

CENTRAL TENDENCY HOMEWORK

How to get online answers for the questions that require calculations. *In all the practice homeworks, answers to problems that require calculations (#1 and #3 in this assignment) are available by using **StatTool**. The **Psych 3000 Tutorial** describes how to use StatTool in some detail. You can get to StatTool from your Online Desk, or from some other screen such as Ducks in a Row. Brief instruction are included below.*

1. Open StatTool. [The page that opens has instructions if you scroll down.] Press the “Analyze Data” button. You will see two screens, one white and blank and one pale yellow (raw data window).

2. On the upper left hand corner of the pale yellow screen, you will find a “File” menu. Click on the word “File.” A menu will drop down. The first choice on the menu is “Open from File.” Click on “Open from File.”

3. A small “menu window” will pop up. Read the menu. Click on the filename appropriate to the homework and problem number you are working on. For example, for Problem 1 of the Central Tendency homework, click on “HW_Central_Tendency_1.dat”. [“dat” just stands for “data.”]

4. The data (the numbers you see below in problem 1) will appear in the pale yellow (raw data) window. Now you can “analyze” the numbers, that is, you can have the computer do the calculations.

5. In the upper left hand corner of the pale yellow (raw data) window there is a menu named “Des Stats.” This stands for descriptive statistics. Click on it. It gives you two choices. Click on “Central Tendency,” then click on the “Mean.”

6. Instantly the results of that analysis appear in the small white (statistical results) window. You will see a mean for each of the data sets in problem 1 below.

[The mode is too easy to calculate. StatTool does not calculate it.]

It is important to learn to use StatTool.

1. Find the mean and mode of each of the following sets of measurements:

a) 10, 8, 5, 0, 8, 3, 2, 5, 8, 2, 0

b) 1, 3, 3, 5, 5, 5, 7, 7, 9

c) 127, 7, 3, 0, 5, 3, 2, 3

2. In which sets of measurements in problem 1 is the mean a poor measure of central tendency? Why?

3. Suppose Farm A is owned by a farmer who hires 5 beginning workers, two experienced workers, and two managers. The profits and wages from the farm are distributed as follows:

New Worker #1:	\$10,000
New Worker #2:	\$10,000
New Worker #3:	\$10,000
New Worker #4:	\$10,000
New Worker #5:	\$10,000
Exp Worker #1:	\$15,000
Exp Worker #2:	\$15,000
Manager #1:	\$30,000
Manager #2:	\$30,000
Owner:	\$380,000

Suppose Farm B is owned in a Co-op by ten farmers. The ten farmers divide up the proceeds from the farm by a complicated formula that has to do with the yield that each of them produces. As a result the money received by each of these farmers is: \$50,000, \$47,000, \$52,000, \$55,000, \$45,000, \$49,000, \$48,000, \$50,000, and \$53,000, \$51,000

- For each farm separately, draw a number line from \$0 to \$400,000. On each line place dot for each amount of money made by each person. If two amounts are the same, place dots above each other.
- On each number line draw a line that separates the top half of moneymakers from the bottom half of moneymakers. Roughly, this is the median income. (This line will be approximately at \$12,500 for Farm A.)
- Calculate the mean and modal income for each farm.
- Based on your knowledge of the mean, the median and the mode explain which has the most even distribution of wealth.

4. Suppose that in Town A the mean yearly income is \$30,000, the median income is \$30,000, and the modal income is \$30,000. Let's say that in nearby Town B the mean income is \$56,000, the median income is \$20,000, and modal income is \$10,000.

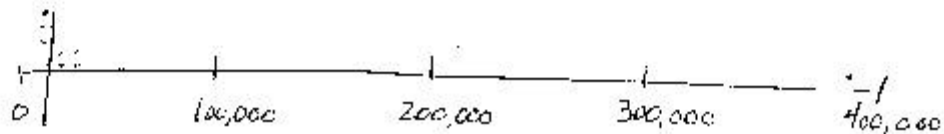
In which Town is wealth most evenly distributed? Why?

Central Tendency

- 1a. $10 + 8 + 5 + 0 + 8 + 3 + 2 + 5 + 8 + 2 + 0 = 51/11 = 4.64$ Mean
 c. $0, 2, 2, 3, 5, 5, 8, 8, 8, 10$ Mode = 8
- b. $1 + 3 + 3 + 5 + 5 + 5 + 7 + 7 + 9 = 45/9 = 5$ Mean
 Mode = 5
- c. $12 + 7 + 7 + 3 + 0 + 5 + 3 + 2 + 3 = 150/8 = 18.75$
 Mode = 3

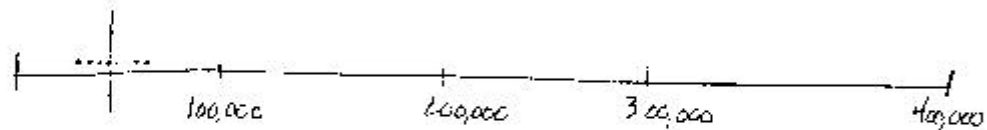
2 c, Extreme Curve.

3 Farm A



$$\text{Mean} = \frac{\sum X}{n} = \frac{520,000}{10} = 52,000$$

$$\text{Mode} = 10,000$$



$$\text{Mean} = \frac{\sum X}{n} = \frac{500,000}{10} = 50,000$$

$$\text{Mode} = 50,000$$

- d. Farm B. The mean, median & mode are all equal which indicates there are no extreme scores & the most common score is the same as the mean & median.
4. Town A for the same reason as 3d. The mean, median & mode are all the same for town A.

