

## Section 1-2

1. Statistical significance is indicated when methods of statistics are used to reach a conclusion that some treatment or finding is effective, but common sense might suggest that the treatment or finding does not make enough of a difference to justify its use or to be practical. Yes, it is possible for a study to have statistical significance but not a practical significance.
2. If the source of the data can benefit from the results of the study, it is possible that an element of bias is introduced so that the results are favorable to the source.
3. A voluntary response sample is a sample in which the subjects themselves decide whether to be included in the study. A voluntary response sample is generally not suitable for a statistical study because the sample may have a bias resulting from participation by those with a special interest in the topic being studied.
5. There does appear to be a potential to create a bias.
6. There does not appear to be a potential to create a bias.
7. There does not appear to be a potential to create a bias.
8. There does appear a potential to create a bias.
17. The male and female pulse rates in the same column are not matched in any meaningful way. It does not make sense to use the difference between any of the pulse rates that are in the same column.
18. Yes, the source of the data is likely to be unbiased.

## Section 1-3

7. Parameter
9. Parameter
13. Continuous
14. Discrete
17. Discrete

## Section 1-4

1. No. Not every sample of the same size has the same chance of being selected. For example, the sample with the first two names has no chance of being selected. A simple random sample of  $(n)$  items is selected in such a way that every sample of same size has the same chance of being selected.
2. In an observational study, you would examine subjects who consume fruit and those who do not. In the observational study, you run a greater risk of having a lurking variable that affects weight. For example, people who consume more fruit might be more likely to maintain generally better eating habits, and they might be more likely to exercise, so their lower weights might be due to these better eating and exercise habits, and perhaps fruit consumption does not explain lower weights. An experiment would be better, because you can randomly assign subjects to the fruit treatment group and the group that does not get the fruit treatment, so lurking variables are less likely to affect the results.