Summary

- If the result of the test corresponds with reality, then a correct decision has been made. However, if the result of the test does not correspond with reality, then an error has occurred

- In statistics, a **Type I error** is the incorrect rejection of a true null hypothesis. A **Type II error** is the failure to reject a false null hypothesis

- Type I and Type II errors are also called errors of the first kind and errors of the second kind

- A type I or alpha error is when you reject the null hypothesis when the null hypothesis is true

- A type II or beta error is when you retain the null hypothesis when the null hypothesis is not true

- Thus, what we see in testing is the possibility of 4 different consequences of our decisions: Two good and correct decisions also two bad and incorrect decisions

- Our goal is to maximize the chances of making a correct decision and minimize the chances of making an incorrect decision

- With a fixed value of type one error and a fixed sample size n, the value of type two error is predetermined

- If type two error is too large, it can be reduced by either raising the level of type one error for fixed n, or by increasing n for a fixed level of type one error

- Although type two errors are seldom determined in an experiment, researchers can be assured that it is reasonably small by collecting a large sample

- Minimizing errors of decision is not a simple issue; for any given sample size the effort to reduce one type of error generally results in increasing the other type of error

- The only way to minimize both types of error, without just improving the test, is to increase the sample size, and this may not be feasible.