Practice Test 3

1. Construct a 95 % confidence interval for the population proportion p if n = 172 and x = 117.

2. Thirty people are randomly selected from a certain town. If their mean age is 85.1 with a standard deviation of 4.5, find a 95 percent confidence interval for the true mean age, μ, of the town's population. Assume their ages are normally distributed.

3. Find the margin of error in estimating the population mean for a sample with 66 observations, mean 33.0 and standard deviation $\sigma = 8.5$, using a 95% confidence level.

4. A chicken farmer claims that her chickens have a mean weight of 58 ounces. The farmer takes a random sample of 36 chickens and finds a mean weight of 59.2 ounces and knows the standard deviation, σ, is 3.0 ounces. If you wish to conduct a hypothesis test to test the farmer's claim, what would be the value of the test statistic?

5. A cereal company claims that the mean weight of cereal in its packets is more than 14 oz. The weights in ounces of the cereal in a random sample of 8 of its cereal packets are listed below. At the .01 significance level, test the claim. Assume the weights are normally distributed.

14.6 13.8 14.1 13.7 14.0 14.4 13.6 14.2

6. A random sample of 139 forty-year-old men contains 26% smokers. Find the P-value for a test of the claim that the percentage of forty-year-old men that smoke is 22%.

7. Two machines fill cartons with cereal. The quality control manager claims that cartons filled by machine 1 have more cereal than those filled by machine 2. Samples from each line were taken and the following results were obtained.

	machine 1	machine 2
sample size	38	36
sample mean	31.8 oz	30.9 oz
sample standard deviation	2.2 oz	1.98 oz

At the 2 percent level of significance, test the claim that the population mean for machine 1 is larger than the population mean for machine 2.

8. Ten different families are tested for the number of gallons of water a day they use before and after viewing a conservation video. Construct a 90% confidence interval for the mean of the differences. Assume the data come from a normally distributed population.

Before	33	33	38	33	35	35	40	40	40	31
After	34	28	25	28	35	33	31	28	35	33

9. A researcher finds that of 1000 people who said that they attend a religious service at least once a week, 31 stopped to help a person with car trouble. Of 1200 people interviewed who had not attended a religious service at least once a month, 22 stopped to help a person with car trouble. At the 0.05 significance level, test the claim that the two proportions are equal. Assume that the samples are independent and that they have been randomly selected.