2} = 17.5$ Q3

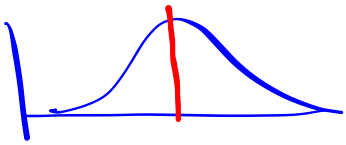
~~20~~ ~~28~~ ~~24~~ ~~26~~ ~~33~~ ~~25~~ ~~29~~ ~~27~~ ~~24~~ ~~26~~
20 24 24 25 26 26 27 28 29 33

min ↗ max ↖

Med

$\frac{26+26}{2} = 26$

Q1 Q3



Measures of Center

Mean: average of values, affected by outlier and skew

Median: middle of data, robust to outliers and skew

Mode: "most" occurred data point

Measures of Spread

Range: max − min Spread of values from lowest value to greatest value

Interquartile Range: IQR Spread of values from Q_1 to Q_3. $Q_3 - Q_1$

Mean Absolute Deviation: MAD

average positive difference of every value subtracted from mean

Below is a list of mens heights. Find the five number summary, mean, mode, range, and interquartile range for this data.

71	63	67	69	76	76	73	68
71	75	69	62	69	73	64	72

Ordered data: 62 63 64 67 68 69 69 69 71 71 72 73 73 75 76 76

67.5 70 16

Minimum: 62

Median: 70

Maximum: 76

Mode: 69

Interquartile Range: 73 − 67.5 $Q_3 - Q_1 = 5.5$

Lower Quartile: 67.5

Upper Quartile: 73

Mean: 69.875

Range: 76 − 62 max − min = 14

$$\frac{3+5+5+395+4+1+1+1+3+2}{10} = 42$$

Summary Statistics – Using Calculator

To calculate summary statistics on your graphing calculator, follow these steps.

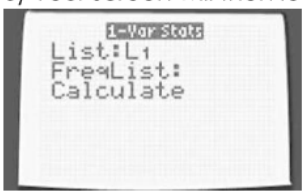
1) Press STAT, then ENTER.

2) To clear L_1, press ↑ to the go to the very top, CLEAR, ↓.
★NEVER PRESS DELETE TO CLEAR THE LIST.★

3) Type your data into L_1. Be sure to hit ENTER after each number. You do NOT need to order your data first.
★ALWAYS TYPE YOUR DATA INTO L1.★

4) Once all of your data is entered, press STAT, then → and ENTER.

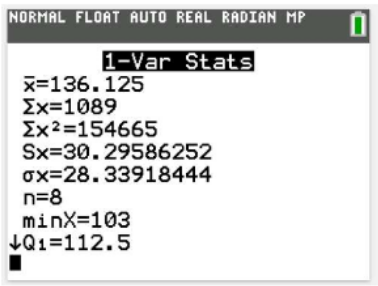
5) Your screen will then look like one of the following:



Make sure it says List: L_1 and that the FreqList is blank. Press ENTER until screen changes.

Press ENTER. Your calculator defaults to using L_1.

6) Your screen will then change to this:



Press ↓ and ↑ to scroll down and up to find the information that you need.

$\bar{x}$ = mean

min = minimum

$Q1$ = lower quartile

med = median

$Q3$ = upper quartile

max = maximum

You will have to calculate the range and interquartile range.

Using your calculator, find the summary statistics listed below for the following data set.

Below is a list of hours slept on school nights for a sample of high school students. Round the nearest tenth if necessary.

9 6 6 5 7 12 7 5 7 6 8.5 11 9 6.5

Minimum		Lower Quartile		Median		Upper Quartile	
Maximum		Average		Range		Interquartile Range	

Summary Statistics – Practice

For the following data sets, find the five number summary, mean, range, and interquartile range. Round the nearest hundredth if needed.

1) Academy Awards

1, 2, 3, 4, 4, 5, 5, 7, 8, 8, 9, 10, 11, 11, 11

Movie	# Awards	Movie	# Awards
The Bridge on the River Kwai	7	Lord of the Rings: Return of the King	11
On the Waterfront	8	The French Connection	5
Ordinary People	4	All Quiet on the Western Front	2
A Beautiful Mind	4	My Fair Lady	8
Crash	3	Ben-Hur	11
The Deer Hunter	5	The English Patient	9
Mutiny on the Bounty	1	Titanic	11
West Side Story	10		

5.6
4.6
3.6
2.6
2.6
1.6
1.6
.4
1.4
1.4
2.4
3.4
4.4
4.4
4.4

44.4 / 15 = 2.96 → MAD

Minimum	1	Lower Quartile	4	Median	7	Upper Quartile	10
Maximum	11	Average	6.6	Range	11 - 1 = 10	Interquartile Range	10 - 4 = 6

2) Age at First Job (in years)

15 17 13 14 18 14 15 16
20 21 15 17 17 15 13

Minimum		Lower Quartile		Median		Upper Quartile	
Maximum		Average		Range		Interquartile Range	

3) Test Scores (points)

50 39 50 49 47 55 44 39 41 48 48 53 52 39

Minimum		Lower Quartile		Median		Upper Quartile	
Maximum		Average		Range		Interquartile Range	

4) Life Expectancy (in years)

State	Years	State	Years	State	Years	State	Years
New Jersey	82.4	Ohio	81	Louisiana	78.2	Massachusetts	83.8
Florida	81.7	Tennessee	77.9	Texas	80.3	New Mexico	77.7
District of Columbia	77.9	South Carolina	78.3	West Virginia	74.1	Minnesota	80.3
South Dakota	74.3	New York	82.5	Mississippi	74.2		

Minimum		Lower Quartile		Median		Upper Quartile	
Maximum		Average		Range		Interquartile Range	

5) Mountain Heights

Name	Feet	Name	Feet	Name	Feet	Name	Feet
Saser Kangri II E	24,649	Annapurna Dakshin	23,684	Rimo I	24,229	Diran	23,839
Chogolisa	25,148	Sia Kangri	24,350	Saser Kangri III	24,590	Singhi Kangri	23,629
Malubiting	24,469	Mamostong Kangri	24,659	Teram Kangri III	24,219	Baintha Brakk	23,901
Jongsong Peak	24,482	Kamet	25,446	Annapurna I	26,545	Ngadi Chuli	25,823
Annapurna II	26,040						

Minimum		Lower Quartile		Median		Upper Quartile	
Maximum		Average		Range		Interquartile Range	

6) Number of Runs in a Baseball Game

12 8 19 4 5 4 12 3 1 8 5 6 7 9

Minimum		Lower Quartile		Median		Upper Quartile	
Maximum		Average		Range		Interquartile Range	