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MATH& 146 DE2

CHAPTER 8

Open book, open notes. Please show your work. Use additional paper as necessary.

1. In a survey of 820 Burger Bomb customers who were asked if they liked their Burger Bomb food order, 427 said yes. Let us test the claim that “A majority of Burger Bomb customers liked their order.” Construct the null hypothesis and the alternative hypothesis for this claim, in both symbolic and written form. Will this hypothesis test be left-tailed, right-tailed, or two-tailed?

2. At the 0.05 significance level, test the hypothesis in question 1, using both the P-value method and the critical value method.

3. Draw a diagram showing how the results of using the two methods in question 2 are related. Will these two methods give the same results?

4. Test the claim in question 1 by using the confidence interval method. What is the confidence interval corresponding to the 0.05 significance level? Will the confidence interval method always give the same answer as the P-value method and the critical value method?

5. What would be a type I error for the claim in question 1? What would be a type II error? Which of these errors do you think is worse?

6. 14 random people were asked, “How many times a month do you go to Burger Bomb?” The answers were as follows:

6 6 4 9 8 5 7 7 4 4 8 10 7 8

Assume that the data is normally distributed. Let us test the claim that “The mean number of times a person goes to Burger Bomb is 7 times per month.” Construct a null hypothesis and an alternative hypothesis for this claim. Will this test be one-tailed or two-tailed?

7. Test the hypothesis in question 6 at the 0.10 significance level, using the critical value method. Draw a diagram explaining your answer.

8. Test the claim in question 6 using the confidence interval method, with a confidence interval that correlates to the 0.10 significance level specified in question 7.

9. Suppose all the tests in all the statistics classes other than ours at SVC have a standard deviation of 13.8 . Suppose for our class there are 26 test scores, with a standard deviation of 19.1 . Use a 0.01 significance level to test the claim that our class has more variation than all the other statistics classes at SVC.

10. Does the higher standard deviation for our class suggest that our class is doing better than all the other statistics classes?