

Study Guide

Probability of Independent and Dependent Events

If the outcome of one event does *not* influence the outcome of a second event, the events are **independent**.

Example: A jar contains 12 red bells and 12 silver bells. Pick one, replace it, and pick another. The probability of picking a silver bell twice is

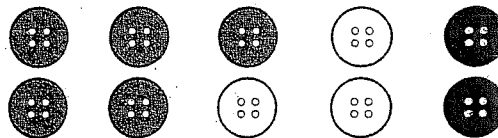
$$\frac{1}{2} \times \frac{1}{2} \text{ or } \frac{1}{4}$$

If the outcome of the second event depends on the outcome of the first event, the events are **dependent**.

Example: A jar contains 12 red bells and 12 silver bells. Pick one, keep it and pick another. The probability of picking two red bells is

$$\frac{1}{2} \times \frac{11}{23} \text{ or } \frac{11}{46}$$

Refer to the ten buttons on the left to find the probability of each outcome. Each button is replaced.



1. a white button twice
2. a gray button twice
3. a gray button, then a white button
4. a white button, then a black button
5. a black button twice
6. a black button, then a gray button

Refer to the ten buttons shown above to find the probability of each outcome. Each button is not replaced.

7. a white button twice
8. a gray button twice
9. a gray button, then a white button
10. a white button, then a black button
11. a black button twice
12. a black button, then a gray button