Chapter 15 Homework **Name:** _____

The administration of a university wants to know if the short term memory capacity of college students differs from the short term memory capacity of seven "chunks" of information. The short term memory capacities for 16 students is measured.

1a. In this scenario, is the administration testing a *directional* or *non-directional* hypothesis? Why is this (be specific)

1b. Expressed in terms of μ, what are the *null* and *alternate* hypotheses?

H_0: H_A:

1c. How many *degrees of freedom* are in this sample and what is the *critical t-Value* (t_α), with $\alpha = .01$?

The short term memory capacities for each of the sixteen students are below. Use this data to answer the questions (use the definitional methods where appropriate).

Student	Capacity
A	7
B	8
C	10
D	7
E	6
F	7
G	6
H	9
I	9
J	9
K	7
L	8
M	9
N	8
O	10
P	8

2a. What is the sample mean equal to?

2b. What is the sum of squares?

2c. What is the estimated population variance?

2d. What is the estimated population standard deviation?

2e. What is the estimated standard error of the mean?

2f. What is the *obtained t-Value* for the sample mean compared to the "normal average" seven units of information?

2g. Based on the answer to you should do what the the null and/or alternate hypotheses?

Chapter 15 Homework **Name:** _____

2h. Calculate the estimated 99% confidence intervals around the sample mean.

3a. If $\mu = 100$, $\bar{X} = 101$, $\hat{s} = 10$, and n = 10,000, that is the obtained t-Value?

3b. If $\mu = 100$, $\bar{X} = 101$, $\hat{s} = 10$, and n = 100, that is the obtained t-Value?

3c. If $\mu = 100$, $\bar{X} = 101$, $\hat{s} = 2$, and n = 100, that is the obtained t-Value?

In each of the three cases, the difference between the sample mean and the hypothesized mean ($\mu = 100$) is the same. Why is the result in part 3a different than the result in part 3b?

Why is the result in part 3c different than the result in part 3b?