

## AS1 (Assignment 1, Unit 2): Central Tendency and Shapes of Distributions

1. What is the goal of central tendency?

The goal of central tendency aims to find the middle of a distribution.

Find the mean, median, and mode for the following sample of scores: 5, 4, 5, 2, 7, 1, 3, 5

Mean 4 Median 4.5 Mode 5

2. Find the mean, median, and mode for the following sample of scores: 3, 5, 7, 3, 9, 8, 3, 7, 5

Mean 5.5 Median 5 Mode 3, 7

3. Find the mean, median, and mode for the scores in the following frequency table.

X	f
6	1
5	2
4	2
3	2
2	2
1	5

Mean 2.7 Median 2.5 Mode 1

4. Find the mean, median, and mode for the scores in the following frequency table.

X	f
8	1
7	1
6	2
5	5
4	2
3	2

Mean 5.07 Median 5 Mode 3, 5

5. Explain why the median is often preferred to the mean as a measure of central tendency for a skewed distribution?

- **The mode being the high is the high on the graph, then median preferred it's self in the middle ratio of scores follow by the mean as the lowest.**

6. A researcher conducts a study comparing two different treatments with a sample of participants divided into 2 treatments. The study produced the following data:

Treatment 1: 6, 7, 11, 4, 19, 17, 2, 5, 9, 13, 6, 23, 11, 4, 6

Treatment 2: 10, 9, 6, 6, 1, 11, 8, 6, 3, 2, 11, 1, 12, 7, 10

Calculate mean for treatment 1 and put your answer here \_\_\_\_\_9.5\_\_\_\_\_

Calculate mean treat treatment 2 and put your answer here \_\_\_\_\_6.06\_\_\_\_\_

Calculate the median for treatment 1 and put your answer here \_\_\_\_\_7\_\_\_\_\_

Calculate the median for treatment 2 and put your answer here \_\_\_\_\_7\_\_\_\_\_

Calculate the mode for treatment 1 and put your answer here \_\_\_\_\_6.3\_\_\_\_\_

Calculate the mode for treatment 2 and put your answer here \_\_\_\_\_7\_\_\_\_\_

7. Schmidt (1994) conducted a series of experiments examining the effects of humor on memory. In one study, participants were shown a list of sentences of which half were humorous and half were non-humorous. Schmidt then measured the number of each type of sentence recalled by each participant. The following scores are similar to the results obtained in the study:

Humorous	Non-humorous
4 5 2 4	5 2 4 2
6 6 6 6	2 3 1 6
2 5 4 3	3 2 3 3
1 3 5 5	4 1 5 3

Mean for humorous group: \_\_\_\_\_4.1\_\_\_\_\_      Mean for non-humorous group: \_\_\_\_\_3.06\_\_\_\_\_

Do the data suggest that humor helps memory? Answer “yes” or “no” and why:  
No, because the ratio is almost the same.

8. A researcher measured the time that a sample of students selected from Caldwell University spent studying on a given week during a semester. Here are the data in hours:

4, 6, 5, 4, 5, 7, 8, 6, 5, 7, 8, 9, 9, 1, 0, 2, 3, 5, 6, 4, 3, 7, 8, 4, 5, 6, 7, 8, 7, 6, 21, 7, 8, 9, 2, 3, 2

ANSWER the following questions based on the information given in question #9

Name the population: \_\_\_\_\_35\_\_\_\_\_

Name the sample: \_\_\_\_\_10\_\_\_\_\_

How many participants are in the sample? \_\_\_\_\_10\_\_\_\_\_

What is the scale of measurement?

Interval

Is the scale continuous or discrete?

Discrete

9a. Use SPSS to compute the following (using the data from question 9):

- generate a frequency table
- the appropriate graph
- mean
- median
- mode

PASTE your SPSS results here:

Statistics

VAR00001

N Valid 10

Missing 11

Mean 3.5000

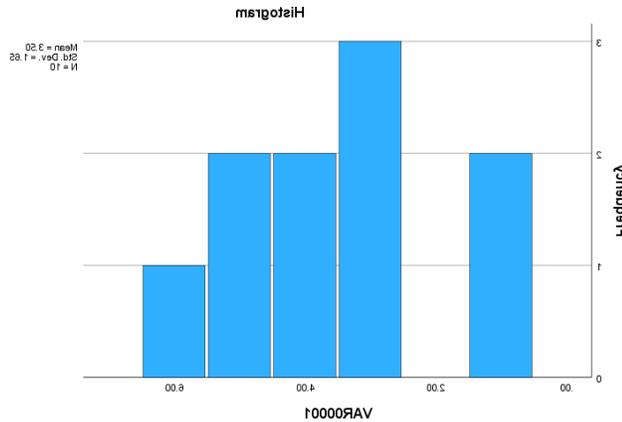
Median 3.5000

Mode 3.00

Std. Deviation 1.64992

VAR00001

	Frequency		Percent Valid Percent		Cumulative Percent
Valid	1.00	2	9.5	20.0	20.0
3.00	3	14.3	30.0	50.0	
4.00	2	9.5	20.0	70.0	
5.00	2	9.5	20.0	90.0	
6.00	1	4.8	10.0	100.0	
Total	10	47.6	100.0		
Missing	System	11	52.4		
Total		21	100.0		



Based on your SPSS results, please

answer the following questions:

What is the mean? 3.5 What is the mode? 3 What is the median?  
3.5

What is the shape of this distribution? Answer=**The shape is a small negative skew, because the mean from increase from lowest score to the mode highest score from left to right instead of right to left. The shape of the distribution.**

Which is the “best” measure of central tendency for these data? **The Median**

Why?

**The mean is a distorted measure in this case and the Median is the best representative in measure in the case.**

Going on to a different set of questions, which have nothing to do with any of the above questions:

9. Why are there three measures of central tendency rather than just one?

Most often an individual would want to calculate the mean, because it takes every score into consideration and give a accurate measure , but can't be use for data that uses names, so there's a use for different measure tendency such as mode or median for askewed distribution.

10. Name a situation where the mean would NOT be an appropriate measure of central tendency. Do not use an example from class lecture

**The mean would not be an appropriate measure of central tendency when using a bar of graph.**

11. Name a situation where only the mode could be used as a measure of central tendency

The mode could be used when using a bar of graph.

12. If a distribution were perfectly symmetrical and Mary got an exam score that was equal to the median, and John got an exam score that was equal to the mean, what would you know about their scores?

Answer: Mary score is higher than John score.

13. A professor gave a very, very difficult exam. Vincent scored at the mode, Brandon scored at the mean, and Linda scored at the median. Place the names in order from who got the highest exam score to who got the lowest exam score.

Answer: Vincent                      Linda                      Brandon

14. A professor gave a very, very easy exam. Dan scored at the mode, Luci scored at the median, and Stephen scored at the mean. Place the names in order from who got the lowest exam score to who got the highest exam score:

Answer: Stephen                      Luci                      Dan

### True / False Questions

Please type "T" if the statement is true, and type "F" if the statement is false in the provided spaces

- F 16. A student takes a 10-point quiz each week in statistics class. If the student's quiz scores for the first three weeks are 2, 6, 5, and 10, then the mean score is  $M = 9$ .

- T 17. A sample of  $n = 6$  scores has  $\Sigma X = 48$ . This sample has a mean of  $M = 8$ .

- T 18. For the scores in the following frequency distribution table, the mean is  $M = 3$ .

$X$	$f$
4	1
3	4
2	2

- F 19. The mean is considered to be the "balance point" for a distribution because exactly half of the scores are located above the mean and exactly half are below the mean.

- T 20. In a sample of  $n = 3$  scores, if two scores are each below the mean by 2 points, then the third score is above the mean by 4 points.

- F 21. A sample has  $n = 5$  scores: 2, 4, 5, 8, and 11. The median for the sample is 6.5.

- T 22. There are situations for which it is either impossible to compute a mean or the mean does not provide a central, representative value.

- T 23. A distribution of scores has a mean of 50, a median of 53, and a mode of 56. Based on this information, it appears that the distribution is negatively skewed.
- T 24. If a negatively skewed distribution has a mean of 50, then the median and the mode are probably both greater than 50.
- T 25. For a positively skewed distribution, the mean usually has a larger value than either the median or the mode.