

Lesson 2: The Statistical Process & Design of Studies

Homework

Solutions

Please note that the steps show rounded numbers, but that the final answers to the problems are calculated without rounding.

| Problem | Part | Solution |
|---------|------|--|
| 1 | A | Quantitative |
| 1 | B | Categorical |
| 1 | C | Quantitative |
| 1 | D | Categorical |
| 1 | E | Categorical |
| 1 | F | Quantitative |
| 1 | G | Categorical |
| 2 | - | In a designed experiment, researchers manipulate the conditions that the participants experience. In an observational study researchers observe the responses of the individuals, without controlling the conditions experienced by the individuals. |
| 3 | A | If there is a list of all the items of the population, take a randomly selected number of them. (Software can be used to randomly select the items) |
| 3 | B | Stratified sampling works well when the items are similar within each stratum and tend to differ from one stratum to another. A certain number of items is randomly selected from each of these strata. |
| 3 | C | This sample requires taking every k^{th} item in the population, beginning at a random starting point. Systematic sampling works well when the items are in a random, sequential ordering. If the items are not arranged randomly, a systematic sample can miss important parts of the population. |
| 3 | D | A cluster sample consists of taking all items in one or more randomly selected clusters, or blocks. When the variation from one block to another is relatively low, compared to the variation within the block, cluster sampling is a reasonable way to get a sample. |
| 4 | - | c. Systematic Random Sample |