

18. Two possible wordings for a questionnaire on gun control are as follows:

1. The U.S. has the highest rate of murder by handguns among all countries. Most of these murders are known to be crimes of passion or crimes provoked by anger between acquaintances. Are you in favor of a 7-day cooling-off period between the filing of an application to purchase a handgun and the resulting sale?
2. The U.S. has one of the highest violent crime rates among all countries. Many people want to keep handguns in their homes for self-protection. Fortunately, U.S. citizens are guaranteed the right to bear arms by the Constitution. Are you in favor of a 7-day waiting period between the filing of an application to purchase a needed handgun and the resulting sale?

- a. Which question showed that 70% of the population favored the waiting period?
- b. Which question showed that 25% favored the waiting period?
- c. Reword the question to eliminate bias.

6.3

die

4. A game is played by two people each rolling a single number cube. The player with the higher value on their cube will win. If the players both roll the same value, they must both roll again.

- What constitutes a single play of this game?
- Describe a correspondence between the random digits from a random digit table and outcomes in the game.
- Use the random digit table, beginning on line 105 to simulate 10 games. Report the proportion of times player 1 wins the game.

one roll from each player

1-6

pick 2 digits at a time 1st digit is 1st player's number + 2nd digit is second player's # if both digits are between 1-6.

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7. Assume that the percentage of women in the labor force of a large metropolitan area is 40%. A company hires ten workers, two of whom are women. We want to see if this is likely.

- a. Assign the digits, 0 through 9, to represent the men and women in this situation. Describe how you will run the simulation using those digits and the random digit table.
- b. Start on line 136 of the random digit table and carry out the simulation with 3 runs.
- c. What is the expected number of women that should be hired, based on your simulation?
- d. Repeat the 3 runs using line 135 of the random digit table. Is the expected number the same? Why or why not?

0-3
Women

4-9
men

2. A SRS was selected of large urban school districts throughout New England. The selected districts were identified as target districts. Within each district, a SRS of its high schools was chosen and the principals of those high schools were interviewed. This situation is an example of a
- Simple random sample
 - Convenience sample
 - Voluntary response sample
 - Multistage sample
3. Refer to question 2. Could the results of these interviews be used to infer responses of the population of high school principals in New England?
- Yes
 - No

District
school
principals

Use this information for questions 4 and 5:

In order to assess the membership's attitudes about a new Supreme Court decision, a local bar association selects a SRS of 100 lawyers from its membership list. Surveys are delivered to the selected lawyers. 63 of the lawyers return their surveys. 43 of the respondents disagree with the new ruling.

4. Which of the following is of great concern in this situation?
- Nothing is known about the parameters of the population of interest.
 - Nothing is stated about the methodology of the SRS.
 - There may be a problem with the sampling frame.
 - There may be a problem with non-response bias.
 - None of these is true.



Question 7

If the LSRL relating the independent variable x and the dependent variable y for a given problem is $\hat{y} = 3x + 4$, then an increase of 1 unit in x is associated with an increase of how many units in y ?

Slope

$$\frac{\text{Change in } y}{\text{Change in } x} \rightarrow \frac{3}{1}$$

Question 8

If the correlation between number of children in a family and annual income was close to -1 , we could conclude that:

- a) low incomes cause people to have more children.
- b) high incomes cause sterility.
- c) low-income families tend to have more children.
- d) high-income families tend to have more children.
- e) high incomes cause people to have more children.

