

Precalculus Workload

Copy and answer. Write your answers on intermediate pad.

PAREF-SOUTHRIDGE SCHOOL
Precalculus

Name: _____

Score: _____

Section: _____

Date: _____

I. Write the first ten elements for each of the following general elements.

1. $a_n = 2n + 5$

2. $a_n = \frac{n-2}{n(n-1)}$

3. $a_n = (-1)^n \frac{1}{3^n}$

4. $a_n = (-1)^{n-1} x^{2n}$

5. $a_n = (-1)^n \frac{x^n}{2^{n-1}}$

II. Write the first 10 elements of the sequence whose general element is given.

1.

$$a_n = \begin{cases} \frac{2}{n+1} & \text{if } n \text{ is odd} \\ 2 & \text{if } n \text{ is even} \end{cases}$$

2.

$$a_n = \begin{cases} 1 & \text{if } n \text{ is odd} \\ \frac{4}{(n+2)^2} & \text{if } n \text{ is even} \end{cases}$$

3.

$$a_n = \begin{cases} n & \text{if } n \text{ is odd} \\ \frac{1}{2}n & \text{if } n \text{ is even and is not divisible by 4} \\ \frac{1}{2}(a_{n-2} + a_{n-1}) & \end{cases}$$

If n is even and is divisible by 4

III. For each of the following sequence, give the *pattern*. Write it in the form " $a_n = \text{expression}$ "

1. $1, 3, 5, 7, 9, 11, \dots, n$

2. $1, \frac{1}{3}, \frac{1}{9}, \frac{1}{27}, \frac{1}{81}, \dots, n$

3. $\frac{1}{2}, -\frac{x^2}{4}, \frac{x^4}{6}, -\frac{x^6}{8}, \frac{x^8}{10}, \dots, n$

Fourth Year Statistics WORKLOAD

GENERAL DIRECTIONS: Read and study the lesson below and answer WORKSHEETS 1 & 2. It is required that you submit these on July 2, 2009.

MEASURES OF CENTRAL TENDENCY

The **measure of central tendency** is the point about which the scores tend to cluster, a sort of average in the series. It is the center of concentration of scores in any set of data. It is a single number which represents the general level of performance of a group.

MEAN

- The **mean or arithmetic mean**, or arithmetic average is defined as the sum of the values in a data group divided by the number of values.

Finding the Mean from Ungrouped Data

The mean in the ungrouped values $x_1, x_2, x_3, \dots, x_n$ denoted by \bar{x} is

$$\bar{x} = \frac{\sum_{i=1}^n x_i}{n} \text{ or simply } \bar{x} = \frac{\sum x}{n}$$

where x = score or measure
 n = number of scores or measures

Example 1: The mean of 86, 80, 75, 78, and 86 is...

Example 2: Last year the five sales counselors of Pacific plans Inc. sold the following number of education plans: 25, 18, 36, 13, 22. Find the mean

Weighted Mean

- Some values sometimes are given more importance than others. In such instance, the weighted mean is computed.
- A weighted mean is the mean of a data set whose entries have varying weights. A weighted mean is given by

$$\bar{x} = \frac{\sum (x \cdot w)}{\sum w}$$

where w is the weight of each entry x

Example 3: You are taking a class in which your grade is determined from five sources: 50% from your test mean, 15% from your midterm, 20% from your final exam, 10% from your computer lab work, and 5% from your homework. Your scores are 86(test mean), 96 (midterm), 82(final exam), 98(computer lab), and 100 (homework. What is the weighted mean of your scores?

Example 4: Let us determine the weighted mean if, 500 bags were sold at P250 each, 350 bags at P200 each; 200 bags at P150 each; 150 bags at P100 each; and 50 bags at P80.

MEDIAN

- The **median** refers to the value of the middle observation in an ordered distribution
- It is a point on the scale of scores below which $\frac{1}{2}$ of the scores lie above and the other half of the scores lie below.

Finding the Median from Ungrouped Data

To get the median for ungrouped data, we arrange first the data from the highest value to the lowest or vice versa.

- When n is odd, the median is the middle score.
 Example 1: 20 7 6 8
 15 11 13

- When n is even, the median is the average of the two middle scores.
 Example 2: 8 7 8 18
 15 21 14 11

MODE

- The **mode** is the item or value in a distribution with the highest frequency or most number of cases.

Finding the Mode from Ungrouped Data

For ungrouped data, the mode is simply the value which occurs most often.

Let us determine the mode given the distributions below.

SET A:	19	20	20	20	18	15	13	9
SET B:	8	8	10	6	10	8	10	2
SET C:	9	2	8	3	4	5	7	6

PROBLEMS ON MEAN, MEDIAN AND MODE

Find the mean, median, and mode for each of the following data.

- A sample of 17 production number in a small company earned the following wages for a given week arranged in ascending order:

P 140 P 140 P 140 P 140 P 140 P 140 P 140 P 155 P 165
 P 165 P1 80 P 190 P 200 P 205 P 225 P 230 P 240

- A work-standards expert observes the amount of time required to type a sample of 10 business letters in an office with the following results listed in ascending order to the nearest minute: 5, 5, 5, 7, 9, 14, 15, 15, 16, and 18.

- For a sample of 9 customers at a small stall in Fairview Wet Market, the following sales amounts in a day are observed:

P 315 P 420 P 450 P 485 P 490
 P 450 P 480 P 510 P 520

PAREF-SOUTHRIDGE SCHOOL
Afternoon School
Statistics

Name: _____

Score: _____

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WORKSHEET 1

Answer the following completely.

1. Identify the population and the sample:

- a. A survey of 1353 American households found that 18% of the households own a computer.

Population: _____

Sample: _____

- b. A recent survey of 2625 elementary school children found that 28% of the children could be classified obese.

Population: _____

Sample: _____

- c. The average weight of every sixth person entering the mall within 3 hour period was 146 lb.

Population: _____

Sample: _____

2. Determine whether the numerical value is a parameter or a statistics (and explain):

- a. A recent survey by the alumni of a major university indicated that the average monthly salary of 10,000 of its 300,000 graduates was 25,000.

- b. The average salary of all assembly-line employees at a certain car manufacturer is \$33,000.

- c. The average late fee for 360 credit card holders was found to be \$56.75.

3. Identify whether the statement describes inferential statistics or descriptive statistics:

- a. The average age of the students in a statistics class is 21 years.

b. The chances of winning the California Lottery are one chance in twenty-two million.

c. There is a relationship between smoking cigarettes and getting emphysema.

d. From past figures, it is predicted that 39% of the registered voters in California will vote in the June primary.

4. Determine whether the data are qualitative or quantitative:

a. the colors of automobiles on a used car lot

b. the numbers on the shirts of a basketball team

c. the number of seats in a movie theater

d. a list of house numbers on your street

e. the ages of a sample of 350 employees of a large hospital

5. Identify the data set's level of measurement (nominal, ordinal, interval, ratio):

a. hair color of women on a high school tennis team

b. numbers on the shirts of a soccer team

c. ages of students in a statistics class

d. temperatures of 22 selected refrigerators

e. number of milligrams of tar in 28 cigarettes

g. marriage status of the faculty at the local community college

h. list of 1247 social security numbers

i. the ratings of a movie ranging from "poor" to "good" to "excellent"

j. the final grades (A,B,C,D, and F) for students in a chemistry class

k. the annual salaries for all teachers in Las Piñas

l. list of zip codes for NCR

m. the nationalities listed in a recent survey

n. the amount of fat (in grams) in 44 cookies

o. the data listed on the horizontal axis in the graph

WORKSHEET 2

Mean, Median, and Mode

For items 1 – 11, Find the mean, median, mode, and range for the following sets of data.

1. 5, 2, 12, 7, 13, 9, 8

Mode:

Mean:

Median:

Mode:

2. 92, 88, 84, 86, 88

Mean:

Median:

Mode:

3. 4.3, 1.3, 4.5, 8.6, 9, 3, 2.1, 14

Mean:

Median:

Mode:

4. 22, 3, 36, 18, 36, 40, 25, 23, 32, 43, 43

Mean:

Median:

Mode:

5. 4.0, 3.3, 5.6, 4.6, 3.3, 5.6, 1.3, 1.9, 6.4

Mean:

Median:

Mode:

6. 20, 17, 42, 26, 27, 12, 31

Mean:

Median:

7. 23, 13, 45, 56, 72, 44, 89, 92, 67

Mean:

Median:

Mode:

8. 143, 245, 423, 143, 293, 301, 99, 361

Mean:

Median:

Mode:

9. $P = \{x \mid 2 < x < 100, x \text{ is a prime number} \}$

Mean:

Median:

Mode:

10. Number of inches of rain that fell on 14 towns in a 50 mile radius during a three day period:

8, 4, 7, 6, 5, 6, 7, 8, 9, 10, 11, 5, 4, 8

Mean:

Median:

Mode

11. The table shows the number of nations represented in the Summer Olympic Games from 1960 through 2004. Find the mean, median, mode and range of the data.

Year	Nations
1960	83
1964	93
1968	112
1972	121
1976	92
1980	80
1984	140
1988	159
1992	169
1996	197
2000	199
2004	201

Mean:

Median:

Mode

12. Explain why the MEAN can never be bigger than the maximum value in a series of numbers.

13. Why would the MEAN NOT be a good central tendency to use in the following set of numbers:

5, 9, 4, 6, 7, 8, 8, 4, 7, 4, 985, 5, 8, 4, 9, 4, 7, 8, 7, 5, 4, 6, 4, 5, 5, 7, 8
