

REVIEW for Exam #4 – Chapter 10, 11.1, 11.2, 11.3, 12.1, 12.2, 13.1

Problem 1 – If you're using a graphing calculator, please write the function you're using. Don't forget to include the equation I gave in class. Follow the format we went over in class!!

A recent study stated that if a person chewed gum, the **average** number of sticks of gum he or she chewed daily was 8. To test the claim, a researcher selected a random sample of 36 gum chewers and found the mean number of sticks of gum chewed per day was 9. The standard deviation of the sample was 1. At $\alpha = 0.05$, is the number of sticks of gum a person chews per day actually greater than 8? Use the *Pvalue Method*.

- State the hypothesis
- Find the test value
- Find the Pvalue
- Will you reject or not reject the null hypothesis? Explain how you made your decision.
- Summarize your results. Please use complete sentences.

Problem 2 – If you're using a graphing calculator, please write the function you're using. Don't forget to include the equation I gave in class. Follow the format we went over in class!!

The Harris Poll conducted a survey in which they asked "How many tattoos do you currently have on your body?" Of the 1,205 males surveyed, 181 responded that they had at least one tattoo. Of the 1,097 females surveyed, 143 responded that they had at least one tattoo. At level of significance of 0.05, is the difference in proportions of females that have at least one tattoo different from the proportion of males that have at least one tattoo.

- State the hypotheses
- What kind of test do you have? (Right tailed-test, left tailed-test, or Two tailed-test)
- Find the test value.
- Find the P-value
- Is $P\text{-value} > \alpha$ or $P\text{-value} \leq \alpha$?
- Will you reject or NOT reject H_0 ?
- Summarize

Problem 3 – If you're using a graphing calculator, please write the function you're using. Don't forget to include the equation I gave in class. Follow the format we went over in class!!

The **average** temperature during the summer months for the northeastern part of the United States is 67 degrees. A **sample of 10** cities had an average temperature of 69.6 for the summer of 1995 with a standard deviation of 1.1. At $\alpha = 0.10$ can it be concluded that the summer of 1995 was **warmer** than average? Use any method.

Problem 4- Use any method.... BUT please be NEAT and CLEAR... I want to see 5 steps.

Listed below are measured amounts of lead in the air. The Environmental Protection Agency has established an air quality standard for lead of 1.5. The measurements shown below were recorded at Building 5 of the World Trade Center site on different days immediately following the destruction caused by the terrorist attacks of September 11, 2001. Test the claim that these amounts are from a population with a standard deviation greater than 0.4. Use significance level of 0.05.

5.40 1.10 0.42 0.73 0.48 1.10

Problem 5 - If you're using a graphing calculator, please write the function you're using. Don't forget to include the equation I gave in class. Follow the format we went over in class!!

Listed below are the weights (in pounds) of nine randomly selected supermodels. Use a 0.01 level of significance to test the claim that weights of female supermodels vary less (in other words... they have a smaller standard deviation) than the weights of women in general. The standard of weights of the population of women is 29 lbs.

125 (Taylor)	119 (Auermann)	128 (Schiffer)	128 (MacPherson)
119 (Turlington)	127 (Hall)	105 (Moss)	123 (Mazza)
115 (Hume)			

Problem 6 - If you're using a graphing calculator, please write the function you're using. Don't forget to include the equation I gave in class. Follow the format we went over in class!!

A researcher claims that the standard deviation of the number of deaths annually from tornadoes in the United States is less than 35. If a sample of 11 randomly selected years had a standard deviation of 32, is the claim believable? Use $\alpha = 0.05$. Use any method.

- What parameter are you testing?
- What distribution will you be using?
- Use the 5-Step Hypothesis Testing, to answer the question.

Problem 7 - If you're using a graphing calculator, please write the function you're using. Don't forget to include the equation I gave in class. Follow the format we went over in class!!

A dietitian wishes to see if a person's cholesterol level will change if the diet is supplemented by a certain mineral. Six subjects were pre-tested and then they took the mineral supplement for a 6-week period. The results are shown in the table. Can it be concluded that the cholesterol level has been changed at $\alpha = 0.01$? Assume the variable is approximately normally distributed.

Subject	1	2	3	4	5	6
Before (x)	210	235	208	190	172	244
After (y)	190	170	210	188	173	228

Problem 8 - If you're using a graphing calculator, please write the function you're using. Don't forget to include the equation I gave in class. Follow the format we went over in class!!

A sample of 150 people from a certain industrial community showed that 80 people suffered from a lung disease. A sample of 100 people from a rural community showed that 30 suffered from the same lung disease. At $\alpha = 0.05$, is there a difference between the proportions of people who suffer from the disease in the two communities? Use any method.

Problem 9 - If you're using a graphing calculator, please write the function you're using. Don't forget to include the equation I gave in class. Follow the format we went over in class!!

To illustrate the effects of driving under the influence (DUI) or alcohol, a police officer brought a DUI simulator to a local high school. Student reaction time in an emergency was measured with unimpaired vision and also while wearing a pair of special goggles to simulate the effect of alcohol on vision. For a random sample of nine teenagers, the time, in seconds, required to bring the vehicle to a stop from a speed of 60 miles per hour was recorded. At $\alpha = 0.05$ is there a difference between the normal vision and impaired vision?

	Student 1	Student2	Student3	Student4	Student5	Student6	Student7	Student8	Student9
Normal (No goggles)	4.47	4.24	4.58	4.65	4.31	4.80	4.55	5.00	4.79
Impaired (with goggles)	5.77	5.67	5.51	5.32	5.83	5.49	5.23	5.61	5.63

- Is this a dependent sample or independent sample? Explain why.
- State the null and alternate hypothesis. (**HINT: testing the average of difference**)
- Find your CV. Please provide a graph, shade and label
- Find your test value
- Make your decision and Summarize

Problem 10 - If you're using a graphing calculator, please write the function you're using. Don't forget to include the equation I gave in class. Follow the format we went over in class!!

A medical researcher wishes to see whether the pulse rates of smokers are higher than the pulse rates of nonsmokers. Samples of 100 smokers and 100 nonsmokers are selected. The results are shown. Can the researcher conclude at $\alpha = 0.05$ that smokers have a higher pulse rates than nonsmokers?

Smokers	Nonsmokers
$x_1 = 90$	$x_2 = 88$
$s_1 = 5$	$s_2 = 6$
$n_1 = 100$	$n_2 = 100$

Problem 11

Test the claim that the proportion of drowning deaths of children attributable to beaches is more than 25%. A sample of 615 drowning deaths showed that 30% of them were attributable to beaches. Use $\alpha = 0.01$. Use the Traditional Method.

Problem 12

A study was conducted to assess the effects that occur when children are exposed to cocaine before birth. Children were tested at age 4 for object assembly skills. The 190 children born to cocaine users had a mean of 7.3 and a standard deviation of 3. The 186 children not exposed to cocaine had a mean score of 8.2 with a standard deviation of 3. Use $\alpha = 0.05$ to test the claim that prenatal cocaine exposure is associated with lower scores of four year-old children on the test of object assembly. Use any method.

Problem 13 - If you're using a graphing calculator, please write the function you're using. Don't forget to include the equation I gave in class. Follow the format we went over in class!!

The head injury data (in hic) are given below. Use significance level of 0.05 to test the null hypothesis that the different weight categories have the same mean. Do the data suggest that larger cars are safer?

Subcompact	681	428	917	898	420
Compact	643	655	442	514	525
Midsize	469	727	525	454	259
Full-size	384	656	602	687	360

Problem 14 - If you're using a graphing calculator, please write the function you're using. Don't forget to include the equation I gave in class. Follow the format we went over in class!!

Do "A" students tend to sit in a particular part of the classroom? The author recorded the locations of the students who received grades A and the results were the following:

17 sat in the front
9 sat in the middle
5 sat in the back

Is there sufficient evidence to support the claim that the "A" students are not evenly distributed throughout the classroom?

Problem 15 - If you're using a graphing calculator, please write the function you're using. Don't forget to include the equation I gave in class. Follow the format we went over in class!!

Suppose a study of speeding violations and drivers who use car phones produced the following fictional data:

	Speeding violation in the last year	No speeding violation in the last year	Total
Car phone user	25	280	305
Not a car phone user	45	405	450
Total	70	685	755

- Compute the MARGINAL Frequency distributions.
- $P(\text{person is a car phone user}) =$
- $P(\text{person had no violation in the last year}) =$
- $P(\text{person had no violation in the last year AND was a car phone user}) =$
- $P(\text{person is a car phone user OR person had no violation in the last year}) =$
- $P(\text{person is a car phone user GIVEN person had a violation in the last year}) =$
- $P(\text{person had no violation last year GIVEN person was not a car phone user}) =$
- Is using a "car phone" independent of receiving a speeding violation? Use the 5Step hypothesis test to answer this question