GRADE 12 ESSENTIAL
UNIT C – STATISTICS
MEAN, MEDIAN, MODE, RANGE

Name: _____
Date: _____-

For the following data give the mean, median, mode and range. Round all answers to nearest 0.01 if necessary unless otherwise indicated.
Show all work

a. {1, 2, 3, 4, 5}

{x, 2, 3, 4, 5}

Mean: $\bar{x} = \frac{\Sigma x}{n} = 15/5 = 3$

Median: $\tilde{x} = 3$

Mode(s) (if any): "Nil"

Range: $x_{max} - x_{min}$ $= 5 - 1 = (4)$

b. {1, 2, 3, 4, 5, 6}

Mean:

Median:

Mode(s) (if any):

Range:

c.
{1, 11, 2, 10, 9, 8, 3, 4, 5, 7, 1, 6, 12}

Mean:

Median:

Mode(s) (if any):

Range:

d.
{1, 11, 2, 10, 9, 8, 3, 4, 5, 7, 1, 6, 12, 1}

Mean:

Median:

Mode(s) (if any):

Range:

Show method MrE

e. {2, 5, 8, 18, 14, 8, 12, 3, 1, 1, 1, 3, 4, 4, 8, 8, 7, 6, 5, 8, ***145***, 8}

Mean: Median: Mode(s) (if any): Range:

Determine the statistics if that 'outlier' ***145*** were not there?
Without the 'outlier':

Mean: Median: Mode(s) (if any): Range:

f. {2, 2, 2, 2, 2, 2} A *uniform* set

Mean:
Median:

Mode(s) (if any):

Range:

g. {80, 100, 90, 80, 100}

Mean:
Median:

Mode(s) (if any):

Range:

h. {2.1, 3.2, 4.5, 4.5, 6.7, 3.2, 2.1, 4.5, 25.7}

Mean:

Median:

Mode(s) (if any):

Range:

i. {15.6, 13.4, 19.2, 19.2, 23.2, 15.6}

Mean:

Median:

Mode(s) (if any):

Range:

Show work! Show method MrF

j. Cassandra did a survey of thirty girls' (sample size 'n' = 30) shoe sizes and got:

6	**6**	**8**	**9**	**8**	**7**
6	**8**	**9**	**9**	**8**	**9**
5	**4**	**5**	**6**	**7**	**5**
8	**4**	**2**	**8**	**7**	**4**
4	**1**	**8**	**10**	**7**	**6**

Determine the mean, median, and mode of the girls' shoe sizes.

Mean: Median: Mode(s) (if any)

l. Monique has to baby sit her eight young cousins this weekend! She wants to get a sense of what type of activities she will need to plan, what toys to assemble. She wants to know the mean, median, mode and range of their ages:

{ 2, 2, 8, 12, 4, 4, 7, 4}

Mean: Median: Mode(s) (if any) Range:

m. Which age is throwing off the mean (ie: what is the outlier data)? _____

If the 'outlier' was given $15 and sent to the movies with a friend and the friend's mom, determine the new:

Mean: Median: Mode(s) (if any) Range:

Notice the ages are all closer now to a central value, how close data is to a central number is a measure of its 'spread' or 'dispersion' or 'variability' or 'deviation'. We do not study that in Essential Math but I may show you regardless.

n. **Meaning of Mean**. I like to think of mean as the equal share that everyone would get if they shared equally, if everyone was 'average'. If Cassandra had $12, Monique had $7, and Casey had $41 and they all threw their money in a hat and then got an equal share that would be the mean.

Mean (or equal share):

Median:

p. Determine the mean, median, mode, and range of the following:

4	1	2	3	3	3	2	4	5
2	1	3	2	2	3	4	3	1
4	3	4	2	5	1	4	1	1
2	1	2	4	4	3	3	5	3
3	5	1	1	1	5	2	3	2
4	5	4	2	3	1	2	3	5
4	3	4	4	3	3	4	2	2
1	5	1	4	2	4	1	3	1
1	4	2	4	4	4	4	4	3
3	3	3	3	3	4	3	1	3

(It is actually pretty easy if you think about it)(ask for the statistics calculation template!)

Mean: Median: Mode(s) (if any) Range:

q. make a list of 5 numbers where the mean equals the median

r. make a list of 5 numbers where the mean is more than the median

s. make a list of 5 numbers where the mean is less than the median

ANSWERS

a. 3, 3, Nil, 4 b. 3,5, 3.5, nil, 5
c. Σx = 79, n = 13, 6.08, 6, 1, 11
d. Σx = 80, n = 14, mean = 5.71, med = 5.5, mode =1 ; range: 11
e. n= 22, Σx = 279, mean = 12.68, med = 6.5; mode = 8; range 144
n = 21; Σx = 134; mean 6.38, med = 6, mode = 8
f. 2, 2, 2, 0
g. mean:90, med 90, modes: 80 and 100; range =20
h. n= 9; Σx = 56.5; mean 6.28; med 4.5 mode 4.5 ; range 23.6
i. n = 6 , Σx = 106.2; mean 17.7; med 17.4 ; mode 19.2 *and* 15.6; range 9.8
j. n= 30; Σx = 194; mean 6.47; med 7; mode: 8
l. 5.38; 4; 4; *10* m. 4.43; 4; 4; 6
n. mean: 20; median12
p. 2.878, 3, 3, 4

CENTRAL TENDENCY TEMPLATE FOR LARGE SAMPLES

A frequency data table to record and calculate large samples

	Frequency Data Table (to calculate statistics of large samples) 'acc' means accumulated; running sum of frequency				
x Value of variable being measured	Tally ticks (if doing a survey)	**f** frequency each value happens [count]	acc	**f*x** ***f times x***	
					Mode; most frequent x: _____
					Mean: $\frac{\Sigma(f * x)}{n} =$
					Median Halfway up the data acc; in between two values if n is EVEN. _____
		sum: **n =** _____		sum $\Sigma all\ the\ f * x's$ _____	

*A quick way to find the middle place of a string of numbers is to take **(n + 1)/2**. That will tell you where the middle place would fall. If the result is a half value then you then you are in between the two places. So in a string of 83 numbers the middle number would be in the 42nd place. In a string of an even number of numbers however, say 180, the middle place would be in the 181÷ 2 place or the '*ninety and a halfth*' place; so you would need find the mean of the two numbers either side; so the mean of the two numbers in the 90th and the 91st place.