Test 6 Review

Name: _____ Date: _____

Vocabulary—*Know your vocab!*

ISN Pgs. 61-68

Confidence Interval	*Point Estimate*	*Degrees of Freedom*	*Table A*	$\hat{q}$	α
Confidence Level	*Critical Value*	*Error of Estimate*	*t-Table*	p	$\hat{p}$

Work Problems—*answer each question fully.*

C.I. when n>30: (Use the table A.)

1. Find the critical values ($z_{\alpha/2}$) for:

(a) a 92% confidence interval: _____ (b) a 97% confidence interval: _____

Formula: $\bar{X} - Z\alpha_{/2}\left(\frac{\sigma}{\sqrt{n}}\right) < \mu < \bar{X} + Z\alpha_{/2}\left(\frac{\sigma}{\sqrt{n}}\right)$ **(ROUND TO TWO DECIMAL PLACES!)**

2. In a recent study of 35 ninth-grade students, the mean number of hours per week that they watched television was 22.6. The standard deviation is known to be 2.8. Find the 98% confidence interval of the mean.

3. The average weight of 40 randomly selected school buses was 4150 pounds. The standard deviation was 480 pounds. Find the 99% confidence interval of the true mean weight of the buses.

4. A recent study of 100 women indicated that the mean age of women who are widows is 52 years old. The population standard deviation in this study is 6.8 years. What is the 95% confidence interval the true mean of women who are widows?

C.I. when n<30: (Use the t-table.)

5. Find the critical values ($t_{\alpha/2}$) for:

(a) a 95% confidence interval for a sample of 18: _____

(b) a 99% confidence interval for a sample of 6: _____

C.I. when n<30: (Use the t-table.) (ROUND TO THREE DECIMAL PLACES!!!)

Formula: $\bar{X} - t_{\alpha/2}\left(\frac{s}{\sqrt{n}}\right) < \mu < \bar{X} + t_{\alpha/2}\left(\frac{s}{\sqrt{n}}\right)$ ***Degrees of freedom = n – 1**

6. An irate patient complained that the cost of a doctor's visit was too high. She randomly surveyed 20 other patients and found that the mean amount of money they spent on each doctor's visit was $44.80. The standard deviation of the sample was $3.53. Find the 98% confidence interval of the population mean.

7. In a study of 10 insurance sales reps from a certain large city, the average of the group was 48.6 years old, and the standard deviation was 4.1 years. Find the 95% confidence interval of the population mean of all insurance sales reps in that city.

8. A previous study found that people waited an average of 2.5 hours after noon to each lunch. This study contacted 25 people. The sample standard deviation of this study is .5 hours. What is the 96% confidence interval of the true population mean of all people who wait to eat lunch.

C.I. for Proportions: (Use the z-table.) (ROUND TO THREE DECIMAL PLACES!!!)

Formula: $\hat{p} - Z_{\alpha/2}\sqrt{\left(\frac{\hat{p}\cdot\hat{q}}{n}\right)} < \mu < \hat{p} + Z_{\alpha/2}\sqrt{\left(\frac{\hat{p}\cdot\hat{q}}{n}\right)}$

9. A political analyst found that 60% of 300 Republican voters believe that the federal government has too much power. Find the 95% confidence interval of the population proportion of Republican voters who feel this way.

10. A recent study of 75 workers found that 53 people rode the bus to work each day. Find the 98% confidence interval of the proportion of all workers who rode the bus to work.

11. A researcher collected data from 520 counties across the state and found that 210 of the counties spend more than $300 on road repairs each year. If a researcher wants to be 99% confident what is the confidence interval of the true proportion?