

Content and Language Objectives:

Students will ask and answer questions about how to calculate mean, median, mode and identify outliers of a data set. Students will be able to explain the effects of outliers on mean and median after:

- a.) creating a graphic organizer for mean, median and mode
- b.) working in pairs to discuss the differences between mean, median and mode

WARM-UP

Find the minimum maximum and range of the following data sets

- 1.) 2,5,1,9,12,16,5,8,20,13,6,7,21,20
max: 21
min: 1
Range: 20
- 2.) 23,24,30,1,29,22,31,31,24,26,30,12,15
max: 31
min: 1
Range: 30

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MEAN	The average value of a data set. To find it you add all the #'s in the data set and then divide the sum by the amount of values in the set.
MEDIAN	The middle # in a data set and is found by put the data in order from least to greatest the find middle#. If 2#s find the mean.
MODE	The most frequent # in a data set. 1 mode, no mode, or more than one mode 1, 2, 2, 3, 5, 5, 7, 9, 11 mode: 2, 5
OUTLIER	A number that doesn't fit with the rest of the data.

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~~36~~, ~~93~~, ~~59~~, ~~48~~, ~~25~~, ~~97~~, ~~40~~, ~~51~~, ~~45~~, ~~87~~, ~~24~~

Mean 55 Median 48 Mode no mode

$$\frac{605}{11} = 55$$

~~21~~, ~~25~~, ~~36~~, ~~40~~, ~~45~~, ~~48~~, ~~51~~, ~~59~~, ~~87~~, ~~93~~, ~~97~~

49, 49, 27, 67, 62, 21, 78, 92, 41

Mean 54 Median 49 Mode 49

24, 42, 12, 29, 29, 80, 83, 75, 32, 70, 19

Mean 45 Median 32 Mode 29

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An outlier is datum that is far outside the rest of the data.

For example, consider the data:

3, 145, 187, 162, 139, 155, 191, 180.

'3' is the outlier of the data.

The rest of the data lie in the hundred zone.

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Question 1.

Identify any outliers in each set of data.

a) 12, 18, 23, 11, 26, 17, 290, 32

b) 1005, 2099, 1873, 2354, 4012, 124564, 2978, 6001

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Question 2.

a) Determine the mean, median, and mode for the following data.

12, 34, 51, 32, 89, 45, 56, 13

b) Determine the mean, median, and mode for the following data.

12, 34, 51, 32, 89, 45, 678, 13

c) Examine the two sets of data. One of the sets has an outlier. Identify it.

d) Which measure of central tendency has changed a lot because of the outlier? Explain why that happens if an outlier is present.

50, 50, 53, 54, 59, 64, 64, 67, 68, 72, 74, 75, 75, 75, 75, 76, 78

mean: _____ median: _____ mode: 75

outliers: None