

Your Name

Professor Name

Subject Name

04 September 20XX

Name:

The following is a review for the midterm. It is NOT comprehensive but is a good way to practice in preparation for the midterm. Be aware that any information that has been covered in lecture, homework, or the textbook may appear on the midterm but that the majority of the information which appears on the midterm was covered in lecture and related assignments.

1. For the following, indicate whether each statement is one of the following (ONE best response per row): nonprobability sample, random sample, a dependent variable, an independent variable, a question for descriptive statistics, a question for inferential statistics, type I error, type II error.

| Statement                                                                                                                                                 | Answer |
|-----------------------------------------------------------------------------------------------------------------------------------------------------------|--------|
| a. concluding that the null hypothesis is wrong when it is actually correct (OPTIONAL item but worth trying)                                              |        |
| b. concluding that the null hypothesis is correct when it is actually incorrect (OPTIONAL item but worth trying)                                          |        |
| c. A sample of persons drawn from all persons within a parameter of interest when all persons within that parameter had an equal chance of being selected |        |
| d. the student wants to know what the number of individuals in a sample, the mean score of the sample, and the standard deviation for the sample.         |        |
| e. A sample of every 5 <sup>th</sup> person who shows up to class.                                                                                        |        |
| f. Stress when the hypothesis is that greater stress will cause exam scores to be lower                                                                   |        |
| g. Exam scores when the hypothesis is that greater stress will cause exam scores to be lower                                                              |        |

2. The following requires you to use your knowledge about z-scores.

| Statement                                                               | Answer |
|-------------------------------------------------------------------------|--------|
| a. What percentage of cases are below those with a Z-score of -1.75?    |        |
| b. What percentage of cases are between a Z score of 1.25 and 2.25?     |        |
| c. Is a person whose Z-score is -1.75 an outlier? (explain briefly why) |        |
| d. Is a person whose Z-score is 3.50 an outlier? (explain briefly why)  |        |
| e. A person's SD is 0.50 above the mean. What is his Z-score?           |        |
| f. What percentage of cases are above those with a Z-score of -0.50?    |        |
| g. What percentage of cases are above a Z-score of 0.50?                |        |

3. Using the two tables of output below, write three summary statements in APA format. Be sure you report results such as Mean and SD in proper APA format. Coffee refers to the amount of money spent on coffee in the previous week, soda refers to the amount of money spent on soda in the previous week, and sleep refers to the average daily number of hours spent sleeping in the previous week.

| Descriptive Statistics |        |                |    |
|------------------------|--------|----------------|----|
|                        | Mean   | Std. Deviation | N  |
| coffee                 | 7.5500 | 9.62166        | 20 |
| soda                   | 6.1000 | 6.79706        | 20 |
| sleep                  | 7.2625 | 1.38001        | 20 |

4. Review the data in the table below and use it to answer the questions which follow. Show all your work and clearly label your final answers.

| ID | Homework Score | Hours Spent Studying | Quiz Score |
|----|----------------|----------------------|------------|
| 1  | 7              | 0                    | 8          |
| 2  | 9              | 4                    | 8          |
| 3  | 6              | 2                    | 7          |
| 4  | 3              | 8                    | 3          |
| 5  | 5              | 0                    | 4          |
| 6  | 4              | 1                    | 2          |
| 7  | 8              | 3                    | 9          |

- Calculate and indicate all three measures of central tendency and variability for Quiz Score (e.g. mean, median, mode, standard deviation, variance, and exclusive range). Finally, calculate the standard error for Quiz Score.
  - Does there appear to be any skew in Quiz Score? If so, does it appear to be a positive or negative skew?
  - Calculate the means and standard deviations for Homework Score and Hours Spent Studying. Be sure to clearly label your results.
5. Data Set 2 represents final exam scores for a class of students. Create a Cumulative Frequency Distribution that is appropriate for Data Set 2.

| Dataset 2 |    |    |    |    |    |    |  |
|-----------|----|----|----|----|----|----|--|
| 90        | 67 | 98 | 82 | 79 | 88 | 92 |  |
| 75        | 87 | 91 | 37 | 50 | 65 | 89 |  |
| 0         | 87 | 0  | 65 | 74 | 76 | 85 |  |

- When a graph is leptokurtic to another graph, what do we know about the data (or the distribution of the scores) in the leptokurtic graph compared to the other graph. 1-2 sentences.
- You have a sample of raw scores which are: 7, 6, 3, 4, 5, 6, and 4.
  - what is your sample size?
  - what is your mean score?
  - what is your standard deviation?
  - What is the z-score that corresponds to each of the raw scores?
  - Using the z-score table, find the percentage of scores is expected to fall between a raw score of 5 and a score of 6?
- Look over each histogram. Describe for each whether the histogram appears to be created well (using the proper conventions we went over this semester). For each histogram that is not well created, explain what should be changed to make the graph clearer or more accurate. *Please put your answer to the right of each histogram.*

9. (OPTIONAL question but worth trying if you want to practice) A researcher was interested in the use of a new method for teaching statistics to students. She collected data from one group of students who had learned using standard teaching methods (the control group) and a group who were taught using the new teaching method (the experimental group). She believed that the

group who was taught with the new method would have higher quiz scores (0 = lowest quiz score possible, 10 = highest quiz score possible) than those taught using the standard method. Using this information and the data provided below, answer each question below.

|                    |   |   |   |   |   |   |   |   |   |    |
|--------------------|---|---|---|---|---|---|---|---|---|----|
| Control Group      | 5 | 6 | 4 | 4 | 6 | 7 | 2 | 4 | 6 | 6  |
| Experimental Group | 8 | 8 | 7 | 6 | 8 | 6 | 6 | 7 | 9 | 10 |

- What is the research hypothesis?
- What is the null hypothesis?
- Will this require a one-tailed test or a two-tailed test?
- What are the mean, standard deviation, and variance for the control group?
- what is the SE for the control group?
- What are the mean, standard deviation, and variance for the experimental group?
- What is the SE for the experimental group?

NOTE: You can use this information to contemplate whether the two groups are likely to be significantly different, however, you do NOT need to know for sure at this point. We will learn this after the midterm. For now, our goal is to get ready for significance testing by knowing how to calculate these important pieces of information.

**YOU CAN USE THIS AREA AS SCRATCH PAPER**