Clarification of Examination II.
You are required to submit an examination II. This can be done in either of 3 ways:

(1) You submit Examination II Choice A (previous test); or
(2) You submit Examination II Choice B (this test); or
(3) You submit BOTH Examination II Choices A and B

Note - If you choose to attempt both choices A and B, I will take the higher grade.

Instructions and Checklist:
__1. Start each problem on a new page.
__2. Write your name on every page.
__3. Make a photo-copy of your exam for safekeeping prior to submission
__4. Complete the signature page

How to submit your exam:

**Worcester “In-Class” Section**

__1. Bring your completed exam to class on Tuesday October 15, 2013, being sure that you have made a copy for safe keeping; OR

__2. Mail your completed exam to me with post mark October 15, 2013 to my address below.

**ONLINE Section**

__1. Upload your completed exam to the ASSIGNMENT tab no later than 11:59 pm on Tuesday October 15, 2013. This must be a single pdf and be named using the convention lastname_exam2B.pdf.

__2. Mail your completed exam to me with post mark October 15, 2013 to my address below.

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Signature

This is to confirm that in completing this exam, I worked independently and did not consult with anyone.

Signature: __________________________________________________________

Printed Name: _______________________________________________________

Date: ___________________________
1. (10 points total)

The magazine *BusinessWeek* ran an online poll on their website and asked the readers the following question: “Do you think Google is too powerful?” Poll participants were offered three buttons as response: “yes”, “no”, or “not sure”.

In all 1336 (35.9%) said “yes”, 2051 (55.1%) said “no” and 335 (9.0%) said “not sure”

1a. (5 points)
What is the sample size for this poll?

1b. (2 points).
The magazine *BusinessWeek* was careful to note that: “These are surveys, not scientific polls”. In 1-2 sentences, explain what is meant by this statement.

1c. (3 points).
Do you think this poll might have given unreliable information? In 1-2 sentences, explain your reasoning.
2. (10 points total)

Some highway planners decided to change a two-way main street in West Lafayette, Indiana into a one-way street. The Lafayette Journal and Courier took a one-day poll by inviting readers to call a telephone number and record their comments. The next day, the paper reported the following:

Journal and Courier readers overwhelmingly prefer two-way traffic flow in West Lafayette’s Village area to one-way streets. By nearly a 7-1 margin, callers to the newspaper’s Express Yourself opinion line on Wednesday complained about the one-way streets that have been in place since May. Of the 98 comments received, all but 14 said “no” to one-way.

2a. (5 points)
What population do you think the newspaper wants information about?

2b. (5 points).
In your opinion, is the proportion of this population who favor one-way streets almost certainly larger or smaller than the proportion 14/98 in the sample? In 1-2 sentences, explain your reasoning.
The University of Massachusetts/Amherst wants to gather student opinions about parking for students on campus. It isn’t possible to contact all the students. A sampling must be done instead.

3a. (5 points)
*Design your own bad sample.* Give an example of a way to choose a sample of students that is poor practice because it depends on voluntary response. In 1-2 sentences, explain why you believe this is poor practice.

3b. (5 points)
*Design your own bad sample.* Give an example of a bad way to choose a sample of students that does NOT use voluntary response. In 1-2 sentences, explain why you believe this is also poor practice.
4. (10 points total)

The *San Francisco Bay Times* reported on a poll in New Zealand that found that New Zealanders opposed the nation’s new gay-inclusive civil-unions law by a 3-1 ratio. This poll was a call-in poll that cost $1 to participate in. The *San Francisco Bay Times* article also reported that a scientific polling organization found that New Zealanders favor the law by a margin of 56.4% to 39.3%.

In 1-3 sentences, explain why the two polls can give such widely differing results and which poll is likely to be more reliable.
5. (10 points total)

Suppose the University of Massachusetts/Amherst has 30,000 undergraduate students and 10,000 graduate students. A survey of student opinion concerning health care benefits for domestic partners of students selects 300 of the 30,000 undergraduate students at random and then separately selects 100 of the 10,000 graduate students at random. The 400 students chosen comprise the study sample.

5a. (5 points)
Does this sampling method give each student an equal chance of being selected? In 1-2 sentences, explain your reasoning.

5b. (5 points)
In 1-2 sentences, explain why this sampling method is not simple random sampling.
6. (10 points total)

6a. (2 points)
TRUE or FALSE.
In a table of random digits, each pair of digits has a 1 in 100 chance of being the pair 33.

6b. (2 points)
TRUE or FALSE.
In a table of random digits, there are exactly four 4’s in each row of 40 digits.

6c. (2 points)
TRUE or FALSE.
In a table of random digits, the digits 99999 can never appear as a group because this pattern is not random.

6d. (2 points)
Voter registration records show that 15.4% of all voters in Philadelphia are registered as Republicans. However, a radio talk show host in Philadelphia found that of 20 local residents who called the show recently, 60% were registered Republicans.

Choose ONE: Complete the sentence with either “parameter” or “statistic”
The bold face number 15.4% is a ______________.

Choose ONE: Complete the sentence with either “parameter” or “statistic”
The bold face number 60% is a ______________.

6e. (2 points)
A national polling organization uses a random digit dialing device to dial residential landline phone numbers in the United States. Of the first 100 numbers dialed, 32 are unlisted numbers. This is not surprising, because 34% of all residential phones in the United States, including cell-phone-only and many unlisted landline phone households, are not covered by current landline phone number sampling methods.

Choose ONE: Complete the sentence with either “parameter” or “statistic”.
The bold face number 32 is a ______________.

Choose ONE: Complete the sentence with either “parameter” or “statistic”.
The bold face number 34% is a ______________.
7. (10 points total)

The Denver Police Department wants to know if Hispanic residents of Denver believe that the police use racial profiling when making traffic stops. A sociologist prepares several questions about predominantly Hispanic neighborhoods and sends a uniformed Hispanic police officer to each address to ask the questions of an adult living there.

7a. (2 points)
What is the population?

7b. (3 points)
What is the sample?

7c. (5 points)
In 1-2 sentences, explain why the results are likely to be biased even thought the sample is a simple random sample.
8. (10 points total)

8a. (2 points) Fill in the blank. Choose the ONE BEST answer.
A simple random sample is a sample chosen in such a way that every unit in the population has a(n) ________ chance of being selected into the sample.

___A. equal
___B. unequal
___C. known

8b. (2 points) Multiple Choice. Choose ONE.
In a random digit table, approximately what percent of the digits are 9 or 2?

___A. 20%
___B. 10%
___C. unknown

8c. (2 points). TRUE or FALSE.
Sampling with replacement from a very large population gives virtually the same result as sampling without replacement.

8d. (2 points) Complete the sentence by choosing the ONE BEST last word
In a stratified random sample, the selection probability for each element within a stratum is ___.

___A. equal
___B. unequal
___C. known

8e. (2 points) Fill in the blank. Choose the ONE BEST answer.
A probability sample is a sample chosen in such a way that each possible sample has a (n) ______ chance of being selected.

___A. equal
___B. unequal
___C. known
___D. unknown
9. (10 points total)

An epidemiologist wishes to estimate the average length of hospitalization for cancer patients discharged from the hospitals in her region of the country. There are 500 hospitals with the number of beds ranging from 30 to 1200 in the region.

9a. (5 points).
In 1-2 sentences, discuss what difficulties the researcher might encounter in drawing a simple random sample.

9b. (5 points).
In 1-2 sentences, offer suggestions for obtaining a representative sample.
10. (10 points total)

A city planner is interested in estimating the proportion of passenger cars that have only one occupant during rush hours.

10a. (2 points).
What is the population of interest?

10b. (2 points).
Suggest a sampling frame that the city planner might use to obtain a sample.

10c. (3 points).
In 1-2 sentences, advise the city planner on how to actually use the sampling frame to obtain a sample?

10d. (3 points).
In your opinion, is the sampling frame you suggested in #10b representative of the population you identified in #10a? In 1-2 sentences, explain your reasoning.