An **OUTLIER** is a data value that is much greater or much less than the other data values

Ex. What is the outlier?
1, 5, 4, 2, 6, 25, 3, 2

outlier

An outlier can affect the **mean** of a group of data.

Example: Using the data below, find the outlier and tell how it affects the mean. Round to the nearest tenth.

EX: 9 10 12 13 8 9 ~~31~~ 9

Outlier: 31 ★

Mean without outlier: 10 ★

Mean with outlier: 12.625 -> 12.6 ★★★★★

How does the outlier affect the mean?   Increase by 2.6

The outlier is higher, so it causes the mean to be higher

★★★★★★★★★★★★★★★★★★★★★★★★★★★★

Find an outlier for each group of data below and tell how it affects the mean. Round to the nearest tenth.

B) 1 , 17.5 , 18 , 19.5 , 16 , 17.5

O - 1

Mean w/   14.9

mean w/out — 17.7

Affect — Decrease
                2.8

Sometimes one measure of central tendency is a better indicator of the data than the others.
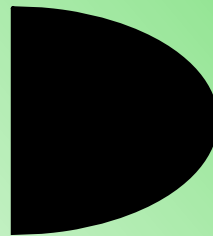
For example, consider the eight hourly wage rates show below.

Hourly	Wages
$5.50	$6.20
$5.50	$6.30
$5.50	$8.00
$6.00	$17.00

Mode: $5.50
Mean: $7.50
Median: $6.10

The **Mode** is the lowest wage listed. It does not describe the data well.

The **Mean** is above the hourly wage of all but two. It is influenced by the outlier, $17.

The **Median** is the best measure of c.t. since it's not influenced by the size of the outlier.

Hourly	Wages
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$5.50	$6.30
$5.50	$8.00
$6.00	$17.00

Mode: $5.50
Mean: $7.50
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How to Determine the Best Measure "favorite"

*When determining the most frequently chosen item, or when the data is not numerical, use the Mode _____.

*When the data has no outliers, use the Mean _____.

*When an outlier may significantly influence the mean, use the Median _____.

Which measure of c.t. best describes the situation? Explain.

1. The favorite movies of students in the eighth grade.

   Mode; since the data is not numerical

2. The daily temperatures during a week in July.

   Mean, since the daily temps. in July are likely to not have an outlier.

3. The distance students in your class travel to school.

   Median, since some students may live much further from school and be considered outliers

4. Ages of students in a 7th grade classroom.

   Mean, there are likely no outliers