Independent Events Probability

Two events are said to be **Independent** if the occurrence of the first event does **NOT** affect the probability of the second event and events are independent if **P(A) · P(B) = P(A and B)**

INDEPENDENT PROBABILITY

1. Determine the following probabilities if each of the following are **independent**.

> **GIVEN:**   **P(A) = 0.8**   **P(B) = 0.25**   **P(C) = 0.6**

a.   P(A and C) =

Decimal:

b.   P(A and B and C) =

Decimal:

c.   P(Rolling a 4 on a standard die and B) =

Decimal:

d.   Find P(D) if D is an independent event and P(C and D) = 0.10

Decimal:

e.   P(Rolling a 2 on a standard die and picking a card with a "7" on it from a standard deck of cards) =

Decimal:

f.   If your chances of losing the shell game if you randomly pick is 2 in 3. What are the chances that you would lose 5 games in a row?

Decimal:

g.   If the Atlanta Hawks free throw percentage is 82%, what is the probability that a player for the Hawks will make 2 free shots in a row?

Percentage:

h.   The chance of rain on a random day in May in Gwinnett is about 30%. What would you estimate the probabily of having NO rain for an entire week (7 days)?

Percentage:

i.   Nancy estimates that the probability that a tornado will strike with in the city limits on any given year is 0.75%. What is the probability that no tornados touch down in the next 5 years?

Percentage:

2.

> **GIVEN:**   **P(M) = 0.8**   **P(N) = 0.25**   **P(R) = 0.6**

a.   If the probability of **P(M and N) = 0.2,** are M and N independent?

b.   If the probability of **P(N and R) = 0.3,** are N and R independent?

DEPENDENT PROBABILITIES

3. Consider that 3 consecutive cards are drawn **without replacement** from a shuffled deck of cards

    A. What is the probability that the first two cards drawn are face cards?

    Decimal:

    B. What is the probability that the all three cards are hearts?

    Decimal:

    C. What is the probability that all three cards are a King?

    Decimal:

    D. What is the probability that the first card is black and the second is a 2?

    Decimal:
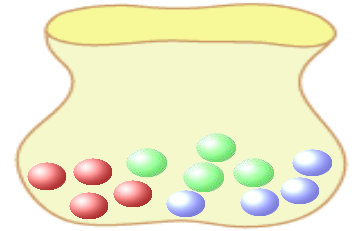
4. A bag contains 4 blue marbles, 4 red marbles, and 4 green marbles:

    A. What is the probability of drawing 2 green marbles **without replacement**?

    Decimal:

    B. What is the probability of drawing 3 marbles without replacement in a row of the same color **without replacement**?

    Decimal:

5. James has 3 dimes, 4 pennies, and 2 quarters in his pocket. If each coin is equally likely to be pulled out of his pocket in order **without replacement**, what is the probability that he will pull out the 2 quarters in a row first?

    Reduced Fraction:

6. In a cookie jar there are 10 chocolate chip cookies and 8 peanut butter cookies left. The cookies are randomly mixed together in the jar. What is the probability of pulling out a chocolate chip cookie, eating it, and then pulling out a peanut butter cookie?

    DECIMAL:

7. In a classroom there are 7 male students and 11 female students that are taking a test. If each student is equally likely to turn in their test at any given time at the end of class, what is the probability that the first 3 students to turn in their test are female students?

    DECIMAL: