Name: _____ Hour: _____ Date: _____

Does gummy bear brand matter?

Is the distribution of gummy bear color the same for Haribo gummy bears and Meijer gummy bears? We'll collect data as a class and determine if we have convincing evidence of a difference.

1. Add your data to the board and fill in the table below with the class totals.

Observed:

		Brand		
		Haribo	Meijer	Total
	Red			
	Green			
Color	Yellow			
	Orange			
	White			
	Total			

2. How many samples do we have? What population are they from? Explain.

3. How many variables are we examining? Explain.

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

H_0:

H_a:

5. Now we will use a chi-square test to test if there is a difference between the two populations. We first need to find the expected values. Complete the table below.

Expected:

		Brand		
		Haribo	Meijer	Total
	Red			
	Green			
Color	Yellow			
	Orange			
	White			
	Total			

Name: _____ Hour: _____ Date: _____

6. Use your work on the front page to complete a 4 step significance test.

STATE: Hypotheses: Significance level:

PLAN: Name of procedure: **Chi-square test for homogeneity**

Check conditions:

DO: Specific Formula:

Work: df = (rows – 1)(columns – 1)

Picture:

Test statistic:

P-value:

CONCLUDE:

7. Explain how this test is different from a chi-square test for goodness of fit?

Name: _____ Hour: _____ Date: _____

Chi-Square Test for Homogeneity

Important ideas:

Check Your Understanding

A social scientist selects a random sample of 25 freshmen, 25 sophomores, 25 juniors, and 25 seniors from various high schools across the state Kentucky. Each student was asked if they preferred in-person or remote learning. Here are the results:

	Freshman	**Sophomore**	**Junior**	**Senior**
Remote	3	12	14	15
In Person	22	13	11	10

a. State the appropriate null and alternative hypotheses.

b. Show the calculation for the expected count in the Remote/Senior cell. Then provide a complete table of expected counts.

c. Calculate the value of the chi-square test statistic.