Name:_____    Class:_____

# WISE Hypothesis Testing Tutorial – Final Quiz

1. A national study on sleep reported that college students average only 7.0 hours of sleep daily, with a standard deviation of 1 hour. The Dean of Students at Action College decided to implement an educational program to promote more sleep if there was convincing evidence that students at her college slept less than 7.0 hours on average. She planned to conduct a hypothesis test to help make the decision. What are the appropriate null and alternative hypotheses?

Null hypothesis: _____;   Alternative hypothesis: _____

2. A random sample of 25 students from Action College averaged 6.6 hours of sleep nightly. How likely is it to obtain a sample mean of 6.6 hours or less if the average amount of sleep for Action students is really 7.0 hours ($\sigma = 1.0$)? The standardized normal curve below represents the sampling distribution of means. Mark the $z$-score and the area represented by $p$.

$z = $ _____;  $p = $ _____     Show your work



-5.0 -4.5 -4.0 -3.5 -3.0 -2.5 -2.0 -1.5 -1.0 -0.5 0.0 0.5 1.0 1.5 2.0 2.5 3.0 3.5 4.0 4.5 5.0
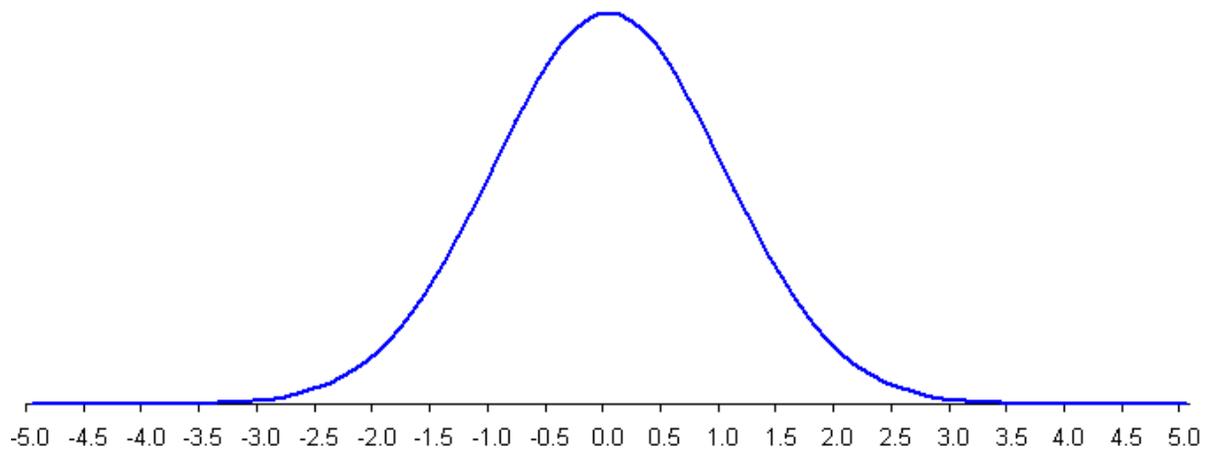
3. Based upon the sample of the 25 students in Question 2, should the Dean be convinced that her students are sleeping less than 7 hours a night? Justify your answer. Would your conclusion be the same whether you were using either an alpha, $\alpha$, of .05 or .01?

4. The Dean of Students at Baker College also took a random sample of 25 students. These students averaged 6.9 hours of sleep. Does this sample provide convincing evidence that Baker students average less than 7 hours of sleep nightly? Conduct a hypothesis test with an alpha, $\alpha$, of .05, to support your conclusion. Assume the standard deviation is 1.00. Show your work.

$z =$ _____; $p =$ _____

5a. In the hypothesis test conducted in Question 4, what would it mean to commit a Type 1 error? Explain in non-technical terms.

5b. In the hypothesis test conducted in Question 4, what would it mean to commit a Type 2 error? Explain in non-technical terms.

6. The Dean of Students at Corby College would like to know whether Corby students on average sleep either more than 7.0 or less than 7.0 hours. What are the appropriate null and alternative hypotheses?

Null hypothesis: _____;  Alternative hypothesis: _____

7. Who would need a sample mean farther below 7.0 to be convinced that their students on average sleep less than 7.0 hours, the Dean from Baker (Question 4) or the Dean from Corby (Question 6)? Assume that they both use $\alpha = .05$ and sample $N = 25$. Explain your answer