

1. A number that describes the population is:

- \*a. A parameter
- b. A statistic
- c. A proportion
- d. A sample

- A. Correct. In practice, we don't know its value.
- B. Incorrect. The statistic is the number that describes the sample.
- C. Incorrect. A proportion is a comparison of two ratios that can be used to describe relationships.
- D. Incorrect. A sample is a set of individuals chosen from the population.

Text Reference: Section 3.1: From sample to population, p. 40

2. Cheshire High School announces the results of a survey— 31% of the senior class has an mp3 player. The survey was given to a random sample of 100 seniors. What is the population?

- a. The random sample of 100 students
- b. Cheshire High School
- c. The percentage of the senior class who has an mp3 player
- \*d. The senior class

- A. Incorrect. These are the individuals who participated in the survey. The statistic is based on this group.
- B. Incorrect. This is not the population the survey was referring to. The senior class is what is being represented.
- C. Incorrect. This is the statistic from the sample.
- D. Correct. This is the population that is being represented by the survey.

Text Reference: Section 3.1: From sample to population, p. 40

3. A good sampling method has:

- \*a. Small bias and small variability
- b. Large bias and small variability
- c. Small bias and large variability
- d. Large bias and large variability

- A. Correct. A good sampling method has small bias and small variability.
- B. Incorrect. We don't want to have a large bias—a consistent repeated deviation of the sample statistic from the population.
- C. Incorrect. Large variability means that the result of sampling is not repeatable.
- D. Incorrect. You would have a consistent repeated deviation of the sample statistic from the population and the result of sampling would not be repeatable.

Text Reference: Section 3.2: Sampling variability, p. 43

4. By increasing the size of a sample, we can:

- a. Reduce bias
- b. Increase bias
- \*c. Reduce variability
- d. Increase variability

- A. Incorrect. Bias means the aim is off—increasing the size of the sample won't help.
- B. Incorrect. Bias means the aim is off—increasing the size of the sample won't help.
- C. Correct: Increasing the size of the sample will reduce variability.
- D. Incorrect. Increasing the size of the sample reduces variability.

Text Reference: Section 3.2: Sampling variability, p. 44

5. To reduce bias, one needs to:

- a. Increase the sample size
- b. Take multiple samples
- \*c. Use random sampling
- d. Reduce variability

- A. Incorrect. Increasing the sample size won't help to reduce bias. The sample values won't center about the population if you increase the sample size.
- B. Incorrect. Although this is always good to do, if you don't choose a random sample, this won't help.
- C. Correct. Using random sampling helps to reduce bias.
- D. Incorrect. Reducing variability won't help to reduce bias. Random sampling does.

Text Reference: Section 3.2: Sampling variability, p. 44

6. Fill in the blank: Larger samples \_\_\_\_\_ than smaller samples.

- a. are less biased
- b. are more biased
- \*c. have less variability
- d. have more variability

- A. Incorrect. Size of population does not reduce bias. Random sampling does.
- B. Incorrect. Size of population does not increase or decrease bias.
- C. Correct. Choosing larger samples assists in reducing variability.
- D. Incorrect. Larger samples have less variability than smaller samples.

Text Reference: Section 3.2: Sampling variability, p.44

7. The conclusion of a confidence statement always refers to:

- \*a. The population

- b. The sample
- c. The statistic
- d. The parameter

- A. Correct. Confidence statements always apply to the population, not the sample.
- B. Incorrect. Confidence statements always apply to the population, not the sample.
- C. Incorrect. Confidence statements always apply to the population. The confidence statement uses the sample result to say something about the population.
- D. Incorrect. Confidence statements always apply to the population. The confidence statement uses the sample result to say something about the population.

Text Reference: Section 3.4: Confidence statements, p.48

8. If no level of confidence is given in a confidence statement, then:

- a. The confidence statement is not valid.
- \*b. It is assumed that the level of confidence is 95%.
- c. The margin of error must be between plus and minus 3 percent.
- d. The level of confidence satisfies the margin of error.

- A. Incorrect. We assume that the level of confidence is 95%.
- B. Correct. If a news report gives a margin of error but leaves out the confidence level, it's pretty safe to assume 95% confidence.
- C. Incorrect. If no level of confidence is given, then we assume that the confidence level is 95%.
- D. Incorrect. If no level of confidence is given in a confidence statement, then we assume that the confidence level is 95%.

Text Reference: Section 3.4: Confidence statements, p.48

9. If you want a smaller margin of error with the same confidence:

- a. Reduce the size of the sample

\*b. Increase the size of the sample

c. Use a different method to select the sample.

d. There is no way to reduce the margin of error with the same confidence.

A. Incorrect. Reducing the size of the sample will increase the margin of error at the same confidence level.

B. Correct. Increasing the size of the sample will reduce the margin of error with the same confidence level.

C. Incorrect. Increasing the size of the sample will reduce the margin of error with the same confidence level.

D. Incorrect. If you increase the size of the sample, you can reduce the margin of error with the same confidence level.

Text Reference: Section 3.4: Confidence statements, p.48

10. True or False: The size of the *population* determines the variability of the statistic from a random sample.

a. True. We must consider the size of the population when we determine the size of the sample.

b. True. Larger populations reduce variability.

c. False. Large populations determine bias, not variability.

\*d. False. Variability of a sample statistic depends on the size of the sample and not on the size of the population.

A. Incorrect. Variability in the sample statistic depends on the size of the sample, not on the size of the population.

B. Incorrect. Variability in the sample statistic depends on the size of the sample, not on the size of the population.

C. Incorrect. Large populations do not determine bias or variability - the sample from the populations does.

D. Correct. The size of the sample determines variability.

Text Reference: Section 3.5: Sampling from large populations, p.49