

NAME: _____

DATE: 01/24/2018

ASSIGNMENT: Statistical Transformation Effect on Central Tendency & Dispersion
DIRECTIONS: Imagine you are a NASA data scientist and forgot to convert all the Centigrade data into Fahrenheit? How does this change our data calculations?

Step 1: Determine mean, median, mode, standard deviation, range, and IQR for the temperature data below. *[source: NASA GISS Surface Temperature Analysis]*

Tokyo (C°):

1880	1900	1920	1940	1960	1980	2000	2014
14.9	14.9	15.3	15.4	16.1	15.6	16.8	16.7

Step 2: Determine mean, median, mode, standard deviation, range, and IQR for the temperature data below in F°. *[source: your mathematical calculations]*

$$F^{\circ} = C^{\circ} * 1.80 + 32$$

Tokyo (F°):

1880	1900	1920	1940	1960	1980	2000	2014
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Step 3:

- a) Generally speaking, explain which operations affect mean and mode and how these operations impact standard deviation differently.

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2.)

[Maximum mark: 5]

A data set has a mean of 20 and a standard deviation of 6.

(a) Each value in the data set has 10 added to it. Write down the value of

(i) the new mean;

(ii) the new standard deviation.

[2 marks]

(b) Each value in the original data set is multiplied by 10.

(i) Write down the value of the new mean.

(ii) Find the value of the new variance.

[3 marks]

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Answer key (show all calculations and inputs to receive full marks)

1.) Here's what we want:

If we multiply and add numbers to our data, how does this impact standard deviation, mean, and mode?

Does multiplication impact all three? Does addition impact all three? Describe how the operations of multiplication and addition impact those three data descriptors.

2.) tutorials (you can do these all in your head)