HYPOTHESIS TESTING: PRACTICE 3; SINGLE PROPORTIONS

STUDENT LEARNING OUTCOMES:

- **THE STUDENT WILL EXPLORE THE PROPERTIES OF HYPOTHESIS TESTING WITH A SINGLE PROPORTION.**

GIVEN:

The National Institute of Mental Health published an article stating that in any one-year period, approximately 9.5 percent of American adults suffer from depression or a depressive illness. (http://www.nimh.nih.gov/publicat/depression.cfm) Suppose that in a survey of 100 people in a certain town, seven of them suffered from depression or a depressive illness. Conduct a hypothesis test to determine if the true proportion of people in that town suffering from depression or a depressive illness is lower than the percent in the general adult American population.

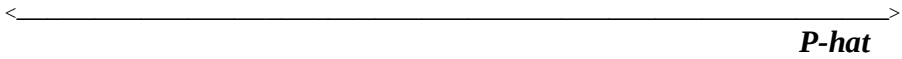
HYPOTHESIS TESTING: SINGLE PROPORTION

1. Is this a test of averages or proportions? _____
2. State the null and alternative hypotheses.
   a. H_o: _____
   b. H_a: _____
3. Is this a right-tailed, left-tailed, or two-tailed test?
   a. How do you know?
4. What symbol represents the Random Variable for this test?
5. In words, define the Random Variable for this test.
6. Calculate the following:
   a. x = _____
   b. n = _____
   c. p-hat = _____

7. Calculate: $\sigma_{\bar{x}}$ = _____ Show the formula set-up.

8. State the distribution to use for the hypothesis test.

9. Sketch a graph of the situation. Label the horizontal axis. Mark the hypothesized mean and the sample proportion, p-hat. Shade the area corresponding to the p-value.



P-hat

11. Find the p-value: _____

12. At a pre-conceived $\alpha = 0.05$, what is your:

a. Decision:
b. Reason for the decision:
c. Conclusion (write out in a complete sentence):

DISCUSSION QUESTIONS

13. Does it appear that the proportion of people in that town with depression or a depressive illness is lower than general adult American population? Why or why not?