

Chapter 10

1-Given the following hypothesis $H_0: \mu \leq 10$

$$H_1: \mu > 10$$

1-For a random sample of 10 observation, the sample mean was 12 and the sample standard deviation 3 , Using the .05 significance level :

- a- State the decision rule.
 - b- Compute the value of the test statistic.
 - c- What is your decision regarding the null hypothesis.
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2- A new weight-watching company, Weight Reducers international ,advertises that those who join will lose , on average ,10 pounds the first two weeks with a standard deviation of 2.8 pounds .A random sample of 50 people who joined the new weight reduction program revealed the mean loss to be 9 pounds . At the .05 level of significance can we conclude that those joining Weight Reducers on average will lose less than 10 pounds ?

3- Wwww. Golfsmith .com receives an average of 6.5 returns per day from online shoppers. For a sample of 12 days, it received the following number of returns

0 4 3 4 9 4 5 9 1 6 7 10

At the .01 significance level, can we conclude the mean number of returns is less than 6.5?

4-The publisher of Celebrity Living claims that the mean sales for personality magazines that feature people such as Angelina Jolie or Paris Hilton are 1.5 million copies per week. A sample of 10 comparable titles shows a mean weekly sales last week of 1.3 million copies with a standard deviation of 0.9 million copies. Does this data contradict the publisher s claim?(Use the 0.01 significance level)

5- The national safety council reported that 52 percent of American truck drivers are men. A sample of 300 cars traveling southbound on the New Jersey highway yesterday revealed that 170 were driven by men. At the .01 significance level. can we conclude that a larger proportion of men were driving on the New Jersey highway than the national statistics indicate?

6- Chicken Delight claims that 90 percent of its orders are delivered within 10 minutes of the time the order is placed. A sample of 100 orders revealed that 82 were delivered within the promised time. At the .10 significance level, can we conclude that less than 90 percent of the orders are delivered in less than 10 minutes?

7-The U. S. president's call for designing and building a missile defense system that ignores restrictions of the Anti-Ballistic Missile Defense System treaty (ABM) is supported by 483 of the respondents in a nationwide poll of 1002 adults. Is it reasonable to conclude that the nation is evenly divided on the issue? Use the .05 significance level.

8- A cola -dispensing machine is set to dispense 9 ounces of cola per cup, with a standard deviation of 1 ounce. The manufacturer of the machine would like to set the control limit in such a way that, for samples of 36 , 5 percent of the sample means will be greater than the upper control limit , and 5 percent of the sample mean will be less than the lower control limit ?At what value should the control limit be set ?

9- The following null and alternate hypotheses are given

$$H_0: \mu \leq 50$$

$$H_1: \mu > 50$$

Suppose the population standard deviation is 10 . The probability of a Type I error is set at .01 and the probability of a Type II error at .30 .Assume that the population mean shifts from 50 to 55 . how large a sample is necessary to meet these requirement?