

A marketing analyst selected 75 companies at random from the Fortune 500 to survey regarding their budgets for promoting themselves on social media. The companies in the sample spent an average of \$5.41 million and the standard deviation was \$1.72 million. Use this information to complete the hypothesis test below.

Claim: The Fortune 500 companies spend more than \$5 million dollars on average to advertise on social media.

- Express the hypothesis set for evaluating the claim. Make sure to:
 - Clearly indicate which hypothesis is the null (H_0) and which is the alternative (H_1).
 - Use the correct Greek letter symbol to describe the population parameter.
 - Use the appropriate comparison symbols (e.g. $>$, $=$, \leq , etc.)
- Choose 1 of the following significance levels: $\alpha = 1\%$, $\alpha = 5\%$, or $\alpha = 10\%$. Tell me 1) which one you chose and 2) describe the standard of proof it represents (low, moderate, or high burden of proof).
- Choose the appropriate test statistic from the three listed below. Tell me 1) which one you chose, 2) why you chose that formula, and 3) how the test statistic is distributed (t or z).

Formula 1	Formula 2	Formula 3
test statistic = $\frac{\bar{x} - \mu}{\sigma/\sqrt{n}}$	test statistic = $\frac{\bar{x} - \mu}{s/\sqrt{n}}$	test statistic = $\frac{p - \pi}{\sqrt{\frac{\pi(1 - \pi)}{n}}}$

- Look up the critical value and then use it to write the decision rule for your hypothesis test. Your decision rule should be in the form "Reject the null hypothesis if..." (you'll need to finish that statement).
- Calculate the sample test statistic using the formula you identified in part 3. Show ALL your work.
- Look up and report the sample p-value. If you are not able to report a precise p-value, you can provide a range.
- Briefly explain what the number(s) you looked up in part 6 means. Answer in full sentences.
- Interpret the results of your test by telling me 1) whether you rejected the null hypothesis AND 2) evaluating the initial claim that "The Fortune 500 companies spend more than \$5 million dollars on average to advertise on social media". Answer in full sentences.
- Would your answer to part 8 be different if you had chosen one of the other two significance levels (α) in part 2? Explain. Answer in full sentences.