**EXAMINING THE EFFECT OF OUTLIERS**

In this example you will be investigating how an outlier affects the mean and median of a set of data. By the end of the lesson you will be able to explain which measure of central tendency most accurately represents a set of data with an outlier.

# Begin Copying for Notes

**Rushing Yards Gained by San Diego Chargers Football Players**

The table below show the rushing yards gained by San Diego Chargers Football Players during the 2006 season.

| Player | Rushing Yards |
|---|---|
| LaDainian Tomlinson | 1815 |
| Michael Turner | 502 |
| Lorenzo Neal | 140 |
| Philip Rivers | 49 |
| Andrew Pinnock | 25 |
| Erick Parker | 19 |
| Vincent Jackson | 16 |
| Charlie Whitehurst | 13 |
| Keenan McCardell | 8 |
| Brandon Manumaleuna | 1 |
| Billy Volek | -3 |
| Mike Scifres | -7 |

- Which player is an outlier in the data?

LaDainian Tomlinson

- How many rushing yards did he have?

1815

Calculate the mean and median for the rushing yards, but **DO NOT** include the outlier in your calculations. Show your work below.

**Mean**

$\frac{763}{11}$

Mean = 69.4

**Median**

Median = 16

without outlier

-7, -3, 1, 8, 13, 16, 19, 25, 49, 140, 502

with outlier

-7, -3, 1, 8, 13, 16 | 17, 25, 49, 140, 502, 1815

6 6

Now, recalculate the mean and median for the rushing yards, but this time **INCLUDE** the outlier in your calculations. Show your work below.

**Mean**

$\frac{2578}{12}$

Mean = 214.8

**Median**

$\frac{16+17}{2}$

Median = 17.5

1) Look at your calculations for the mean and median when you **DID NOT** include the outlier.

- How many players had a rushing total that was less than the mean? 9
- How many players had a rushing total that was greater than the mean? 2
- How many players had a rushing total that was less than the median? 5
- How many players had a rushing total that was greater than the median? 5

(11)

mean
69.4

median = 16

2) Look at your calculations for the mean and median when you **DID** include the outlier.

- How many players had a rushing total that was less than the mean? 10
- How many players had a rushing total that was greater than the mean? 2
- How many players had a rushing total that was less than the median? 6
- How many players had a rushing total that was greater than the median? 6

(12)

mean
214.8

median
17.5

Ticket out the Door

Look at your answers to questions 1 and 2. If you wanted to accurately represent the number of yards that a TYPICAL San Diego Charger gained rushing, should you use the mean or the median to report the data? Explain your answer.