East Los Angeles College
Department of Mathematics
Math 227
Final Exam

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

6, 5, 8, 6, 4, 6

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 $ 45,000 life insurance policy for a 28-year old male costs $ 1,500 per year. If the probability of a 28-year old male living to see 29 years of age is 0.95, compute the expected value for the insurance policy. **Hundredths**

Multiple Choice Quiz
There are 8 questions on a multiple-choice quiz in which each question has 4 possible answers (a), (b), (c), (d). 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 one question?
13. No more than two questions?
14. What is the expected number of correct guesses?

The lifespan of a laptop is normally distributed with a mean of 6.5 years and a standard deviation of 1.6 years. What percent of laptops last:
15. At least 5 years? **Hundredths**
16. Less than 8 years? **Hundredths**
17. Between 6 and 9 years? **Hundredths**
18. More than 5 years? **Hundredths**
19. What lifespan represents the top 5%? **Tenths**

When reviewing health records, a sample of size 280 indicates that 46% of Americans over the age of 45 suffer from type II diabetes. Use the 95% confidence level to:

20. Estimate the margin of error. **Thousandths**
21. Estimate the true proportion. **Thousandths**

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

	Male	**Female**	*Total*
Democrat	42	12	*54*
Republican	36	6	*42*
Independent	0	4	*4*
Total	*78*	*22*	*100*

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

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

Left Handedness

The proportion of men who are left handed is the same as the proportion of women who are left handed. A sample of 62 men reveal that 12 are left handed and a sample of 76 women report that 10 are left handed. Use the 5% level of significance answer the following questions.

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

Car and Taxi Ages

The mean age of cars is no more than the mean age of taxis. A sample of 22 cars reveal a mean age of 10.2 years with a standard deviation of 2.6 years. A sample of 38 cars reveal a mean age of 11.4 years with a standard deviation of 3.2 years. Use the 10% level of significance to answer the following questions.

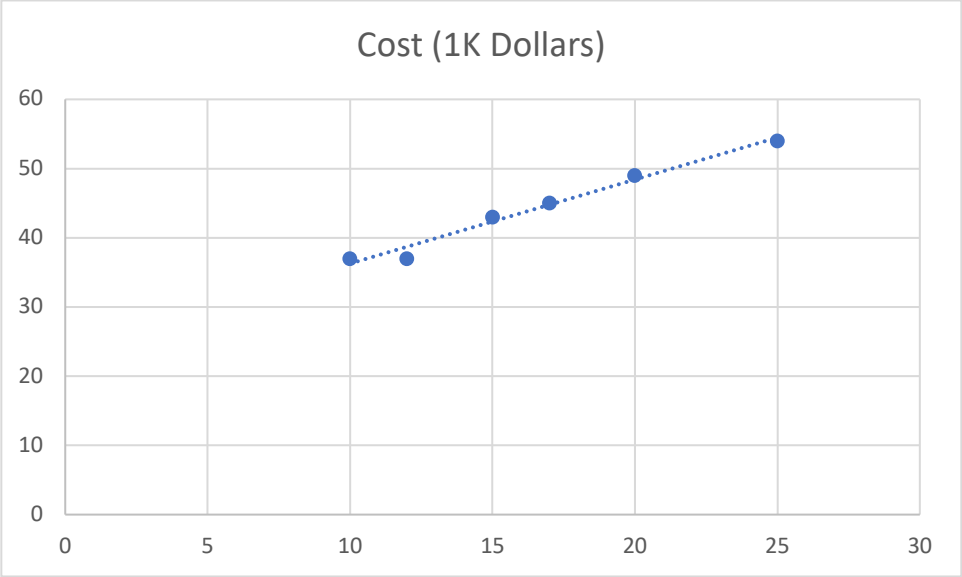
32. What is the hypothesis?
33. What are your critical value(s)?
34. What is your test statistic?
35. What is your conclusion?

Customer Service and Computer Sales

The bivariate sample data below are the number of customer service calls (per week) and the computer sales (thousand dollars) at a computer wholesale store. Use the 1% level of significance to test the claim that there is a linear correlation between the number of calls (week) and the computer sales (one thousand dollars).

$\alpha = 0.01$ and $n = 6$ and **r=0.990**

# of calls (week)	Cost (1K Dollars)
10	37
15	43
12	37
20	49
25	54
17	45



36. What are the critical values?

37. Compute the Test Statistic

38. What is the conclusion?

39. Determine the equation of the regression line (Best Fit Line).

40. Determine the best predicted number of computer sales, if there are 18 calls made.

41. Determine the best predicted number of computer sales, if there are 23 calls made.

Answer Sheet

1		22	
2		23	
3		24	
4		25	
5		26	
6		27	
7		28	
8		29	
9		30	
10		31	
11		32	
12		33	
13		34	
14		35	
15		36	
16		37	
17		38	
18		39	
19		40	
20		41	
21		42	