

# Unit #4: 1 Sample Hypothesis Testing

Content Area: **Mathematics**  
Course(s): **Statistics H**  
Time Period: **Semester 1 & 2**  
Length: **4 weeks**  
Status: **Published**

## Standards

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MA.K-12.1	Make sense of problems and persevere in solving them.
MA.S-ID.B.5	Summarize categorical data for two categories in two-way frequency tables. Interpret relative frequencies in the context of the data (including joint, marginal, and conditional relative frequencies). Recognize possible associations and trends in the data.
MA.S-IC.A.1	Understand statistics as a process for making inferences about population parameters based on a random sample from that population.
MA.S-IC.B.4	Use data from a sample survey to estimate a population mean or proportion; develop a margin of error through the use of simulation models for random sampling.
MA.S-IC.B.5	Use data from a randomized experiment to compare two treatments; use simulations to decide if differences between parameters are significant.

## Enduring Understandings

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- 1) Understanding that hypothesis testing is merely a formal way of constructing and having an argument and then deciding with confidence that one argument is correct.
- 2) Recognizing the specific circumstances that determine the type of hypothesis used.

## Essential Questions

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- 1) Will students be able to construct various confidence intervals to estimate means, proportions, standard deviations, and variances?
- 2) Will students be able to calculate the probabilities of Type I and II errors?
- 3) Will students be able to perform 1 and 2-sided hypothesis tests on means, proportions, standard deviations, and variances?
- 4) Will students be able to utilize DESMOS to construct confidence intervals and perform various hypothesis tests?
- 5) Will students be able to understand the connection between a p-value and a critical value, and use p-values to determine the rejection of a hypothesis test?

## **Knowledge and Skills**

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- 1) Construct confidence intervals to estimate means, proportions, standard deviations, and variances
- 2) Calculate the probabilities of Type I and II errors
- 3) Perform 1 and 2-sided hypothesis tests on means, proportions, standard deviations, and variances
- 4) Construct confidence intervals and perform the calculation portions of a hypothesis test utilizing DESMOS.
- 5) Understand what a p-value is, its relationship with critical values, and determine to reject or fail to reject a hypothesis test based on the p-value.

## **Transfer Goals**

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- 1) Original claims/arguments are assumed true unless shown to be false, then the original claim is rejected.
- 2) The criteria used to reject the original claim is based upon the alternative claim/argument, and the significance level.

## **Resources**

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### **Elementary Statistics 10th Edition**

<https://doralacademyprep.enschool.org/ourpages/auto/2015/8/18/48840047/Elementary%20Statistics%2010e.pdf>