

Practice Exam 4 Math 150

1. In a 3M Privacy Filters Poll, 806 adults were asked to identify their favorite seat when they fly, and 492 of them chose a window seat. Use a .01 significance level to test the claim that the majority of adults prefer window seats when they fly.
2. In a Harris Poll of 514 human resource professionals, 45.9% said that body piercings and tattoos were big grooming red flags.
 - Use a .05 significance level to test the claim that less than half of human resource professionals say that body piercings and tattoos are big grooming red flags.
 - Do the same with a .01 significance level.
3. The weights of discarded plastic from a sample household consists of 62 samples with an average weight of 1.911 lb and standard deviation 1.065lb. Use a .05 significance level to test the claim that the mean weight of discarded plastic from the population of households is greater than 1.800 lb.
4. Find a range of values for the P-value in the following examples:
 - The claim is that for the tar amounts in king-size cigarettes, $\mu > 20.0$ mg. The sample size is 25 and the test statistic is $t = 1.733$.
 - The claim is that for measurements of standard head injury criteria in car crash tests, $\mu = 475$ HIC. The sample size is 21 and the test statistic is $t = -2.242$.
5. In the following examples decide whether the paired data is linearly correlated or not with .05 significance:
 - A simple random sample of 8 pairs of data recording the number of chirps by crickets in 1 min and the temperature in Fahrenheit has a linear correlation coefficient $r = .874$.
 - A sample of 5 pairs of data recording the systolic blood pressure measurements in the right arm and the left arm of a woman has a linear correlation coefficient 0.867.
6. The measurements of the diameter and the circumference of 8 different balls (a baseball, a basketball, a golf ball, a soccer ball, a tennis ball, a ping-pong ball, a volleyball and a softball) are recorded and we know that it has a regression equation $\hat{y} = -0.00396 + 3.14x$ where x is the diameter and y is the circumference. What is the predicted value for the circumference of a marble with a diameter of 1.50cm? how does this result compare to the actual circumference of 4.7cm?
7. Find the regression equation given that $r = 0.7$, $s_x = 1.3$, $s_y = 1.7$, $\bar{x} = 17.2$ and $\bar{y} = 11.1$.