4-3 Basic Skills and Concepts

Statistical Literacy and Critical Thinking

1. Complements What is wrong with the expression $P(A) + P(\overline{A}) = 0.5$?

2. Casino Craps A gambler plans to play the casino dice game called craps, and he plans to place a bet on the "pass line." Let A be the event of winning. Based on the rules used in almost all casinos, $P(A) = 244/495$. Describe the event $\overline{A}$ and find the value of $P(\overline{A})$.

3. Disjoint Events For a Gallup poll, M is the event of randomly selecting a male, and R is the event of randomly selecting a Republican. Are events M and R disjoint? Why or why not?

4. Rule of Complements One form of the rule of complements is this: $P(A \text{ or } \overline{A}) = 1$. Write a sentence describing the message that this rule represents.

Determining Whether Events Are Disjoint. ***For Exercises 5–12, determine whether the two events are disjoint for a single trial.*** **(Hint:** ***Consider "disjoint" to be equivalent to "separate" or "not overlapping."*****)**

5. Arriving late for your next statistics class.

Arriving early for your next statistics class.

6. Asking for a date through a Twitter post.

Asking for a date in French, the romance language.

7. Randomly selecting a survey respondent and getting someone who believes in UFOs.

Randomly selecting a survey respondent and getting someone who believes in the devil.

8. Randomly selecting a statistics student and getting one who uses a TI calculator in class.

Randomly selecting a statistics student and getting one who uses the STATDISK computer program.

9. Randomly selecting a drug screening result and getting one that is a false negative.

Randomly selecting a drug screening result and getting one from someone who is not a drug user.

10. Randomly selecting a drug screening result and getting one that is a false positive.

Randomly selecting a drug screening result and getting one from someone who uses drugs.

11. Randomly selecting a drug screening result and getting one that is a false positive.

Randomly selecting a drug screening result and getting one from someone who does not use drugs.

12. Randomly selecting a drug screening result and getting one that is a false positive.

Randomly selecting a drug screening result and getting one that is a false negative.

Finding Complements. ***In Exercises 13–16, find the indicated complements.***

13. Whatever A Marist poll survey showed that 47% of respondents chose "whatever" as the most annoying phrase used in conversation. What is the probability of randomly selecting someone choosing something different from "whatever" as the most annoying phrase in conversation?

14. Online Courses According to the National Association for College Admissions Counseling and *USA Today,* 19.8% of college students take at least one class online. What is the probability of randomly selecting a college student who does not take any college courses online?