Conditional Probability

Conditional M&Ms

A small bag of M&Ms Peanut Butter contained 2 Brown, 2 Yellow, 3 Red, 9 Blue, 9 Orange, and 5 Green. A child selects an orange M&M, eats it, and then selects a yellow M&M and eats it.

1. Determine the probability of selecting the yellow M&M in this situation.

2. Determine the probability of selecting the orange M&M and then the yellow M&M in succession without replacement.

General Multiplication Rule

The probability that two events $E$ and $F$ both occur is

$$P(E \text{ and } F) = P(E) \cdot P(F|E)$$

3. A drawer contains two black socks and four blue socks (each unmatched). A person dressing in the dark randomly selected two socks. Find the probability that both socks were black.

4. A recent report from CBS News (www.cbsnews.com) found that 87 percent of adults and 76 percent of children (under 18 years of age) had a diet that contained caffeine. Among those who included caffeine in their diets, coffee (71 percent), soft drinks (16 percent), and tea (12 percent) were the top three sources of caffeine. Find the probability of randomly selecting an adult who consumes caffeine from coffee.