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# Module Five Assignment Guidelines and Rubric



## MAT 240 Module Five Assignment Guidelines and Rubric

### Scenario

You have been hired by the Regional Real Estate Company to help them analyze real estate data. One of the company's Pacific region sales representatives is making a claim that the average cost per square foot of home sales in the Pacific region is less than \$280. The initial draft of the advertisement states that the average cost per square foot of home sales in the Pacific region is \$280. He wants you to make sure he can make that statement (that the average cost per square foot in the Pacific region is less than \$280). In order to test his claim, you will generate a random sample size of 750 using data for the Pacific region and use

### Prompt

Generate a sample of size 750 houses using data for the Pacific region. Then, design a hypothesis test and interpret the results using in this assignment. Briefly describe how you generated your random sample.

Use the [House Listing Price by Region](#) document to help support your work on this assignment. You may also use the [Descriptive Statistics PDF](#) tutorials for support.

Specifically, you must address the following rubric criteria, using the [Module Five Assignment Template Word Document](#)

- **Introduction:** Describe the purpose of this analysis and how you generated your random sample size of 750 houses.
- **Hypothesis Test Setup:** Define your population parameter, including hypothesis statements, and specify the appropriate test.
  - Define your population parameter.
  - Write the null and alternative hypotheses.
  - Specify the name of the test you will use.
  - Identify whether it is a left-tailed, right-tailed, or two-tailed test.
- **Data Analysis Preparations:** Describe sample summary statistics, provide a histogram and summary, check assumptions, and interpret the results.
  - Provide the descriptive statistics (sample size, mean, median, and standard deviation).
  - Provide a histogram of your sample.
  - Summarize your sample by writing a sentence describing the shape, center, and spread of your sample.
  - Check whether the assumptions to perform your identified test have been met.
  - Identify the test significance level. For example,  $\alpha = .05$ .
- **Calculations:** Calculate the  $p$  value, describe the  $p$  value and test statistic in regard to the normal curve graph, discuss how the

$p$  value to the significance level to reject or fail to reject the null hypothesis.

- Calculate the sample mean and standard error.
- Determine the appropriate test statistic, then calculate the test statistic.
  - **Note:** This calculation is (mean – target)/standard error. In this case, the mean is your regional mean (Pacific), and the target is the national mean.
- Calculate the  $p$  value using one of the following tests.
  - **Choose your test from the following:**
    - =T.DIST.RT([test statistic], [degree of freedom]): right-tailed test
    - =T.DIST([test statistic], [degree of freedom], 1): left-tailed test
    - =T.DIST.2T([test statistic], [degree of freedom]): two-tailed test
  - **Note:** The degree of freedom is calculated by subtracting 1 from your sample size.
- Using the normal curve graph as a reference, describe where the  $p$  value and test statistic would be placed.
- **Test Decision:** Compare the relationship between the  $p$  value and the significance level, and decide to reject or fail to reject the null hypothesis.
  - Compare the relationship between the  $p$  value and significance level.
  - Decide to reject or fail to reject the null hypothesis.
- **Conclusion:** Discuss how your test relates to the hypothesis and discuss the statistical significance.
  - Explain in one paragraph how your test decision relates to your hypothesis and whether your conclusions are statistically significant.

You can use the following tutorial that is specifically about this assignment:

- [MAT-240 Module 5 Assignment Video](#)

## What to Submit

Submit your completed Module Five Assignment Template as a Word document that includes your response, supporting charts/graphs, and a conclusion.

### Module Five Assignment Rubric


Criteria	Exemplary (100%)	Proficient (85%)	Needs Improvement (55%)
<b>Introduction</b>	Exceeds proficiency in an exceptionally clear manner	Describes the purpose of the analysis and how they generated their sample	Shows progress toward proficiency, but with errors or omissions; areas for improvement may include cursory description or missing elements
<b>Hypothesis Test Setup</b>	Exceeds proficiency in an exceptionally clear manner	Defines the population parameter, including hypothesis statements, specifies the appropriate test	Shows progress toward proficiency, but with errors or omissions; areas for improvement may include inaccurate or incomplete components

<b>Data Analysis Preparations</b>	Exceeds proficiency in an exceptionally clear manner	Describes the sample summary statistics, provides a histogram and summary, checks assumptions, and identifies the test significance level	Shows progress toward proficiency, but with errors or omissions; areas for improvement may include inaccurate or missing elements
<b>Calculations</b>	Exceeds proficiency in an exceptionally clear manner	Calculates the sample mean, standard error, and the $p$ value. Describes the $p$ value and test statistic in regard to the normal curve graph	Shows progress toward proficiency, but with errors or omissions; areas for improvement may include inaccurate calculations or missing elements
<b>Test Decision</b>	Exceeds proficiency in an exceptionally clear manner	Compares the $p$ value to the significance level to reject or fail to reject the null hypothesis	Shows progress toward proficiency, but with errors or omissions; areas for improvement may include inaccurate or cursory discussion
<b>Conclusion</b>	Exceeds proficiency in an exceptionally clear manner	Explains how the test relates to the hypothesis and the statistical significance	Shows progress toward proficiency, but with errors or omissions; areas for improvement may include conclusions that are cursory or missing critical elements
<b>Articulation of Response</b>	Exceeds proficiency in an exceptionally clear manner	Clearly conveys meaning with correct grammar, sentence structure, and spelling, demonstrating an understanding of audience and purpose	Shows progress toward proficiency, but with errors in grammar, sentence structure, and spelling, negatively impacting readability

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