

## Lab Assignment 12.3, 12.5, 13.1, 13.2, 13.3, 11.3

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### Lab Assignment 12.3, 12.5, 13.1, 13.2, 13.3, 11.3

For each of the following problems, if no significance level is given, use 0.05.

1. SCUBA divers have maximum dive times they cannot exceed when going to different depths. The data in the table below show different depths with the maximum dive times in minutes.

Use your calculator to find the regression line and predict the maximum dive time for 110 feet.

x (depth in feet)	y (maximum dive time)
50	80
60	55
70	45
80	35
90	25
100	22

1. Calculator work
  2. Find a, b
  3. Find the regression line
  4. Find Critical Value and compare with r and state conclusion about linear correlation
  5. Find the best predicted maximum dive time for 110 feet
2. The following table shows economic development measured in per capita income PCINC. Find the regression line and best estimate PCINC for 1905.

Year	1870	1880	1890	1900	1910	1920	1930	1940	1950	1960
PCINC	340	499	592	757	927	1050	1170	1364	1836	2132

1. Calculator work
  2. Find a, b
  3. Find the regression line
  4. Find Critical Value and compare with r and state conclusion about linear correlation
  5. Find the best estimate PCINC for 1905.
3. MRSA, or *Staphylococcus aureus*, can cause a serious bacterial infections in hospital patients. The table below shows various colony counts from different patients who may or may not have MRSA.

Conc = 0.6	Conc = 0.8	Conc = 1.0	Conc = 1.2	Conc = 1.4
9	16	22	30	27
66	93	147	199	168
98	82	120	148	132

Test whether the mean number of colonies are the same or are different.

1. Null and Alternative Hypothesis
  2. Calculator Work
  3. Test Statistic and P-Value
  4. Conclusion about the null hypothesis
  5. Final conclusion that addresses the original claim
4. Four sororities took a random sample of sisters regarding their grade means for the past term.

Sorority 1	Sorority 2	Sorority 3	Sorority 4
2.17	2.63	2.63	3.79
1.85	1.77	3.78	33.45
2.83	3.25	4.00	3.08
1.69	1.86	2.55	2.26
3.33	2.21	2.45	3.18

Using a significance level of 1%, is there a difference in mean grades among the sororities?

1. Null and Alternative Hypothesis
  2. Calculator Work
  3. Test Statistic and P-Value
  4. Conclusion about the null hypothesis
  5. Final conclusion that addresses the original claim
5. Transit Railroads is interested in the relationship between travel distance and the ticket class purchased. A random sample of 200 passengers is taken. The table below shows the results. The railroad wants to know if a passenger's choice in ticket class is independent of the distance they must travel.

Traveling Distance	Third class	Second class	First class
1-100 miles	21	14	6
101-200 miles	18	16	8
201-300 miles	16	17	15
301-400 miles	12	14	21
401-500 miles	6	6	10

1. Null and Alternative Hypothesis
2. Calculator Work
3. Test Statistic and P-Value
4. Conclusion about the null hypothesis
5. Final conclusion that addresses the original claim

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