Significance Testing for a single proportion: AKA: Is the sample result really different or is the variation just to random sampling error (chance)

Steps to take:

Step 1: Check Conditions

A Random sample? Is the population more than 10 times the sample size? Are both nP_o and $n(1-P_o)$ greater than 10?. If not we can't use this test.

Step 2: State the claim in a sentence.

Step 3: Write the hypotheses, in symbolic form and identify which is the claim.

The Null Hypothesis means No difference. Nothing is statistically different.

Ho: $P = P_0$ (P_0 is the number identified in the Claim)

The Alternative or Research hypothesis Takes one of these forms

Ha:

$P > P_0$	A right tailed test	Words to associate with this kind of test: At least, More than, greater than.
$P < P_0$	A left tailed test	Words to associate with this kind of test: No more than, less than.
$P \neq P_0$	A two-tailed test	Words to associate with this test: no difference, differs.

Find:

p-hat = the sample proportion

Std dev for this sampling distribution:

Formula:

$$\sqrt{\frac{Po(1 - Po)}{n}}$$

Step 4: Find the test statistic: A z score

$$z = \frac{\hat{p} - P_o}{\sqrt{\frac{P_o(1 - P_o)}{n}}}$$

Step 5: Make a decision:

Reject: Ho

Fail to reject Ho

Step 6: Write the decision in terms of the claim

What calculator key combination performs this test?

A poll conducted for *Newsweek* found that 13% of Americans have seen or sensed the presence of an angel. A contingent doubts that the percent is really that high. It conducts its own survey. Out of 76 Americans surveyed, only two had seen or sensed the presence of an angel. Because of the contingent's survey, would you agree with the *Newsweek* poll? In complete sentences, also give three reasons why the two polls might give different results.

Conditions met?

The claim

Ho:

Ha:

p-hat =

Std dev for this sampling distribution:

Formula:

$$\sqrt{\dfrac{\underline{\quad}(1 - \underline{\quad})}{\underline{\quad\quad}}}$$

Test statistic:

Make a decision:

Write the decision in terms of the claim

School officials from a high school claim that at least 85% of the students who have graduated from the school have received a college degree or are enrolled in a college degree program. A random sample of sixty former graduates indicates that forty-seven have received or are enrolled in a program to receive a college degree. Do the data contradict the school officials' claim?
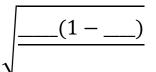
Conditions met?

The claim

Ho:

Ha:

p-hat =

Std dev for this sampling distribution:

Formula:

$$\sqrt{\dfrac{\underline{\quad}(1 - \underline{\quad})}{}}$$

Test statistic:

Make a decision:

Write the decision in terms of the claim

Last year a local television station determined that 70% of the people who watch news at 11:00 PM watch its station. The station's management believes that the current audience share may have changed. To determine whether the audience share had in fact changed, the station questioned a random sample of eighty local viewers and found that sixty watched its news show. Does the sample evidence support the management's belief?
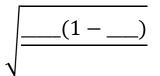
Conditions met?

The claim

Ho:

Ha:

p-hat =

Std dev for this sampling distribution:

Formula:

$$\sqrt{\frac{\underline{\quad}(1 - \underline{\quad})}{\underline{\quad}}}$$

Test statistic:

Make a decision:

Write the decision in terms of the claim