

Measures of Center

A **measure of center** is a measure that represents the center, or typical value, of a data set. The *mean*, *median*, and *mode* are measures of center.

Mean	Median	Mode
The mean of a numerical data set is the sum of the data divided by the number of data values. The symbol \bar{x} represents the mean. It is read as “x-bar.”	The median of a numerical data set is the middle number when the values are written in numerical order. When a data set has an even number of values, the median is the mean of the two middle values.	The mode of a data set is the value or values that occur most often. There may be one mode, no mode, or more than one mode. Mode is the only measure of center that can represent a nonnumerical data set.

Example 1 The table shows the sizes (in kilobytes) of emails in your inbox.

- Find the mean, median, and model of the email sizes.
- Which measure of center best represent the data? Explain.

Email Sizes (kilobytes)				
1.5	13	1.8	1.9	9.1
2.4	2.8	9.2	2	11
5.6	5	4.9	5.5	11

a. **Mean** $\bar{x} = \frac{1.5 + 13 + 1.8 + \dots + 5.5 + 11}{15} = 5.78$

Median 1.5, 1.8, 1.9, 2, 2.4, 2.8, 4.9, **5**, 5.5, 5.6, 9.1, 9.2, 11, 11, 13
↑
middle value

Mode 1.5, 1.8, 1.9, 2, 2.4, 2.8, 4.9, 5, 5.5, 5.6, 9.1, 9.2, 11, 11, 13 11 occurs most often.

► The mean is 5.78 kilobytes, the median is 5 kilobytes, and the mode is 11 kilobytes.

- The median best represents the data. The mean and mode are both greater than most of the data.

Practice

Check your answers at BigIdeasMath.com.

Find the mean, median, and mode of the data set.

- 35, 44, 40, 35, 54, 50
mean: 43; median: 42; mode: 35
- 14, 8, 10, 12, 13, 18, 6, 11, 16
mean: 12; median: 12; mode: none
- 834, 654, 711, 590, 578, 861, 525
mean: 679; median: 654; mode: none
- 4, 8, 5, 6, 4, 5, 4, 2, 6, 5, 4, 3, 5, 4, 6, 5
mean: 4.75; median: 5; modes: 4, 5
- 0.6, 1.4, 0.7, 2, 1.5, 1.2, 1.4, 0.9, 0.7, 1.8
mean: 1.22; median: 1.3; modes: 0.7, 1.4
- $7\frac{3}{4}$, $8\frac{1}{2}$, 8, $6\frac{3}{4}$, $7\frac{3}{4}$, 8, $8\frac{1}{4}$, 8
mean: $7\frac{7}{8}$; median: 8; mode: 8

- APARTMENTS** The table shows the monthly rental prices for apartments in a city. Find the mean, median, and mode of the prices. Which measure of center best represents the data? Explain.
mean: \$626.25; median: \$522.50; mode: none; The mean best represents the data. The mean is greater than most of the data and there is no mode.

Monthly Rental Prices			
\$535	\$625	\$850	\$480
\$895	\$420	\$500	\$485
\$1175	\$490	\$510	\$550