Answers: Introduction to hypothesis testing

Ellie Trace

Summary

Answers to questions relating to the guide on introduction to hypothesis testing.

*These are the answers to* [*Questions: Introduction to hypothesis testing*](../questions/qs-hypothesistesting.qmd)*.*

**Please attempt the questions before reading these answers!**

## Q1

The following questions are on defining hypotheses.

1.1. Set the average number of pages (mean) to . Here, and , and you would need a lower one-tailed test.

1.2. Set the percentage of defective products to be equal to . Here, and , and you would need an upper one-tailed test.

1.3. Set to be the average wait time in the two different branches. Here, and , and you would need a two-tailed test.

1.4. Set to be the average time of the express trains, and to be the average time of the regular trains. Here, and , and you would need a lower one-tailed test.

## Q2

2.1.

2.2.

2.3. A paired t-test.

## Q3

3.1. I reject as the test statistic of is greater than the critical value of . Therefore there is significant evidence to suggest the average daily sales of Boole Bars differ from 150.

3.2. I reject as the test statistic of is greater than the critical value of . Therefore there is significant evidence to suggest the proportion of customers who buy Lagrangian Lollipops exceeds .

3.3. I do not reject as the test statistic of is between the critical values of and . Therefore there is no significant evidence to suggest there is a difference in sweetness scores between the two recipes.

## Version history and licensing

v1.0: initial version created 12/24 by Ellie Trace as part of a University of St Andrews VIP project.

[This work is licensed under CC BY-NC-SA 4.0.](https://creativecommons.org/licenses/by-nc-sa/4.0/?ref=chooser-v1)