

Name: _____ Hour: _____ Date: _____

Which color M&M is the most common?



The company that makes milk chocolate M&Ms claims the following distribution: 13% Brown, 14% Yellow, 20% Orange, 16% Green, 24% Blue, and 13% Red. Is this true?

1. Observed values: Brown: _____ Yellow: _____ Orange: _____ Green: _____ Blue: _____ Red: _____
Total number of M&Ms: _____

2. As a class, write down hypotheses for a significance test.

H_0 :

H_a :

3. Let's suppose that M&Ms claimed distribution is correct. If they are correct, how many of each color would we expect to get in our sample.

Expected values: Brown: _____ Yellow: _____ Orange: _____ Green: _____ Blue: _____ Red: _____

Use the table to calculate the test statistic.

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

Add up all the numbers in the last column. This is our test statistic: _____

4. What value would we get for the test statistic if our sample was very close to what is expected? Explain.

5. What value would we get for the test statistic if our sample was very far from what is expected? Explain.

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Chi-Square Test: Goodness of Fit

Important ideas:

Check Your Understanding

Are births equally likely across the days of the week? A random sample of 150 births give the following sample distribution:

Day of the week	Sunday	Monday	Tuesday	Wednesday	Thursday	Friday	Saturday
Count	11	27	23	26	21	29	13

- State the appropriate hypotheses.
- Calculate the expected count for each of the possible outcomes.
- Calculate the value of the chi-square test statistic.
- Which degrees of freedom should you use?
- Use Table C to find the P -value. What conclusion would you make?