**Appendix 10**

**How the Cookie Crumbles, Mathematics Pre-Lesson Assessment**

Based on the scenario above, answer the following questions:

**Scenario:**

In response to public outcry for healthier cookie options, *Scrumptious Cookie Company* has created a healthier version of its signature cookie, “The Crumbler.” As a sensory specialist, you have been contracted to design and conduct a test to determine if consumers detect a significant difference in the original vs. the healthier version of “The Crumbler” or have a preference for one cookie versus the other.

You decide to conduct a sensory evaluation using as your subjects, 50 students from a local high school.

1. State a possible null hypothesis for the sensory evaluation above. \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
2. State a possible alternate hypothesis for the sensory evaluation above.

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The principal offers you the following locations within the school to conduct your sensory evaluation:

1. The cafeteria area next to the kitchen where the cooks are preparing the daily lunch.
2. The commons area of the school where random amounts of people flow through at any given time.
3. A quiet area in the Media Center with limited traffic.

Which of the three locations above would you select and why? (Explain why the other two locations would be less suitable.) \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

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Given the following results of a Food Sensory Evaluation, answer the statistics questions that follow:

**Results of Two Different Cookies by Overall Taste on a Scale of 1-10**

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| Participant # | Cookie A | Cookie B | Participant # | Cookie A | Cookie B |
| 1 | 3 | 6 | 6 | 7 | 7 |
| 2 | 6 | 5 | 7 | 9 | 7 |
| 3 | 5 | 4 | 8 | 8 | 6 |
| 4 | 3 | 4 | 9 | 5 | 7 |
| 5 | 8 | 9 | 10 | 6 | 9 |

1. What is the mean difference between the two cookies? Show how you arrived at your answer.
2. What is the standard deviation of the differences between the two cookies? Show how you arrived at your answer.
3. Would a paired t-test be an appropriate statistical measure for use in this scenario? Defend your answer.