## Name:\_\_\_\_\_

## MOCK EXAM 4

1. An egg company prides itself on having fast chickens. They claim that on average their chickens lay 12 eggs a day. However, one of the egg farmers believes that this number is too high and in reality they don't lay on average that many a day. To test this claim, the farmer tracks 100 hundred chickens throughout the day and finds that the average egg laying came out to only 9 eggs per day per chicken. He found that the standard deviation was 2 eggs. Use a .05 significance level to test the claim that the Egg company's chickens lay less than 12 eggs per day on average. Use the rejection region method.

2. A farmer believes that he has the best eggs on the market, better than the next leading egg brand. To test this claim he has to make a lot of omelets. He makes 60 omelets with his own eggs and finds that 42 of the omelets taste good. After that, he makes 65 omelets using the next leading egg brands eggs and finds that only 39 of the omelets taste good. Preform the appropriate hypothesis test at the .04 significance level to determine if the farmers eggs are better than the competition. Use the P-Value method.

3. An egg farmer believes that his old egg collecting machine is too inconsistent in filling orders, so he tries testing a new machine to see if he should make the switch. Under the old system, a random sample of 20 egg shipment collection times was obtained and had a standard deviation of 18 minutes. Under the new system, a random sample of 10 egg shipment collection times was obtained and had a standard deviation of 18 minutes. Under the new system, a the .10 significance level, is there enough evidence to convince the chicken farmer to switch to the new system? Use the P-Value method.

4. An egg company believes that it has a customer satisfaction rate of 85 percent. However, a company employee has found that their customers seem to be pretty angry and believes that the percentage of satisfied customers is actually lower, so the employee decides to conduct a test of their own with a sample size of 1050 random customers and finds that 873 of them are satisfied. With this information on hand, can the employee make the claim that the egg company has a lower customer satisfaction rate? Test this at the .01 significance level, use the Rejection region method.

5. An egg farmer believes that his chickens have been getting fatter. To test his theory he measures the same five chickens and looks at their data from this year and last year. Below are the different weights for the five chickens.

|                                | Chicken 1 | Chicken 2 | Chicken 3 | Chicken 4 | Chicken 5 |
|--------------------------------|-----------|-----------|-----------|-----------|-----------|
| Chicken<br>Weight last<br>Year | 5.0 lbs   | 5.8 lbs   | 4.3 lbs   | 4.9 lbs   | 5.5 lbs   |
| Chicken<br>Weight this<br>Year | 6.9 lbs   | 5.7 lbs   | 4.4 lbs   | 5.7 lbs   | 5.4 lbs   |

Does the evidence suggest that the weight of the chickens is increasing at the .05 significance level? Use the rejection region method.

6. What does the 0.01 mean in a hypothesis test that is performed at the 0.01 significance level?

7. What is a type I error?

8. What is a type II error?