

ACTIVITY 7.4

Hypothesis Tests for a Proportion

USE GEOGEBRA TO TEST FOR PROPORTION

[HTTP://WWW.GEOGEBRA.ORG](http://www.geogebra.org)

You can use [Geogebra](#) for hypothesis tests for a proportion to see if you should reject the null or fail to reject the null. You begin by opening the program and selecting “Probability” from the menu options. To start the hypothesis test, select the “Statistics” tab (see red oval below). You will then be able to select several tests including the Z-test of a mean, T-test of a mean and the Z-test of a proportion. Use [Geogebra](#) for the problems below.

■ Explore

- Step 1** Specify a value for n . (Percent)
Step 2 Select the Alternative Hypothesis
Step 3 Specify the Success (Whole number)
Step 4 Specify the sample size N (Whole number)
Step 5 Interpret the Results

TAKE SCREEN SHOTS OF THE GEOGEBRA RESULTS

Hypothesis tests for proportions can be used when politicians want to know the proportion of their constituents who favor a certain bill or when quality assurance engineers test the proportion of parts that are defective. Use [Geogebra](#) to test the claim. Write a short paragraph about the results of the test and what you can conclude about the claim.

1. A polling agency reports that over 16% of U.S. adults are without health care coverage. In a random survey of 1420 U.S. adults, 256 said they did not have health care coverage. At $\alpha = 0.02$, is there enough evidence to support the agency's claim? (Source: *The Gallup Poll*)
2. The Western blot assay is a blood test for the presence of HIV. It has been found that this test sometimes gives false positive results for HIV. A medical researcher claims that the rate of false positives is 2%. A recent study of 300 randomly selected U.S. blood donors who do not have HIV found that 3 received a false positive test result. At $\alpha = 0.05$, is there enough evidence to reject the researcher's claim? (Adapted from *Centers for Disease Control and Prevention*)
3. A research center claims that less than 50% of U.S. adults have accessed the Internet over a wireless network with a laptop computer. In a random sample of 100 adults, 39% say they have accessed the Internet over a wireless network with a laptop computer. At $\alpha = 0.01$, is there enough evidence to support the researcher's claim? (Adapted from *Pew Research Center*)
4. A research center claims that 25% of college graduates think a college degree is not worth the cost. You decide to test this claim and ask a random sample of 200 college graduates whether they think a college degree is not worth the cost. Of those surveyed, 21% reply yes. At $\alpha = 0.10$, is there enough evidence to reject the claim? (Adapted from *Zogby International*)