Mth 120 – Statistics – **Practice Exam 1**

NOTE: This exam should not be taken as a complete list of possible problems. It is merely intended to be an example of the length and difficulty level of the regular exam. To best utilize it as a *practice* exam, give yourself 55 minutes with no distractions. Try to emulate the classroom environment as much as possible.

1. Classify each variable as qualitative or quantitative. Justify your choice.

    a. annual salary

    b. religious affiliation

    c. Mth120 exam score

    d. zip code

    e. weight

2. Classify each quantitative variable as discrete or continuous. Justify your choice.

    a. age

    b. number of students in class

    c. time spent studying for this exam

    d. number of typos on this exam

    e. speed of a car on the highway

3. The Gallup Organization recently polled 524 adults asking the question, "*All in all, do you think it was worth going to war in Iraq, or not?*" Of those polled, 51% responded that it was worth going to war, while 46% responded that it was not.

    a. What was the objective of this poll?

    b. Identify the population.

    c. Identify the sample.

4. Identify the type of sampling (random, systematic, stratified, cluster, or convenience) used in each example. Justify your answer.

    a. An opinion poll concerning parking at ECC randomly selects members from each group: faculty, staff, and students.

    b. A radio DJ does a call-in poll to determine if she should play a certain song.

    c. A grocery store would like to determine what proportion of eggs is cracked after being shipped with a particular shipping company. The manager randomly chooses 10 cartons and observes the number of cracked eggs in each carton.

5. A pharmaceutical company wants to test the effectiveness of an experimental drug meant to reduce high cholesterol. The researcher decided to randomly choose 40 people from a list of 200 volunteers with high cholesterol and split them into two groups. One group will receive a placebo while another will receive the drug.

    a. What is the response variable in this experiment?

    b. What is the treatment?

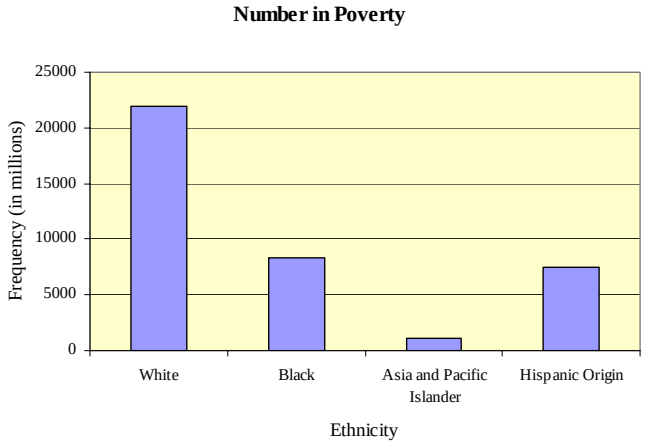
    c. What type of experimental design is this?

6. Every year the US Census Bureau counts the number of people living in poverty. The Bureau uses money income thresholds as its definition of poverty, so that non-cash benefits such as Medicaid and food stamps do not count toward poverty thresholds. The bar chart below represents the number of people living in poverty in the US in 1999.

   a. How many whites were living in poverty in 1999?

   b. Of the impoverished, what percent are of Hispanic origin?

   c. Why might this graph be misleading? What could you do to better represent the data?



7. The following data represent the number of robberies in 1998.

Type of Crime	Number of Offenses (in thousands)	Relative Frequency
Street or highway	219	
Commercial house	61	
Gas station	10	
Convenience store	26	
Residence	54	
Bank	9	

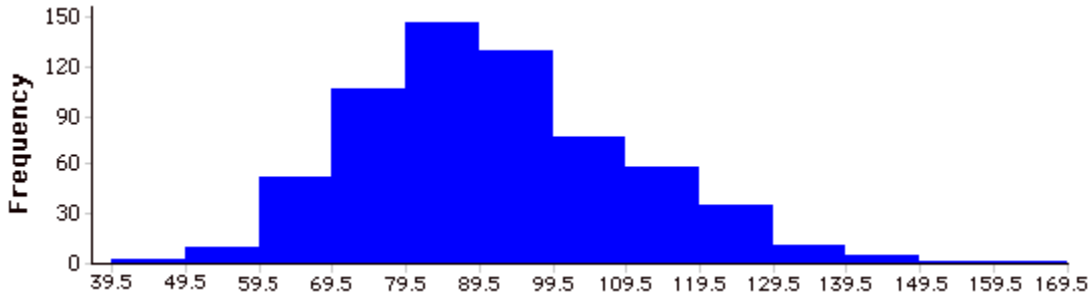
   a. Construct a relative frequency distribution. (Use the provided table.)

   b. Construct a frequency bar graph.

8. Given the following data set for scores on an exam, create a histogram. Justify your choice of classes.

57	91	88	79	65	96	85	68	78	89	92
72	94	87	92	88	94	48	94	94	98	70
71	83	40	78	90	89	61	55			

9. The figure below represents scores on a Psychology exam. What is the shape of the distribution?



10. In each of the following examples, state which measure of center is more appropriate. (mean, median, or mode) Justify your choice.
    a. Exam scores for this exam. (assume the distribution is reasonably bell-shaped)

    b. Housing prices in Elgin, IL.

    c. Favorite color of each student in the class.

11. For the following data, approximate the mean miles per day.

Miles (per day)	Frequency
1-2.9	3
3-4.9	30
5-6.9	17
7-8.9	21
9-10.9	7

12. The grades are given for a student for a particular semester. Find the grade point average. The point values of grades are given below.

A: 4 B: 3 C: 2 D: 1 F: 0

Grade	Credits
F	4
D	2
B	3
F	3
D	4

13. The test scores of 30 students are listed (sequentially) below. Find the 30th percentile.

31	41	45	48	52	55	56	56	63	65	67	69	70	70	74
75	78	79	79	80	81	83	85	85	87	90	92	95	98	99

14. The mean IQ score is approximately 100, with a standard deviation of 15. Compute the z-score for an IQ of 112.

15. ECC offered 13 sections of Mth096 Beginning Algebra during spring semester, 2004. The number of students in each section at the conclusion of the semester are as follows:

13 14 14 17 18 18 19 20 21 22 23 23 26

a. Find the five-number summary and construct a boxplot.

b. Are there are any outliers in the data? Justify why or why not.