Chapter 5: Probability: What are the chances?

Key Vocabulary:

- law of large numbers
- probability
- simulation
- two -way table
- sample space
- S = {H, T}
- tree diagram
- probability model

- replacement
- event
- P(A)
- complement A^C
- disjoint
- mutually exclusive event
- Venn diagram

- union (or)
- intersection (and)
- conditional probability
- independent events
- general multiplication rule
- general addition rule

- multiplication rule

5.1   Randomness, Probability, and Simulation (pp.282-292)

1. What is the *law of large numbers?*

2. The *probability* of any outcome…

3. How do you interpret a probability?

4. Answer the two questions for the *Check Your Understanding* on page 286.

5. What are the two *myths about randomness*? Explain.

6. Define *simulation*.

7. Name and describe the four steps in performing a simulation:

8. What are some common errors when using a table of random digits?

5.2   Probability Rules (pp.299-308)

1. In statistics, what is meant by the term *sample space*?

2. In statistics, what is meant the term *probability model*?

3. What is an *event*?

4. What is the P (A) if all outcomes in the sample space are equally likely?

5. Define the *complement* of an event. What is the complement rule?

6. Explain why the probability of any event is a number between 0 and 1.

7. What is the sum of the probabilities of all possible outcomes?

8. Describe the probability that an event does not occur?

9. When are two events considered *disjoint* or *mutually exclusive*?

10. What is the *addition rule* for mutually exclusive events?

11. What is the probability of two disjoint events?

12. Summarize the *five basic probability rules* as outlined on page 302.

13. Answer the three questions for *Check Your Understanding* on page 303.

14. When is a *two-way* table helpful?

15. In statistics, what is meant by the word *"or"?*

16. When can a *Venn diagram* be helpful?

17. What is the *general addition rule* for two events?

18. What happens if the general addition rule is used for two mutually exclusive events?

19. What does the union of two or more events mean? Illustrate on a Venn diagram.

20. What does the intersection of two or more events mean? Illustrate on a Venn diagram.

5.3   Conditional Probabilty and Independence (pp.312-327)

1. What is *conditional probablity?* What is the *notation* for conditional probabilty?

2. Answer the two questions for the *Check Your Understanding* on page 314.

3. What are *independent events*?

4. What is the *notation* used for independent events?

5. Answer the three questions for *Check Your Understanding* on page 317.

6. When is a *tree diagram* helpful?

7. State the *general multiplication rule* for any two events.

8. State the *multiplication rule* for independent events.

9. How is the *general multiplication rule* different than the *multiplication rule* for independent events?

10. Explain the difference between *mutually exclusive* and *independent*.

11. State the *formula* for calculating *conditional probabilities*.

12. How is the conditional probability formula related to the general multiplication rule?