STA 240/ENV 298.01 Quiz 1   Name:_____

I agree to follow the NSEES Honor Code.   Signature:_____

Quiz Hint: Draw pictures.

1. In a laboratory experiment, sea urchins were fed 5 cm blades of green turtle grass. In a sample of 100 sea urchins, the mean ingestion time was found to be 3 hours and the sample standard deviation was 1 hour.

    (a) Give an approximate 90% confidence interval for the mean ingestion time. *Show all work. Answers without supporting work receive no credit.*

    (b) **True or False.** *Circle one.* With 95% probability, the true mean ingestion time is contained in the interval in (1a).

    (c) **True or False.** *Circle one.* As the sample size increases, a confidence interval for the sample mean ingestion time would widen due to the variability in the new data collected.

    (d) Give hypotheses to test the claim that the mean ingestion time is no more than 3.2 hours.

    $H_0 :$ _____ $H_A :$ _____

    (e) Given the large sample size, a normal approximation is used to calculate the p-value. The p-value for the test in (1d) would be: **Circle one.**

    A. $p \leq 2.5$ %   B. 2.5 % $< p \leq 5$ %   C. $5\% < p \leq 50$ %

    D. 50 % $< p \leq 95$ %   E. 95 % $< p \leq 97.5$ %   F. $p \geq 97.5$ %

    (f) **True or False.** *Circle one.* Regardless of the shape of the underlying population distribution, a sample histogram of the ingestion times would approach a normal distribution if the sample size was large enough.

2. **True or False.** *Circle one.* The p-value is dependent on sample size.

3. **True or False.** *Circle one.* If a study design calls for a random sample to be taken from a population, we refer to it as a randomized experiment.

4. **True or False.** *Circle one.* A study design in which subjects are selected at random from a population allows us to generalize statistical inferences from the sample to the population.