

Unit 1 Review

Pre-Calc

Linear Regression

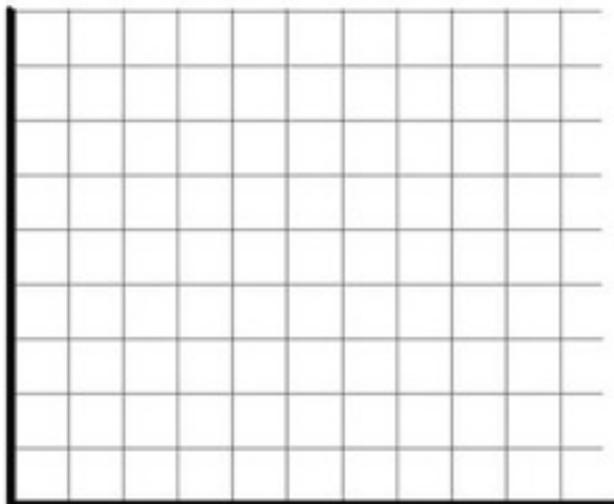
Unit 1

1. Find the mean, standard deviation for the following data set.

Hours spent outside (x)	10	8	13	9	11	14	6	4	12	7	5
Germs found on hands (y)	8.04	6.95	7.58	8.81	8.33	9.96	7.24	4.26	10.84	4.82	5.68

2. Make a scatter plot for the following data. Make sure to label your graph!

Number of hours (x)	1	2	3	4	5	6	7	8	9	10
Growth of bacteria (y)	22	19	25	37	32	35	42	33	29	21



The table shows the number of kids enrolled in Sunshine Pre-School since the year 2005. Let x be the number of years since 2006. Use it to answer the questions on the next page.

Year (x)	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015
Number of Students (y)	15	20	22	27	35	46	50	52	55	60

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3. Calculate the equation of the linear regression line for this situation.

4. Calculate the correlation coefficient and interpret what it means.

$r =$ _____ Interpretation: _____

5. What is the slope? What is the y -intercept?

6. Using the linear regression equation, predict how many students will be enrolled in 2020.

7. Using the linear regression equation, predict what year it might be if there is an enrollment of 83 students.

Principal Murphy kept track of how much money was in the Math Department account at the beginning of each week. The table shows how much money was there each week.

Week (x)	0	1	2	3	4	5	6	7
Amount of \$ (y)	8,000	6,245	4,183	3,271	7,064	3,609	5,041	2,798

8. Using the data in the table, calculate the mean and standard deviation.

9. Calculate two standard deviations above and three standard deviations below the mean.

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10. List at least 4 limitations for the situation.

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A surveyor went out and asked residents of Las Vegas how much money they spent on shoes each month. There were only 541 people willing to participate in the survey. After the survey was over, the mean was calculated to be \$200 spent on shoes each month.

11. Using a standard deviation of \$73, calculate the Standard Error for the sample.

12. What does the sample error tell us about the sample?

13. What if the surveyor went out and asked more people about their spending habits on shoes, and then got the total number of people surveyed to be 5,232 people. What would the new Standard Error be?

14. What does the new standard error tell us about the sample?

15. Using a standard deviation of \$7.30, as well as a total sample size of 5,232, calculate the Standard Error for the sample.

16. Using the standard error from #15, can we say that the sample is a good representation for the whole state of Nevada? Why or why not. What about for the whole United States? Why or why not.

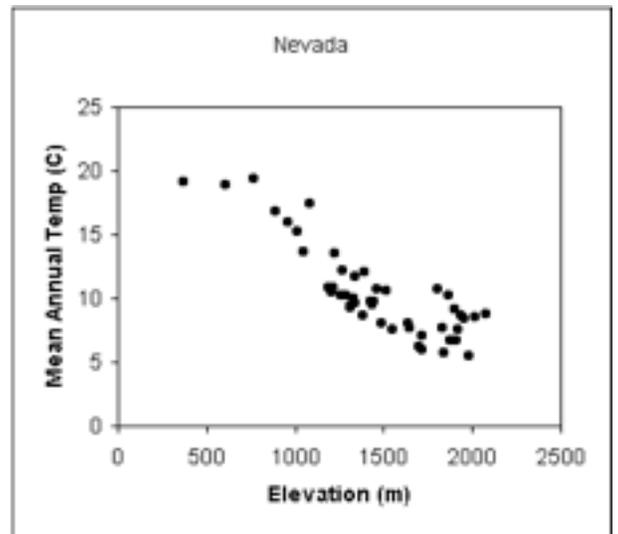
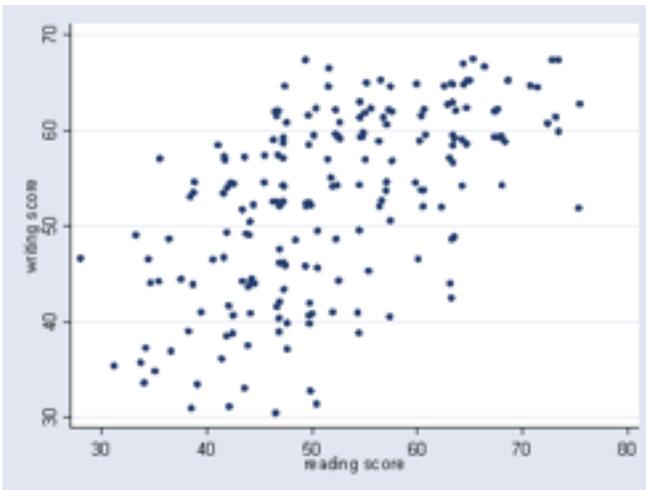
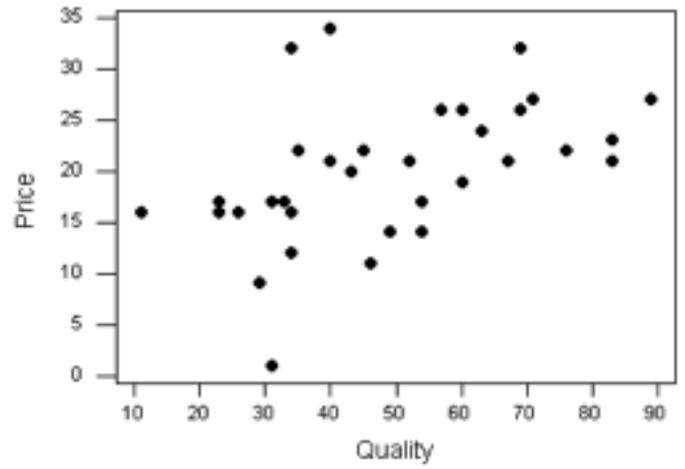
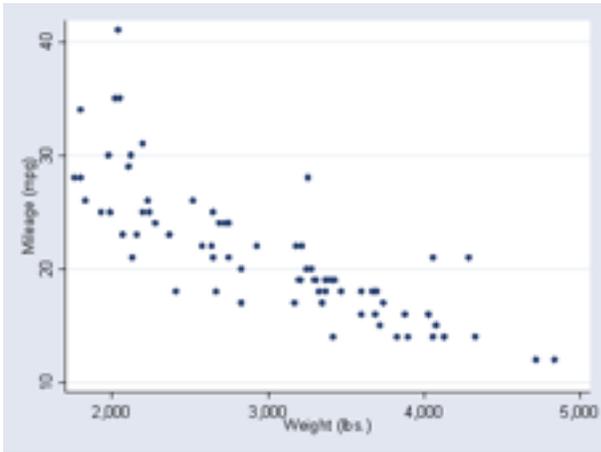
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17. Draw an estimated linear regression line through the scatter plots below.



18. Estimate the y-intercept and correlation coefficient for each of the scatter plots above.