

Name: _____

Date: _____

STATISTICS REVIEW

ALGEBRA 2 WITH TRIGONOMETRY

Statistics is the study of sets of data and how these sets vary within the set and between sets. Doctors collect data in controlled studies to determine the effectiveness of life-saving drugs. Biologists collect data to observe trends in animal populations. Advertisers collect data to determine what television programs people watch. A **statistic** is simply a measurement that tells us something about the members of a data set.

Exercise #1: Biologists are studying the weight of brown trout in upstate New York streams. They capture and weigh 15 brown trout from the Saw Kill Creek in Red Hook, New York. Their weights, accurate to the nearest hundredth of a pound, are given below:

2.45, 1.60, 1.53, 2.89, 2.85, 1.09, 1.23, 2.39, 2.97, 2.28, 1.79, 1.48, 1.62, 1.17, 1.41

- (a) Use your calculator to find the mean weight, symbolized by \bar{x} , and the median weight. Round your mean to the nearest *hundredth*.
- (b) Use your calculator to find the first and third quartile values.
- (c) Calculate the range of this data set.
- (d) Calculate the **interquartile range** of this data set.

The mean and the median are called **measures of central tendency**. The quartiles, the range, and the interquartile range are all **measures of dispersion**, or how **spread out** a data set is. We will see another important measure of dispersion in the next lesson. It is also important to be able to work with grouped data that comes in a **frequency table**.

Exercise #2: Marketers are studying the ages of teenagers using social networking sites. They survey 100 teens for a particular site and find an age distribution given in the table below.

- (a) Find the mean age of the teens using this site.
- (b) 75% of all of the data fall at or below what age?
- (c) What is the modal age of this data set?

Age (x_i)	Frequency (f_i)
13	5
14	11
15	17
16	26
17	24
18	10
19	7



Exercise #3: A children's concert was given recently where 32 adults paid \$12.00 per ticket to attend and 68 children paid \$8.00 to attend. Which of the following was the mean ticket price paid?

- (1) \$10.00 (3) \$9.25
(2) \$7.42 (4) \$9.28
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Exercise #4: Which of the following formulas, written in summation notation, would represent the mean of the data set $\{x_1, x_2, \dots, x_n\}$? Explain your choice.

- (1) $\sum_{i=1}^n x_i$ (3) $n \sum_{i=1}^n x_i$
(2) $\frac{1}{n} \sum_{i=1}^n x_i^2$ (4) $\frac{1}{n} \sum_{i=1}^n x_i$
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Exercise #5: The mean and median of the following ascending data set are the same. Find the value of k . Show your work.

2, 4, 6, 7, 8, 9, 11, k

Exercise #6: Naihla wants to average 30 minutes per workout for five days this week. For the first four days she exercises for 25, 38, 40, and 29 minutes. How many minutes must she exercise on the fifth day to reach her mean of 30 minutes?

Exercise #7: Freddy has received test scores of 56%, 67%, and 50% on his first three tests this marking period. If there are only two tests remaining, what is the minimum he can score on the fourth test and still have a mathematical chance of reaching a passing average of 65%?



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STATISTICS REVIEW
ALGEBRA 2 WITH TRIGONOMETRY - HOMEWORK

SKILLS

1. For the data set $\{2, 3, 3, 5, 7, 11, 12\}$, which of the following is true?

(1) median < mode < mean (3) mode < median < mean

(2) mean < median < mode (4) median < mean < mode

2. The interquartile range of the data set $\{4, 7, 10, 13, 18, 22, 30\}$ is

(1) 15 (3) 7

(2) 18 (4) 10

3. Which of the following represents the mean of the data set $\{y_1, y_2, y_3\}$?

(1) $3\sum_{i=1}^3 y_i$ (3) $\sum_{i=1}^3 y_i$

(2) $\sum_{i=1}^3 y_i^3$ (4) $\frac{1}{3}\sum_{i=1}^3 y_i$

4. The mean of five numbers in a set is 12. If the set contains a total of six numbers and the mean of all six is 14, which of the following is the sixth number?

(1) 24 (3) 32

(2) 13 (4) 18

APPLICATIONS

5. Senior citizens pay \$6.00 to attend a school play, students pay \$8.00 and adults pay \$10.00. If 26 senior citizens, 110 students, and 86 adults see a play, which of the following is closest to the average ticket cost?

(1) \$7.52 (3) \$8.54

(2) \$8.26 (4) \$9.25



6. A school is tracking its freshmen attendance for the first marking period. Shown below is a table summarizing their findings for 30 freshmen in Mr. Weiler's homeroom.

(a) Find the mean and median of this data set. Round your mean to the nearest tenth.

Days Absent (x_i)	Number of Students (f_i)
0	4
1	9
2	7
3	5
4	3
9	1
15	1

(b) What effect do the two **outliers** have on the mean compared to the median?

(c) Calculate the interquartile range for this data set. Show your calculation.

7. For the last 9 years, Dennis has earned an average salary of \$52,000. Determine what he must make in his tenth year for his ten year average to be \$52,500.

8. The mean of six numbers is 19. If five of the numbers are identical and the sixth is 12 more than the common value of these five numbers, then find the sixth number. Only an algebraic solution is acceptable.

