

Math 254: Tests of Hypothesis

1. The average number of hours per week worked by software engineers in industry is 60 with a standard deviation of 8. A random sample of 50 software engineers working at McDonald Dettwiler and Associates shows their average workweek to be 57 ½ hours long. Are the MDA engineers slackers? Answer at both the 95% and 99% confidence level.
2. Camosun mechanical engineering students want to determine whether the Prius or the Smart car is more fuel efficient. They take 40 of each type of car and measure the average fuel efficiency for the Prius to be 59 mpg with standard deviation 2 mpg and the Smart car to be 60 mpg with standard deviation 2 mpg. Use a p -test to determine whether the two cars have significantly different fuel efficiencies.
3. A peony plant with red petals was crossed with another plant having streaky petals. A geneticist states that 75% of the offspring resulting from this cross will have red flowers. To test this claim, 100 seeds from this cross were collected and germinated: 63 had red petals. Do the data support the geneticist's claim at the 99% level?
4. Camosun wants more students to carpool, so now has "carpool-only" parking spaces. To evaluate their effectiveness, personnel monitored samples of randomly selected cars before and after the spaces were implemented, and measured the following data.

	before	after
sample size	1000	1250
carpools	62	93

Has carpooling increased since carpool spaces were implemented? Use a 90% confidence level.