Testing Hypothesis about Proportions or Means: PHANTOMS

For this class, we will use an acronym to remember the steps needed to conduct a **hypothesis test**. The acronym is **PHANTOMS.**

Keep in mind that these will all make more sense, once you see some examples. You won't know what all of these mean right away, but right now we want to become familiar with the process.

P	**Parameter Statement** - After reading the problem, define the parameter you are going to test.
H	**Hypotheses** - Write your null and alternative hypotheses. Keep in mind that the <u>claim</u> could be either, but the null must always have an equal sign, greater than or equal sign, or less than or equal sign.
A	**Assumptions & Conditions** - If there are any assumptions or conditions for the model you are going to use, then check them.
N	**Name the Test** - Is this a left tail, right tail, or two-tail test? Are you using a normal model (**z**) or a student's t-model (**t**)? This is also where you specify your level of significance, .
T	**Test Statistic** - Make sure to use the correct test statistic formula. Once you have the correct formula, it's just plug and chug.
O	**Obtain the p-value or Check the Rejection Region** - The p-value is the area under the curve that is created by your test statistic. This is the probability that your results just happened by chance. Alternatively, you could also check to see if your test statistic is in the "rejection region".
M	**Make a Decision about the Null Hypothesis** - If your p-value is less than or equal to your level of significance, (alpha), then reject the null hypothesis. If the p-value is greater than , then fail to reject the null. Alternatively, if your test statistic is in the "rejection region" you reject the null hypothesis. If the test statistic is not in the rejection region, then you fail to reject the null hypothesis.
S	**State Your Conclusion (in context)** - Write a sentence or two giving the conclusion you can make according to the decision you made in the previous step.

Again, you really won't know what all of this means until you see some examples and work through some problems yourself.