Hypothesis testing for proportions

An inference method commonly used in statistics. The goal of a hypothesis test is to get a handle on a parameter (population *statistic*) from a sample statistic. (Really that's the goal of all inference procedures.) It is used when a claim is made about how something should be and then a sample is drawn to test that claim

Procedure for conducting a 1-proportion z test

- 1) check the assumptions and conditions for applying the central limit theorem for a sampling distribution of proportions (same as a confidence interval)
- 2) clearly state the null hypothesis in words and numbers (the null hypothesis refers to the fact that the parameter of interest remains unchanged...It is what the claim is)
- 3) clearly state the alternative to the null hypothesis (what we are trying to prove may be happening) the alternative is either larger than the null, smaller than the null or just not equal to the null
- 4) perform the test to get a P-value (definition of P-value= the probability the sample is where it is or more extreme given the null hypothesis is true) use normalcdf(leftz,rightz)
- 5) Develop a conclusion in context, you either reject the null hypothesis and accept the alternative OR you fail to reject the null hypothesis. This is all based on the P-value and maybe a confidence interval...when you fail to reject the null hypothesis, you can claim that it may be the truth. A small P-value is evidence towards rejecting the null and claiming the alternative as the truth.

Example:

As a class we claim to have a "shot-make" percent of _____ percent. Thinking this claim might not be the truth we test the claim by shooting ______shots and making ______of them. Does this provide evidence for or against our claim?

Discuss conditions and assumptions:

State the null hypothesis and the alternative hypothesis

Do the calculations to determine the P-VALUE (after a few of these we will let the calculator do this part)

State your conclusion in context