MTH1W – Unit 9: Statistics

Name: Mr. Hagen

Homework #9.2: Measure of Spread: Standard Deviation

Date: _____

1. Ten people from work decide to have lunch together. They all share how much they make in a year.

a) Calculate the mean, median, mode and standard deviation from their given salaries in thousands of dollars.

Name	Annual Income
Raffy	$33
Jessie	$38
Corin	$39
Paul	$42
Kat	$46
Luigi	$49
Carl	$52
Susan	$60
Miguel	$68
Jeff	$79

Mean: $\frac{506}{10} = 50.6$

Median: 47.5

Mode: none

Data	Subtract mean: 50.6	Square	Average the squares	Square root
33	-17.6	309.76	$\frac{1900.4}{10}$	$\sqrt{190.4}$
38	-12.6	158.76		
39	-11.6	134.56		
42	-8.6	73.96	$= 190.04$	$= 13.8$
46	-4.6	21.16		
49	-1.6	2.56		
52	1.4	1.96		
60	9.4	88.36		
68	17.4	302.76		
79	28.4	806.56		

b) Calculate the normal range, then fill in the chart with the ten names.

Low: $50.6 - 13.8 = 36.8$

High: $50.6 + 13.8 = 64.4$

Below Normal	Normal	Above Normal
Raffy	Jessie, Corin, Paul, Kat, Luigi, Carl, Susan.	Miguel, Jeff

1,000,000,000

c) Jeff gets a text and needs to leave lunch, but then of all people, Elon Musk joins. He earns at least $1 billion in a year (more, but just being conservative). Recalculate the mean and median. What happened? Which number best describes the "average" of this data set?

New Average: $\frac{1000467}{10} = 100046.7$ or $\$100,046,700$ one hundred million....

New Median: 47.5 or $\$47,500$

d) You do not need to recalculate the standard deviation (unless you want to), but what do you think would happen to the standard deviation or the normal range?

2. In the table below are the ages of the past ten Prime Ministers of Canada when they were first elected.

Prime Minister	Age
Justin Trudeau	43
Stephen Harper	46
Paul Martin	65
Jean Chretien	59
Kim Campbell	46
Brian Mulroney	45
John Turner	55
Joseph Clark	39
Pierre Trudeau	48
Lester B. Pearson	65

Mean = $\frac{511}{10}$: 51.1

a) What is a normal age range for a Prime Minister?

Data	Subtract mean: 51.1	Square	Average the squares	Square root
43	-8.1	65.61	$\frac{774.9}{10}$	$\sqrt{77.49}$
46	-5.1	26.01		
65	13.9	193.21	= 77.49	= 8.8
59	7.9	62.41		
46	-5.1	26.01		
45	-6.1	37.21		
55	3.9	15.21		
39	-12.1	146.41		
48	-3.1	9.61		
65	13.9	193.21		

b) Look up a list of Prime Ministers. Which of the Prime Ministers not in the above list are above normal age?

Low Normal: 51.1 − 8.8 = 42.3

High Normal: 51.1 + 8.8 = 59.9

3. Make your own data set that has a mean of 10, median of 8, and a mode of 12. You decide how many numbers are in the set!