Chapter 1 Self-Test Solutions

1) A survey was conducted to examine the way in which adult residents of the Southeast (Georgia, South Carolina, North Carolina, and Florida) prefer to travel. A total of 400 respondents answered 10 questions each. For example, the third question was: "If you are planning a trip that would require 10-12 hours of driving, is your first choice Bus (press 1), Driving (press 2), Flying (press 3), or Rail (press 4)?"

The results for this question were summarized as:

Response	Frequency	Relative Frequency
1	16	0.0400
2	265	0.6625
3	114	0.2850
4	5	0.0125

The response is:

A) Qualitative – It is qualitative because the numbers represent modes of transportation. For example, flying is not the average of rail and driving).
B) Quantitative

Questions 2-4 are based on the following description

The Pew Research Center recently conducted a survey to see what percentage of American adults say they most admire political leaders who stick to their positions (as opposed to making compromises). The poll was conducted by telephone from September 16-19 and 1,005 responses from adults with phone lines living in the continental United States. 492 of those responding said they favored leaders who stick to their positions.

2) The **sample** is:

A) American adults – this is the population
B) The 1,005 who responded
C) Adults with phone lines living in the US – this is called the sampling frame
D) The percentage of American adults who said they favored leaders who stick to their positions
E) The percentage of the 1,005 who responded who said they favored leaders who stick to their positions

3) The **statistic** is:

A) American adults
B) The 1,005 who responded
C) Adults with phone lines living in the US
D) The percentage of American adults who said they favored leaders who stick to their positions
E) The percentage of the 1,005 who responded who said they favored leaders who stick to their positions

4) The **parameter** is:

A) American adults
B) The 1,005 who responded
C) Adults with phone lines living in the US
D) The percentage of American adults who said they favored leaders who stick to their positions
E) The percentage of the 1,005 who responded who said they favored leaders who stick to their positions

Questions 5-6 are based on the following description

An advertising firm is conducting a survey of adult South Carolinians about the effectiveness of different advertising campaigns to promote tourism in Florida. Using the most recent voter registration lists, they select 4,000 registered voters and mail them a survey and $1 (to make people feel more inclined to respond). They send a second reminder envelope (without the $1) to those who hadn't responded after three weeks. In the end they receive responses from 1,235 people.

5) The **population** is:

A) Adult South Carolinians
B) The 1,235 people who responded - this is the sample
C) Registered voters in South Carolina – this is called the sampling frame
D) The 2,765 people who did not respond – these are the non-respondants
E) The 4,000 people who received the survey in the mail – this is the sample plus the non-respondants

6) The **sample** is:

A) Adult South Carolinians
B) The 1,235 people who responded
C) Registered voters in South Carolina
D) The 2,765 people who did not respond
E) The 4,000 people who received the survey in the mail

Questions 7-8 are based on the following description

A team of researchers wished to study whether oatmeal reduced bad cholesterol levels in those who ate it. They found 500 adults over age 40 who regularly eat oatmeal or products from oatmeal. They then matched each of these 500 with a similar adult (one of the same gender, within 10 pounds of the same weight, and who exercised roughly the same amount) who did not regularly eat oatmeal or products made from oatmeal. Finally, they measured the bad cholesterol LDL for each adult and compared both groups.

7) This is NOT an **experiment** because:

A) It used matched pairs
B) It was not at least single-blind
C) The sample size wasn't large enough
D) The researcher did not use randomness
E) The researcher did not assign the adults to regularly eat oatmeal or not

8) The most important reason this study can't give evidence that oatmeal **causes** a decrease in LDL levels of those in our sample because:

A) The subjects knew which group they were in
B) The sample size wasn't large enough
C) The researcher did not use randomness
D) The researcher did not assign the adults to regularly eat oatmeal or not – a (good) experiment is required to show causality

9) It is desired to select a simple random sample of size ten from a class with forty students, twenty male and twenty female.

Select the two methods below that would result in a simple random sample:

A) Write the numbers one to forty on slips of paper. Mix them up in a hat and have the students come up in alphabetical order to draw a number and sit in the seat with that number. Use the students in seats 1-20 for your sample. – Every grouping of students has the same chance of being selected

B) Write "Selected" and "Not Selected" on two slips of paper. Have the students come up in alphabetical order to select one and put it back until you have selected ten. – Students at the end will be more likely to be grouped together because the sample will be finished before you get to them.

C) Write "Selected" on ten slips of paper and "Not Selected" on thirty slips of paper. Mix them up in a hat and call the students up in alphabetical order to select one each. – Every grouping of students has the same chance of being selected

D) Write "Selected" on five slips of paper and "Not Selected" on fifteen slips of paper. Mix them up in a hat and call the male students up in alphabetical order to make a selection. Repeat this process for the female students. – It is impossible to get a group of all men, or all women, for example. This is a stratified random sample.