

Ch. 7, 8, 9

01/20/2011

*HW #3 – Math 227*

Name: \_\_\_\_\_

Show all work for full credit.

Box your answers.

1.) Each year, millions of people take trips to theme parks owned by Disney, Universal Studios, Sea World, and others. A survey of 1233 people who took trips revealed that 111 of them included a visit to a theme park. Construct a 94% confidence interval for the true proportion of people who take trips to a theme park. Also, determine the confidence level, Critical values and margin of error.

$1 - \alpha$ : \_\_\_\_\_

Critical Values: \_\_\_\_\_

E: \_\_\_\_\_

2.) The department of Mathematics at a four-year university wants to estimate the average age of students who apply to their graduate program with 99% confidence level. If the standard deviation of the ages is known to be 8 years of age with a margin of error of 3.5 years, how large must the sample be?

3.) Suppose a student is measuring the boiling temperature of a certain liquid and she observes the readings in degrees Celsius. With 32 different readings, the student calculates that the mean temperature is  $101.25^\circ$  with a standard deviation of  $1.23^\circ$ . Determine the 95% confidence interval for the population mean boiling temperatures of this particular liquid.

4.) A bank needs information concerning the checking account balances of its student accounts. A random sample of 12 student account balances are listed below.

<b>1025.23</b>	<b>998.56</b>	<b>875.20</b>	<b>500.12</b>	<b>1546.98</b>	<b>1247.39</b>
<b>1045.87</b>	<b>879.62</b>	<b>1784.87</b>	<b>856.50</b>	<b>1223.01</b>	<b>785.20</b>

Assuming that student balances are normally distributed, test the claim that the population mean of student bank account balances is less than \$1000. **Use the P-value method.**

5.) “While vast majorities of Americans experience a range of rude behaviors at least occasionally in their daily lives, the one transgression that occurs most often is accompanied by a ring tone: people talking on cell phones in public places in a loud or annoying manner.” An ABC news poll was conducted by telephone (Jan. 20-24, 2006) among a random national sample of 1014 adults. Of those sampled, 600 said that they often see people making annoying cell phone calls. Test the claim that the true proportion of American adults that often encounter people making annoying cell phone calls is more than 55%. Use 0.02 level of significant.

**Use the traditional method.**

6.) Some colleges have pushed back the starting time of morning classes because students were not getting enough sleep. A random sample of 280 college students had an average of 6.54 hours of sleep and a standard deviation of 1.90 hours. Test the claim that the true mean amount of sleep that college students get per night is not 7 hours. Use 0.05 level of significant.

7.) a. A random sample of 10 students is trying to do well on the Math assessment exam. A new training method in order to increase scores on the Math assessment exam is given at a workshop. The data in the following table shows their scores before and after the training. Test the claim that the new method is increasing their Math assessment exam. Use  $\alpha = 0.01$ . Give a practical conclusion.

<b>Before</b>	<b>65</b>	<b>62</b>	<b>42</b>	<b>54</b>	<b>71</b>	<b>83</b>	<b>80</b>	<b>72</b>	<b>65</b>	<b>55</b>
<b>After</b>	<b>82</b>	<b>70</b>	<b>50</b>	<b>54</b>	<b>72</b>	<b>80</b>	<b>82</b>	<b>75</b>	<b>68</b>	<b>58</b>

b. Construct a 98% confidence interval about  $\mu_d$ . Does the test and the confidence interval result in the same conclusion? Explain your answer.

**8.) a.** A swimming school wants to determine whether a recently hired instructor is working out. Sixteen out of 25 of Instructor A's students passed the lifeguard certification test on the first try. In comparison, 57 out of 72 of more experienced Instructor B's students passed the test on the first try. Is Instructor A's success rate worse than Instructor B's? Use  $\alpha = .10$ .

**b.** Construct a 95% confidence interval for the difference in the population proportions. Does the test and the confidence interval result in the same conclusion? Explain your answer.

9.) Use the given statistics to test the claim that the average GPA of ELAC male students and ELAC female students are significantly different. Use  $\alpha = 0.02$

<u>Male</u>	<u>Female</u>
$n = 45$	$n = 38$
$\bar{x} = 2.85$	$\bar{x} = 2.95$
$s = 0.5$	$s = 0.6$