

PSY 200

Problem Set 1

1. Identify the circumstances in which the median rather than the mean is the preferred measure of central tendency.
2. Given a non-uniform set of data (i.e., all scores are not equal), under what circumstances will the mean, the median, and the mode all have the same value?
3. Find the mean, median, and mode for the following sample of scores:
7, 5, 9, 7, 7, 8, 6, 8, 10, 7, 4, 6
4. Find the mean, median, and mode for the set of scores in the following frequency distribution table:

<u>X</u>	<u>f</u>
10	2
9	3
8	5
7	6
6	3
5	1

5. A population of $N = 25$ scores has a mean of $\mu = 10$. What is the value of ΣX for this population?
6. A sample of $n = 20$ has a mean of $M = 6$. If one new person with a score of $X = 27$ is added to the sample, what will be the value for the new mean?
7. A sample of $n = 6$ scores has a mean of $M = 10$. If one score is changed from $X = 14$ to $X = 2$, what will be the value for the new sample mean?
8. One sample of $n = 20$ scores has a mean of $M = 50$. A second sample of $n = 5$ scores has a mean of $M = 10$. If the two samples are combined, what is the mean for the combined sample?

9. Does it ever seem to you that the weather is nice during the work week, but lousy on the weekend? Cervený and Balling (1988) have confirmed that this is not your imagination-- pollution accumulating during the work week most likely spoils the weekend weather for people on the Atlantic coast. Consider the following hypothetical data showing the daily amount of rainfall for 10 weeks during the summer.

<u>Week</u>	<i>Average Daily Rainfall on Weekdays (Mon.-Fri.)</i>	<i>Average Daily Rainfall on Weekends (Sat.-Sun)</i>
1	1.2	1.5
2	0.6	2.0
3	0.0	1.8
4	1.6	1.5
5	0.8	2.2
6	2.1	2.4
7	0.2	0.8
8	0.9	1.6
9	1.1	1.2
10	1.4	1.7

- a. Calculate the average daily rainfall (the mean) for weekdays and that average daily rainfall for weekends.
- b. Based on the two means, what pattern (if any) appears from the data?
10. What does it mean for a sample to have a standard deviation of zero? Describe the scores in such a sample.
11. A sample of $n = 20$ scores has a mean of $M = 30$
- a. If the sample standard deviation is $s = 10$, would a score of $X = 38$ be considered an extreme value (out in the tail of the distribution)? Briefly explain why or why not.
- b. If the sample standard deviation is $s = 2$, would a score of $X = 38$ be considered an extreme value (out in the tail of the distribution)? Briefly explain why or why not.
12. A normal shaped population has a mean of $\mu = 80$ and a standard deviation of $\sigma = 20$.
- a. If 10 were added to every score in the population, what would be the new values for the population mean and standard deviation?
- b. If every score in the original population was multiplied by 2, what would be the new values for the population mean and standard deviation?

13. A recent study reports that older adults who got regular physical exercise (as measured by a pedometer) experienced fewer symptoms of depression, even when tested 2 years later (Fukukawa, Nakashima, Tsubio, Kozakai, Doyo, Naoakira, Ando, & Shimokata, 2004). Following are hypothetical *sample* data similar to the results obtained in this study.

<u>Regular Exercise</u>	<u>No Regular Exercise</u>
1	5
3	4
4	6
3	3
5	5
2	7
3	6
4	6

- Calculate the mean and standard deviation for each group of sample scores.
- Based on the statistics from part a, does there appear to be a difference between the two groups? Please phrase your answer using the context of the original question.