**TEST STATISTIC:**

A **test statistic** is a random variable that is calculated from sample data and used in a hypothesis test. You can use test statistics to determine whether to reject the null hypothesis. The test statistic compares your data with what is expected under the null hypothesis.

**NULL – HYPOTHESIS:**

A **null hypothesis** is a hypothesis that says there is no statistical significance between the two variables in the hypothesis. It is the hypothesis that the researcher is trying to disprove. In the example, Susie's null hypothesis would be something like this: There is no statistically significant relationship between the type of water I feed the flowers and growth of the flowers. A researcher is challenged by the null hypothesis and usually wants to disprove it, to demonstrate that there is a statistically significant relationship between the two variables in the hypothesis.

**ALTERNATIVE HYPOTHESIS:**

An **alternative hypothesis** simply is the inverse, or opposite, of the null hypothesis. So, if we continue with the above example, the alternative hypothesis would be that there IS indeed a statistically-significant relationship between what type of water the flower plant is fed and growth. More specifically, here would be the null and alternative hypotheses for Susie's study:

**Null**: If one plant is fed club soda for one month and another plant is fed plain water, there will be no difference in growth between the two plants.

**Alternative**: If one plant is fed club soda for one month and another plant is fed plain water, the plant that is fed club soda will grow better than the plant that is fed plain water.