Effect on Mean of Multiplying by a Constant

Question 1.

Calculate the mean of the data: 8, 7, 6, 5, 4 manually. Type in your answer below.

Question 2.

Enter the data 8, 7, 6, 5, 4 in the yellow boxes in the GeoGebra file, then click "Raw Data Calculations".

What is the mean of the data?

Question 3.

Enter the number 5 in the purple box in the GeoGebra file. Click "Modified Data Calculations".

How is the modified dataset different to the raw dataset?

( ) Each element is 5 times bigger

( ) There is no difference

( ) There are 5 more elements in the modified dataset

Question 4.

What is the mean of the modified dataset?

Question 5.

How is the mean of the modified dataset different to the mean of the raw dataset?

( ) It's no different

( ) The mean of the modified dataset is less than the mean of the raw dataset

( ) The mean of the modified dataset is 5 times the mean of the raw dataset

Question 6.

What effect has multiplying each element in the raw dataset by the number 5 had on its mean?

( ) Its mean is 5 times bigger.

( ) Its mean is the same.

( ) Its mean has decreased.

Question 7.

Replace the number 5 in the purple box with a different number of your choosing. Do you notice any relationship between this number and how the mean of the dataset changes?

( ) The mean is this number of times bigger.

( ) The mean decreases by this amount each time.

( ) There is no relationship.

Question 8.

If you were to replace the number in the purple box with the number 20, can you predict how the mean of the modified dataset would be different to the mean of the raw dataset?

Check your prediction using the GeoGebra file.

( ) The mean of the modified dataset will be 20 times bigger than that of the raw dataset.

( ) There will be no change.

( ) There will be a decrease in the mean.

Question 9.

Can you now describe the effect that multiplying each element by a constant value has on the mean of the dataset?

( ) The mean is this number of times bigger.

( ) The mean is unchanged.

( ) The mean decreases by this amount.

Question 10.

The mean of 100 data items is 55. Each item is multiplied by 10. What will the new mean be?

Question 11.

Each item in a dataset is multiplied by 4. The mean of this dataset is now 36. What was the mean of the original dataset?

Question 12.

A set of data has 5 items. Each item in a dataset is multiplied by 20. What effect will this have on the mean of the data?

( ) The mean be 20 times bigger.

( ) The mean will stay the same.

( ) The mean will increase by a factor of 5.

Question 13.

A set of data has 5 items. Each item in a dataset is multiplied by 20. What effect will this have on the sum of the data?

( ) The sum will be 20 times bigger.

( ) The sum will not change.

( ) The sum will be 5 times bigger.

Question 14.

A dataset has 10 elements in it. The mean of this dataset is 15. The sum of this dataset is 150.

Each element in the dataset is multiplied by 7. What will the new mean be?

Question 15.

A dataset has 10 elements in it. The mean of this dataset is 15. The sum of this dataset is 150.

Each element in the dataset is multiplied by 7. What will the new sum be?