## Statistics 1: Sections 2,6,7 CSUS, Fall 2009

## **Practice Problems for Exam 1**

Note: These practice problems are NOT a comprehensive list of the material covered for Exam 1. You are responsible for all the sections we covered in Chapter 1.1 - 3.4 of the text. These problems are meant to be a sample of the type of problem you <u>might</u> see on the exam.

One 8.5"x11" sheet of handwritten notes allowed. Calculators allowed. The actual exam will have space for your work on the exam paper itself.

- 1) For the following dataset: 10,6,2,7,100
  - a) Calculate the mean and median.
  - b) Which is a better measure of central tendency, the mean or median? Why?
  - c) Calculate the standard deviation using the formula  $s = \sqrt{\frac{\sum (x_i \overline{x})^2}{n-1}}$
  - d) If you added a fixed number, k, to each value in the data set, would the standard deviation change? If so, how?
  - e) A portion of the ordered exam scores for a class of 100 students is shown below. Will removing the lowest score affect the standard deviation? If so, how?
    6, 59, 62, 63, 67, 70,..., 96, 99
- 2) Use the histogram to answer the questions below.



- a) The value 240 represents the upper boundary of the left-most rectangle in the histogram. What is the upper boundary of the second rectangle from the left?
- b) Use the histogram to estimate the *relative frequency* of the category having upper bound 260.
- c) Use the histogram to estimate the total number of pregnancies lasting 260 days or less.
- d) The mean and standard deviation for this data are 269 days and 14.2 days, respectively. Calculate mean +/- two standard deviations for this data.
- e) Use the histogram to approximate the percent of data falling in the interval calculated in part (d).

- f) Which would give you the best estimate of the percent of data falling in the interval in part (d) --Chebychev's Rule or the Empirical Rule? Give reasons for your choice then use the chosen rule to estimate the percent of data in the interval from part (e).
- 3) The following data give exam scores for 28 students in a CSUS mathematics course, arranged from lowest to highest.

47	49	49	53
57	61	63	66
66	72	73	75
75	76	79	81
82	85	85	85
85	88	88	89
90	95	95	100

- a) Find the lower quartile, median and upper quartile of these scores.
- b) Calculate the upper and lower fences and determine if any data are outliers.
- 6) Randomly selected girls are given the Wide Range Achievement Test. The ages and test scores of 4 girls are given below.

Age, x	Score, y
6	18
7	47
10	67
11	91

- a) Calculate the covariance using the formula  $s_{xy} = \frac{\sum (x \bar{x})(y \bar{y})}{n-1}$ .
- b) The covariance indicates that the linear relationship is: (circle one) negative, positive or no linear relationship exists.
- c) What type of graphical display would be appropriate for these data?
- 7) Identify the following variables as qualitative or quantitative. Classify the quantitative variables as discrete or continuous.
  - a) Marital status
  - b) Time until an alkaline battery wears out
  - c) Brand of an alkaline battery
  - d) Whether or not a subject has disease X
  - e) Number of votes a political candidate receives
  - f) The pounds of sugar consumed by a person in a week