MMMR
with
OUTLIERS

An <u>OUTLIER</u> 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

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

9 10 12 13 8 9 31 9

Outlier: ★

Mean without outlier:

Mean with outlier:

How does the outlier affect the mean?

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:
Mean:
Median:

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

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

The _____ is the best measure of central tendency. since it's not influenced by the size of the outlier.

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

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

How to Determine the Best Measure

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

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

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

Mean   Mode   Median

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

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

2. The daily temperatures during a week in July.

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

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

For Math 7+
How to find what numbers are outliers:
IQR x 1.5
Add that to Q3 to get the upper outliers
Subtract that from Q1 to get the lower outliers

Recent test scores:
$25, 72, 75, 79, 85, 87, 92, 93, 95, 100$
What do you think the outlier is, if any?

STEP 1:
Recent test scores:
$25, 72, 75, 79, 85, 87, 92, 93, 95, 100$
Find Q2, Q1, and Q3 first:
Q2=
Q1=
Q3=

STEP 2:

Next find the IQR:

Q3 - Q1 = IQR

STEP 3:

Now determine what the outliers are:

IQR x 1.5 =

STEP 4:

To figure out the upper quartile outliers, add the number in step 3 to Q3:

Did anyone score above that on the test? If so, these are your upper outliers.

STEP 5:

To figure out if there are any outliers on the lower end subtract the number in step 3 by Q1:

Were there any scores lower than that for this test? If so, those are your lower outliers.