

## 11.9: Lab 2: Chi-Square Test of Independence (Worksheet)

Name: \_\_\_\_\_

Section: \_\_\_\_\_

Student ID#: \_\_\_\_\_

*Work in groups on these problems. You should try to answer the questions without referring to your textbook. If you get stuck, try asking another group for help.*

### Student Learning Outcome

- The student will evaluate if there is a significant relationship between favorite type of snack and gender.

### Collect the Data

- Using your class as a sample, complete the following chart. Ask each other what your favorite snack is, then total the results.

NOTE: You may need to combine two food categories so that each cell has an expected value of at least five.

Favorite type of snack					
	sweets (candy & baked goods)	ice cream	chips & pretzels	fruits & vegetables	Total
male					
female					
Total					

- Looking at [Table](#), does it appear to you that there is a dependence between gender and favorite type of snack food? Why or why not?

### Hypothesis Test

Conduct a hypothesis test to determine if the factors are independent:

- $H_0$ : \_\_\_\_\_
- $H_a$ : \_\_\_\_\_
- What distribution should you use for a hypothesis test?
- Why did you choose this distribution?
- Calculate the test statistic.
- Find the  $p$ -value.
- Sketch a graph of the situation. Label and scale the  $x$ -axis. Shade the area corresponding to the  $p$ -value.


 Blank graph with vertical and horizontal axes.

Figure 11.9.1.

- State your decision.
- State your conclusion in a complete sentence.

### Discussion Questions

- Is the conclusion of your study the same as or different from your answer to question two under [Collect the Data](#)?
- Why do you think that occurred?

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