

Probability with M & M's

Algebra 5/Trigonometry

April 20, 2010

In your group, count the total number of each color of M & M's in your bags. In addition, find the total number of M & M's that your group has.

1. For each color, compute the probability that a randomly chosen M & M from your pile has that color.
2. Let A be the event that a randomly chosen M & M in your pile is red, and let B be the event that it is blue.
 - (a) Write the event $A \cup B$ in words.
 - (b) Write the event $A \cap B$ in words. Note that in this case, the events A and B are said to be **mutually exclusive**.
 - (c) Compute the probabilities $P(A \cup B)$ and $P(A \cap B)$.
 - (d) Try and guess a formula for the probability $P(A \cup B)$ using $P(A)$, $P(B)$, and $P(A \cap B)$.
3. Write the event A' (the complement of the event A) in words. Compute $P(A')$ and $P(A) + P(A')$. What do you notice?
4. Let C be the event that a randomly chosen M & M from your pile is red OR orange, and let D be the event that a randomly chosen M & M from your pile is red OR brown.
 - (a) Write the event $C \cup D$ in words.

- (b) Write the event $C \cap D$ in words.
- (c) Compute the probabilities $P(C \cup D)$ and $P(C \cap D)$.
- (d) Try again to guess a formula for the probability $P(C \cup D)$ using $P(C)$, $P(D)$, and $P(C \cap D)$. Is this different from your prior guess?