Practice Test—Confidence Interval Name_____

Statistics—Spring 2016

1) A questionnaire of study time was given to a random sample of high school seniors. Each senior was asked to record and report the amount of time they spent studying each night. The sample of 180 seniors resulted in an average of 3.5 hours with standard deviation of .95 hours.

a) Calculate the 90% confidence interval for the mean amount of time seniors spend studying nightly.	b) What is the margin of error for the 90% confidence interval?
c) If 250 seniors were surveyed, what would the margin of error be with a 90% level of confidence?	d) How many seniors should you survey if you want a 5% margin of error with a 90% level of confidence?

2) A sample of student test scores yields the following:

88	*85*	*92*	*81*	*69*	*71*	*75*
77	*92*	*88*	*75*	*66*	*72*	*83*

a) Calculate the sample mean.	b) Calculate the sample standard deviation.
c) Calculate the 90% confidence interval for the population mean.	d) Calculate the 95% confidence interval for the population mean.
e) Calculate the 99% confidence interval for the population mean.	f) Identify the margin of error for all 3 confidence levels.

3) Indicate whether each statement is true or false and give a reason for each.

a) As the confidence interval increases, the margin of error decreases.	b) As the sample size increases, the margin of error increases.
c) As the standard deviation increases, the margin of error increases.	d) If you want to decrease the margin of error, what could you do in your study?

4) An insurance company checks police records on 582 accidents selected at random and notes that teenagers were at the wheel in 91 of them.	
a) Calculate the 90% confidence interval for the proportion of teenagers involved in accidents.	b) What is the margin of error for the 90% confidence interval you just predicted?
c) If 1000 police records were checked and the proportion stayed the same, what would the margin of error be with a 90% level of confidence?	d) How many police records would need to be checked if you want a 5% margin of error with a 90% level of confidence?

5) In a random survey of 226 college students, 20 reported being "only" children (with no siblings).	
a) Construct a 95% confidence interval for the proportion of students nationwide who are only children.	b) Explain what your interval means.
c) Explain what would change if you were to calculate a 99% confidence interval for the proportion of students nationwide who are only children.	d) What impact does the number of students surveyed have on your proportion prediction?

6) A random sample of 168 students were asked how many songs were in their digital music library and what fraction of them were legally purchased. Overall, they reported having a total of 117,079 songs, of which 23.1% were legal.	
a) Construct a 99% confidence interval for the fraction of legal digital music.	b) Calculate a good estimate of legally attained songs in a student's digital music library.
c) What is your margin of error?	d) What would your margin of error be if you asked 1500 random students?