Objective: Find probabilities of independent and dependent events.

Lesson 0-6

KeyConcept Probability of Independent Events

If two events A and B are independent, then the probability that A and B will occur is

$$P(A \text{ and } B) = P(A) \cdot P(B).$$

KeyConcept Probability of Dependent Events

If two events A and B are dependent, then the probability that A and B will occur is

$$P(A \text{ and } B) = P(A) \cdot P(B \mid A).$$

1. A red die and a blue die are rolled. What is the probability of getting the result shown? **independent; $\frac{1}{36}$**

2. Yana has 4 black socks, 6 blue socks, and 8 white socks in his drawer. If he selects three socks at random with no replacement, what is the probability that he will first select a blue sock, then a black sock, and then another blue sock? **dependent; $\frac{5}{204}$ or about 0.025**

(1) $\left(\frac{1}{6}\right)\left(\frac{1}{6}\right) = \frac{1}{36}$

(2) $\left(\frac{6}{18}\right)\left(\frac{4}{17}\right)\left(\frac{5}{16}\right) = \frac{120}{4896} = \frac{30}{1224} = \frac{10}{408}$

$= \frac{5}{204}$

A bag contains 8 blue marbles, 6 red marbles, and 5 green marbles. Three marbles are drawn one at a time. Find each probability.

7. The second marble is green, given that the first marble is blue and not replaced. $\frac{5}{18}$
8. The second marble is red, given that the first marble is green and is replaced. $\frac{6}{19}$
9. The third marble is red, given that the first two are red and blue and not replaced. $\frac{5}{17}$

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