

3 - MEASURES OF CENTER AND SPREAD

NAME Key

A major league baseball player got the following number of hits during each year of his career:

112, 183, 177, 187, 188, 190, 178, 158, 167, 151, 142, 116, 40

Find mean, median, and mode

$\bar{x} = 146$

Median = 162.5

mode = none

When this player is being traded and his agent is trying to show his strengths to other team managers, which measure of central tendency should he use? Why?

The median b/c it is the highest & makes him look the best

2. In your language class you have earned the following test scores: 81, 72, 53, 61; and only one test remains. If you need a mean score of 70 to earn a "C", then what minimum score must you obtain on the test?

$$\frac{81 + 72 + 53 + 61 + x}{5} = 70$$

$$267 + x = 350$$

$x = 83$

3. Calculate the mean, median, and mode from the following frequency distribution.

Score	11	15	9	7	14	10
Frequency	5	2	1	5	8	7

Mean 11.107

Median 11

Mode 14

4. Sarah loves to shop for clothes every Saturday. For the past 6 Saturdays, she has spent the following amounts:

\$109, \$72, \$99, \$15, \$99, \$89

a. Find mean, median and mode

$\bar{x} = \$80.5$
 med = \$94
 mode = \$99

b. If Sarah is trying to convince her parents she doesn't spend too much money on clothes, which measure should she use?

the mean b/c it is the lowest value

5. In Sam's physics course, a mean score of 80 on 10 tests is necessary for a "B". Sam's mean score for the 10 tests was a 79 and his instructor gave him a "C". Sam protested that because he was so close, the instructor should have "just given him the one lousy point" and the "B". Did Sam really only need one point for a "B"? Explain.

No! In order for his entire average to go up one pt., he would need several points on the individual tests.

6. The mean score on four of a set of five scores is a 75. The fifth score is a 90. What is the mean of the five scores?

$$\frac{75+75+75+75+90}{5} = 78$$

7. Suppose for a given month that the mean daily closing price (all numbers in dollars) for Expensive, Inc. common stock was 114.3 with a standard deviation of 13.7. For Cheap, Inc. stock, the mean daily closing price was 54.9 with a standard deviation of 4.9. Which stock was more VOLATILE?

Expensive:

$$\frac{13.7}{114.3}$$

$$= 12\%$$

Cheap:

$$\frac{4.9}{54.9}$$

$$= 9\%$$

The Expensive, Inc. is more VOLATILE/Unstable

8. Find the standard deviation for the following BY HAND:

(*round mean to nearest whole # if necessary)

$$x = 9$$

x	$x - \bar{x}$	$(x - \bar{x})^2$
5	-4	16
6	-3	9
8	-1	1
8	-1	1
8	-1	1
9	0	0
10	1	1
11	2	4
15	6	36

$$S_x = \sqrt{\frac{\sum(x - \bar{x})^2}{n-1}}$$

$$S_x = \sqrt{\frac{69}{8}}$$

$$S_x = 2.94$$

$$n = 9$$

$$\sum(x - \bar{x}) = 69$$

9. Find the mean and standard deviation of the following using your calculator:

1 var. stats L_1, L_2

SCORE	76	82	85	90	92	95
FREQUENCY	5	2	3	4	3	3

$$\bar{x} = 86$$

$$S_x = 7.07$$