

11-5 Appropriate Measures

Key Concept

Using Mean, Median, and Mode

Measure	Most appropriate when ...
Mean	<ul style="list-style-type: none">the data have <u>no</u> extreme values.
Median	<ul style="list-style-type: none">the data <u>have extreme values</u>.there are <u>no big gaps</u> in the middle of the data
Mode	<ul style="list-style-type: none">data have many <u>repeated numbers</u>.

- Sometimes one measure of center is better than another to use to summarize the data.

Selecting the Appropriate Measure Example:

The prices of several DVDs are ~~\$22.50~~, ~~\$21.95~~, ~~\$25.00~~, ~~\$21.95~~, ~~\$19.95~~, ~~\$21.95~~, and ~~\$21.50~~. Which measure of center best represents the data? Justify your selection. Then find the measure of center.

Numerical order: 19.95, 21.50, 21.95, 21.95, 21.95, 22.50, 25.00

Any extreme values?

YES

NO

Any gaps in the middle?

YES

NO

Repeated numbers?

YES

NO

Mode

Justify your selection:

There are repeated numbers, so mode best represents the data.

Measure of center value:

\$ 21.95

Outliers and Appropriate Measure Example:

The prices of some athletic shoes are shown in the table to the right.

Price of Athletic Shoes			
\$51.95	\$47.50	\$46.50	\$48.50
\$52.95	\$78.95	\$39.95	

Identify the outlier: \$78.95

Numerical order: \$39.95, 46.50, 47.50, 48.50, 51.95, 52.95, 78.95

Without the outlier	With the outlier
Mean: $\begin{array}{r} 39.95 \\ 46.50 \\ 47.50 \\ 48.50 \\ 51.95 \\ + 52.95 \\ \hline \end{array} \frac{\$287.35}{6} = \$47.89$	Mean: 39.95 46.50 47.50 48.50 51.95 52.95 $+ 78.95$ $\frac{366.3}{7} = \$52.33$
Median: $\frac{47.50 + 48.50}{2} = \48.00	Median: $\$48.50$
Mode: no mode	Mode: no mode

Which measure of center best describes the data with and without the outlier?

with - Median

without - Median