

You may work with one partner on this assignment, submitting one report with both names, provided that both students contribute substantially to the work. Word-processed reports are preferred to hand-written ones.

Which Tire?

We will collect data in class based on a well-known campus legend. (We found that 18 of 32 students in class chose the right front tire.) You will conduct a test of whether the data provide evidence that Cal Poly students tend to choose the right front tire more often than would be expected if the four tire choices were equally likely.

- (a) State the appropriate null and alternative hypothesis, in symbols and in words.
- (b) Use the binomial distribution (and Minitab's Probability Distribution Plot, under the Graph menu) to determine the (exact) p-value for this test. Also submit the relevant graph of this probability distribution, with the appropriate probability shaded.
- (c) Write a sentence describing what this p-value is the probability of.
- (d) Is the sample result statistically significant at the $\alpha = .05$ level? How about at the $\alpha = .01$ level?
- (e) Write a couple of sentences summarizing the conclusion that you would draw from this analysis and also explaining the reasoning process that underlies your conclusion.
- (f) Suppose that the sample size had been five times larger, with the same proportion of students choosing the right front tire. Repeat this analysis, and comment on how your p-value and conclusion change.