Math 1313 Exam 3 Name: _____

Show all of your work to receive full credit.

1. A group of U of A students are interested in finding out how much support there is on campus for the Football program. They proposed to conduct a poll sampling this question. The group decided to sample 125 people for the study.

   (a) What is the population of the study? What is the sample of the study?

   population: _____

   sample: _____

   (b) The group chose to sample people at Razorback Stadium at the next home game. To encourage people to participate in their study, the group's interviewers dressed up in red clothing and various "Hog" paraphernalia. The group found an overwhelming positive view of the U of A Football program. Do you have reason to question the results of this study? (Explain in complete sentences.)

   (c) By what method of obtaining a sample might the group use to obtain a more accurate result?

   (d) The group decides to have two stations for the surveys, one with the interviewers dressed normally, and another with the interviewers dressed in red, etc., to see if their appearance affected the respondents views. May this be considered an experiment, and, if so, what is the control group?

2. The following table shows the national minimum wages of twenty European countries, in terms of U.S. dollars.

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| Belgium | 12.1 | Greece | 5.2 | Montenegro | 1.5 | Serbia | 1.8 |
| Bosnia & Herzegovina | 1.2 | Ireland | 12.1 | Netherlands | 11.7 | Slovakia | 3.1 |
| Czech Republic | 2.8 | Kosovo | 1.3 | Poland | 3.4 | Slovenia | 6.1 |
| France | 12.8 | Luxembourg | 14.8 | Portugal | 4.5 | Spain | 5.8 |
| Germany | 11.3 | Macedonia | 1.4 | Romania | 1.8 | UK | 11.0 |

(a) Make a reasonable histogram of the minimum wage data.

(b) How would you describe the distribution? Are there any outliers?

(c) Determine the median and mean of the minimum wage data.

median = _____ mean = _____

3. (a) Carbon dioxide emissions are considered an important contributor to climate change. If a country's emissions are measures in units of tons per capita (i.e. per person), there is a wide range in emission levels for each country. Most underdeveloped countries, which includes most of the world, have very low emission levels, while a significant number of industrialized nations have fairly high levels. If one considers the emission levels for all countries, which do you expect is *larger*, the mean emission levels, or the median emission levels? (circle one)

median mean

Is this data normally distributed? Yes No (circle one)

(b) Consider the table below for quiz grades in two sections of a class.

| | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| early class | 8 | 9 | 9 | 9 | 9 | 10 | 10 | 10 | 10 |
| late class | 0 | 2 | 3 | 4 | 5 | 6 | 7 | 9 | 10 |

Find the five number summary for each class's quiz grades, and compare and discuss the two data sets in terms of their variation.

4. The distribution of heights of six-year-old American girls is approximately normally distributed, with a mean of 46 inches and standard deviation of 3 inches. In this question, you will use the 68-95-99.7 rule to determine various percentages of six-year-old girls with various heights.

   (a) Draw the normal curve representing the distribution, labeling the mean and standard deviation.

   (b) Determine the percentage of six-year-old girls who heights are between 43 and 49 inches.

   (c) Determine the percentage of six-year-old girls who are taller than 52 inches.

   (d) If a group of 5 six-year-old American girls each had heights of 53 inches, would this be considered a *statistically significant* event? Explain.

5. A national poll of 1000 autoworkers people found that 75% were worried about their jobs.

   (a) What is the (sample) statistic for this survey? _____

   What is the (population) parameter? _____

   (b) What is the margin of error for the study and the 95% confidence interval?

   margin of error = _____

   confidence interval: _____

   (c) Is it reasonable that another sample of 1000 autoworkers (chosen randomly) could find that only 60% are worried about their jobs. Explain.