Student name: _____   Date: _____

Taste This!

Have you heard? It's all about taste! What do you know about the science of taste preference and testing? Since eating more fruits and vegetables and other nutrient rich foods can help you be healthy, food tasting experiences can increase the number of nutrient rich foods you may enjoy and benefit from. In the food industry, two types of food taste tests are commonly used— preference tests and discrimination tests.

Preference Test

In a preference test, the taster is presented with two foods: **A** and **B**, such as raw versus cooked broccoli or roasted versus steamed broccoli. The foods do not need to look or taste similar. The taster simply decides which option he or she likes best.

When conducting a preference test, make sure that some testers taste food **A** first and an equal number taste food **B** first. (If a student does not have a permission slip from parents to taste the food, he or she can still participate by smelling the food and stating a preference.) Use the table below to organize your preference test data. Use another sheet of paper if you have more testers.

Tester Number	Student Preference (mark with an X)	
	Prefer A	Prefer B
1		
2		
3		
4		
5		
6		
7		
8		
Sample size	Total number of B choices	Total number of A choices

If 100 people participated in a preference test, how many would need to choose one product over another for you to feel confident that most people in the public would prefer the same product? Obviously, if 100 people make the same choice, the conclusion is clear. But what if 75 people make the same choice? What if 55% do?

Scientists are usually satisfied with a conclusion when they are sure about 95 out of 100 times. In the language of statistics, the conclusion has 95% significance. When the number of people (called the sample size) taking the preference test is small, nearly everyone needs to choose the same answer for it to be statistically significant. As the sample size gets larger, the answer can be statistically significant even when fewer people choose the same answer. Examples of data for 95% significance are shown in the table.

Number of Testers	Number of preferences needed for 95% significance
6	6
12	10
25	18
40	27
55	35
60	38

Discrimination Test: Triangle Taste Test

Discrimination tests are designed to answer the question, "Can the tester tell the difference differences between products?" The triangle taste test is a popular type of discrimination test. The taster is presented with three samples: two are the same and one is different. Often the differences between the two samples are small, such as organic broccoli versus conventional broccoli or store brand frozen broccoli versus a national brand. The tester is asked to tell which sample is different.

As in the preference test, offering different testers different orders of samples to test is important. For the triangle taste test, six different orders of samples are possible: AAB, ABA, BAA, BBA, BAB, and ABB. Your teacher may provide further directions for this test. Use the table below to organize your triangle taste test data. Use another sheet of paper if you have more testers.

Tester Number	Did the tester pick the sample that was different? (mark with an X)	
	YES	NO
1		
2		
3		
4		
5		
6		
7		
8		
Sample size	Total number of YES results	Total number of NO results

As in the preference test, the number of correct choices for the results to be statistically significant depends on the sample size. While 95% significance is best, scientists sometimes report results with 80% significance. Since the getting correct responses with the triangle taste test may be difficult (depending on how similar the samples taste), 80% significance may be the best outcome.

Number of Testers	Number of correct responses (choosing sample that is different) needed for 80% significance	Number of correct responses (choosing sample that is different) needed for 95% significance
6	4	5
8	5	6
10	6	7
12	6	8
15	8	9
20	9	11
25	11	13
30	13	15
35	15	17
40	17	19

Student name: _____   Date: _____

Science Research Summary

The investigating scientists are:

_____   _____

_____   _____

Our Test(s)

We plan to conduct the following taste test:

Our Data

We report the following results from our test:

Our Claim

From our test (experiment) and data (results) we claim:

Our Evidence

Our claim is supported by the following evidence:

Our Reflection

After working on this test, this is what we know:

This is how we will use the knowledge we gained: