5. Combinations Rule

$${}_nC_r = \frac{n!}{(n-r)!r!} = \text{Number of different combinations (order does not count) when } n \text{ different items are available, but only } r \text{ of them are selected } \textit{without replacement.}$$

Chapter Quick Quiz

1. A multiple-choice question on a statistics quiz has possible correct answers of a, b, c, d, e. What is the probability that "false" is the correct answer?

2. As the author is creating this exercise, a weather reporter stated that there are 3 chances in 10 of rain today. What is the probability of no rain today?

3. If a day of the week is randomly selected, what is the probability that it is a day containing the letter *y*?

4. Based on a Harris poll, 20% of adults smoke. If two adults are randomly selected, what is the probability that they both smoke?

5. Estimate the probability that a randomly selected prime-time television show will be interrupted with a news bulletin.

In Exercises 6–10, use the following results from the 839 player challenges to referee calls in the first U.S. Open tennis tournament to use the Hawk-Eye electronic instant replay system.

	Player Challenge Was Accepted	Player Challenge Was Rejected
Male Player	201	288
Female Player	126	224

6. If 1 of the 839 challenges is randomly selected, find the probability of getting a challenge that was rejected.

7. If 1 of the 839 challenges is randomly selected, find the probability of getting a challenge that was made by a male player or was rejected.

8. Find the probability of randomly selecting 1 of the 839 challenges and getting a challenge that was accepted and was made by a female player.

9. Find the probability of randomly selecting 2 different challenges and finding that they were both accepted challenges made by female players.

10. Find the probability of randomly selecting 1 of the 839 challenges and getting a challenge that was accepted, given that it was made by a female player.

Review Exercises

Prison and Plea. ***In Exercises 1–10, use the data in the accompanying table (based on data from "Does It Pay to Plead Guilty? Differential Sentencing and the Functioning of the Criminal Courts," by Brereton and Casper,*** **Law and Society Review,** ***Vol. 16, No. 1). Express all probabilities as decimal numbers.***

	Guilty Plea	Plea of Not Guilty
Sentenced to Prison	392	58
Not Sentenced to Prison	564	14

1. Prison and Plea If 1 of the 1028 subjects is randomly selected, find the probability of selecting someone sentenced to prison.