

Activity: The Candy Man Can

Mars, Incorporation, which is headquartered in McLean, Virginia, makes milk chocolate candies. Here's what the company's Consumer Affairs department says about the color distribution of its M&M's Milk Chocolate Candies:

On Average, the new mix of colors of M&M's Milk Chocolate Candies will contain 13% of each of Browns and reds, 14% yellow, 16% green, 20% orange, and 24% blues.

The purpose of this activity is to compare the color distribution of M&M's in your individual bag with the advertised distribution. We want to see if there is enough evidence to dispute the company's claim. For the time being, assume that your bag is a random sample of M&M's Milk Chocolate Candies from the population of candies produced in a particular batch.

1. Open your bag and carefully count the number of whole M&M's of each color as well as the total number of M&M's in the bag. Fill in the first column.

Color	Observed	Expected	Observed – Expected	(Observed – Expected) ²	$\frac{(\text{Observed} - \text{Expected})^2}{\text{Expected}}$
Blue					
Orange					
Green					
Yellow					
Red					
Brown					
Sum					

2. Assuming that the company's claim is true, how many of each color would you expect in your bag. Fill in the Expected column.
3. How close are your observed counts to the expected counts? What do you notice about $\Sigma(\text{Observed} - \text{Expected})$?
4. Fill in the next column and compare with each other.
5. Fill in the last column and compare with each other.

