Critical Thinking

Here is some information about the heights of several different dog breeds.

Breed	Average Height (in centimeters)	Breed	Average Height (in centimeters)
Collie	63	Labrador Retriever	58
Doberman	66	Chihuahua	20
Poodle	31	Cocker Spaniel	34
German Shepherd	63	Bull Mastiff	65
Beagle	36	Shih Tzu	24
Golden Retriever	59		

1. Organize the data into two groups—breeds shorter than 40 cm and breeds taller than 40 cm. What is the mean, median, and mode of each group?

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_____

2. What happens to the mean, median, and mode of the tallest group if you include the shortest breed's height as an outlier?

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3. What generalization can you make about the effect on the median and the mean if the outlier is less than the other data?

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4. What happens to the mean, median, and mode of the shortest group if you include the tallest breed's height as an outlier?

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5. What generalization can you make about the effect on the median and the mean if the outlier is greater than the other data?

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_____

Name _____

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1. Organize the data into two groups—breeds shorter than 40 cm and breeds taller than 40 cm. What is the mean, median, and mode of each group?

Less than 40: mean, 29; median, 31; mode, no mode;

Greater than 40: mean, 62.33; median 63; mode, 63.

2. What happens to the mean, median, and mode of the tallest group if you include the shortest breed's height as an outlier?

Median and mode remain the same. Mean (56.29) is less

than all heights other than the shortest breed's height.

3. What generalization can you make about the effect on the median and the mean if the outlier is less than the other data?

The mean will not be as great if the outlier is included.

_____

4. What happens to the mean, median, and mode of the shortest group if you include the tallest breed's height as an outlier?

No mode. Median increases from 31 to 32.5. Mean (35.17)

is greater than 4 of the 6 items in the data set.

5. What generalization can you make about the effect on the median and the mean if the outlier is greater than the other data?

Mean will be greater if the outlier is included. In many

cases, most of the data will be less than the mean. The

median is affected only slightly; however, it will usually increase.

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