Chapter 5: Probability: What Are the Chances?

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| Key Vocabulary: | replacement |
| trial | event |
| random | P(A) |
| probability | Complement AC |
| independence | disjoint |
| random phenomenon | Venn Diagram |
| sample space | union (or) |
| S = {H, T} | intersection (and) |
| tree diagram | simulation |
| joint event / joint probability | conditional probability |

5.1 Randomness, Probability, and Simulation (pp.283-298)

1. What does the Law of Large Numbers tell us?
2. In statistics, what is meant by probability?

**CYU page 286**

1. What is wrong with the Law of Averages?
2. What is *simulation*?
3. List the four steps for conducting a *simulation*:
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**CYU page 292**

5.2 Probability Rules (pp.299-308)

1. What is a sample space?
2. What is an event?
3. Explain why the probability of any event is a number from 0 to 1.
4. What is the sum of the probabilities of all possible outcomes?
5. Describe the probability that an event does not occur? What is it called?
6. When are two events considered disjoint? What is another term for disjoint?
7. What is the probability of two mutually exclusive events?
8. What is meant by the *union* of two or more events? Illustrate on a Venn diagram.
9. State the addition rule for *disjoint* events. Illustrate on a Venn diagram.
10. State the general addition rule for *unions* of two events.
11. Explain the difference between the rules in 9 and 10.
12. Summarize the 5 Rules of Probability.
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**CYU pg 303**

1. What is meant by the *intersection* of two or more events? Illustrate on a Venn diagram.
2. Explain the difference between the *union* and the *intersection* of two or more events.

**CYU page 305**

* 1. Conditional Probability and Independence (pp.312-328)
1. What is meant by *conditional probability*?

**CYU pg 314**

1. When are two events considered independent? State the formula used to determine if two events are independent?

**CYU page 317**

1. State the general multiplication rule for any two events.

**CYU page 321**

1. What is the multiplication rule for independent events?
2. How is the general multiplication rule different than the multiplication rule for independent events?
3. Can mutually exclusive events be independent?

**CYU page 323**

1. What is the opposite of at least one?
2. State the formula for finding conditional probability.
3. Explain how to set up a tree diagram.