East Los Angeles College
Department of Mathematics
Math 227
Final Exam Study Guide

The following data represents the math lab time (hours) that students spent the week before a final exam.

6, 5, 8, 6, 4, 6, 5

1. Determine the mean. **Tenths**
2. Determine the variance. **Tenths**
3. Determine the standard deviation. **Tenths**
4. Use the 90% confidence level to estimate the margin of error associated with estimating the true mean. **Hundredths**
5. Use the 90% confidence interval to estimate the true mean study time. **Tenths**
6. Use the 90% confidence level to estimate the true variance. **Tenths**
7. Use the 90% confidence level to estimate the true standard deviation. **Tenths**

8. A $ 40,000 life insurance policy for a 28-year old male costs $ 1,600 per year. If the probability of a 28-year old male living to see 29 years of age is 0.94, compute the expected value for the insurance policy. **Hundredths**

Multiple Choice Quiz

There are 12 questions on a multiple-choice quiz in which each question has 5 possible answers (a), (b), (c), (d), and (e). If a person guesses on each question, what's the probability of guessing correct on: **Thousandths**

9. All the questions?
10. One question?
11. Two questions?
12. At least on question?
13. More than three questions?
14. What is the expected number of correct guesses?

The lifespan of a laptop is normally distributed with a mean of 8.5 years and a standard deviation of 1.8 years. What percent of laptops last:

15. At least 5 years? **Hundredths**
16. Less than 10 years? **Hundredths**
17. Between 5 and 10 years? **Hundredths**
18. More than 6 years? **Hundredths**
19. What lifespan represents the top 5%? **Tenths**
20. What lifespan represents the 3rd Quartile? **Tenths**

When reviewing health records, a sample of size 250 indicates that 42% of Americans over the age of 45 suffer from type II diabetes. Use the 95% confidence level to:

21. Estimate the margin of error. **Thousandths**
22. Estimate the true proportion. **Thousandths**
23. If you are conducting a new study using the 95% confidence level and no prior sample proportion information is known, estimate the sample size needed to be within a margin of error of $\pm 2\%$

US Senators The following table displays 100 senators of the 112th US congress viewed by political party affiliation and gender.

	Male	**Female**	*Total*
Democrat	32	10	*42*
Republican	48	7	*55*
Independent	0	3	*3*
Total	*80*	*20*	*100*

If a person is selected at random, what's the probability the person:

24. is a democrat? **Thousandths**
25. is a republican? **Thousandths**
26. is a non-republican? **Thousandths**
27. democrat or a republican? **Thousandths**
28. Is a republican given that the person is a male? **Thousandths**
29. is a republican given that the person is a female? **Thousandths**

Left Handedness

The proportion of men who are left handed is not the same as the proportion of women who are left handed. A sample of 56 men reveal that 8 are left handed and a sap le of 82 women report that 11 are left handed. Use the 5% level of significance answer the following questions.

30. What is the hypothesis?
31. What are your critical value(s)?
32. What is your test statistic?
33. What is your conclusion?

Car and Taxi Ages

The mean age of cars is greater than the mean age of taxis. A sample of 24 cars reveal a mean age of 12.2 years with a standard deviation of 3.6 years. A sample of 36 cars reveal a mean age of 10.8 years with a standard deviation of 4.2 years. Use the 10% level of significance to answer the following questions.

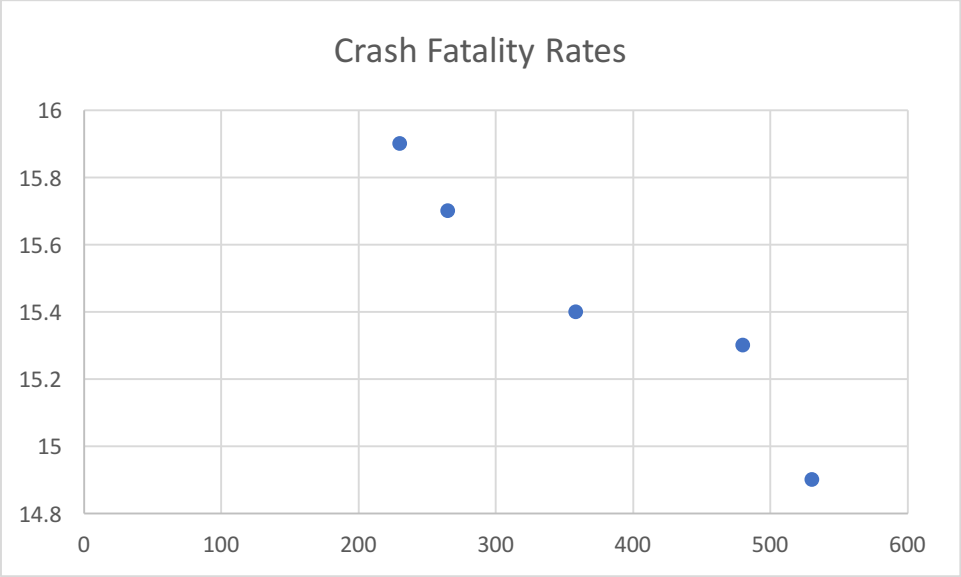
34. What is the hypothesis?
35. What are your critical value(s)?
36. What is your test statistic?

37. What is your conclusion?

Lemons and Car Crashes

Listed below are annual data for various years. The data are weights (metric tons) of lemons imported to the US and car crash fatality rates per 100,000 population.

Lemon Imports	230	265	358	480	530
Crash Fatality Rates	15.9	15.7	15.4	15.3	14.9



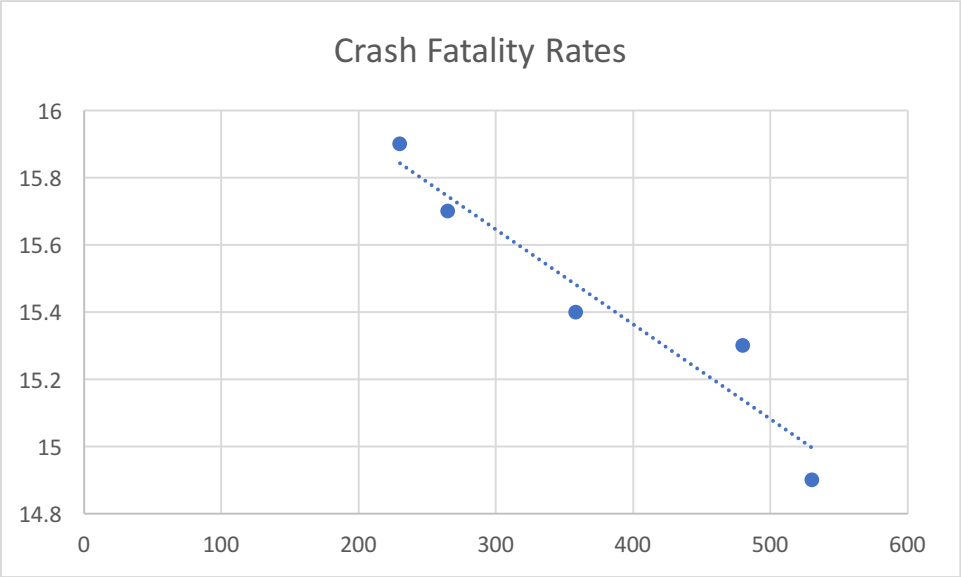
38. Compute the linear correlation coefficient r using the following information.

							SUM
x	**Lemon Imports**	230	265	358	480	530	1863
y	**Crash Fatality Rates**	15.9	15.7	15.4	15.3	14.9	77.2
xy		3657	4160.5	5513.2	7344	7897	28571.7
x^2		52900	70225	128164	230400	280900	762589
y^2		252.81	246.49	237.16	234.09	222.01	1192.56

39. Compute the Test Statistic

40. Is there sufficient evidence to conclude that there is a linear correlation between weights of lemon imports and US fatality rates using the 5% level of significance.

41. Determine the equation of the regression line (Best Fit Line) illustrated below.



42. Determine the best predicted fatality rate given that the lemon imports 400 metric tons.

43. What is your name?

Answer Sheet

1		22	
2		23	
3		24	
4		25	
5		26	
6		27	
7		28	
8		29	
9		30	
10		31	
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21		42	