

Test 1 Review Problems

- Answer the following as either True or False. You don't need to justify your answers.
 - The five number summary for a data set is as follows: 13, 21.5, 29.5, 36.5, 50. Then 75% of the observations in the data set are between 21.5 and 50.
 - Two data sets with different standard deviations cannot have the same mean.
- Consider the following data:

12	23	33	37	40	40
45	50	56	23	33	49
50	34	43	51	44	52

- Construct an ordered stem and leaf plot for this data, using two lines per stem.
 - Construct an ordered stem and leaf plot for this data, using one line per stem.
 - What shape does the data appear to have?
- The U.S. National Science Foundation, Division of Science Resources Studies, collects data on the ages of recipients of science and engineering doctoral degrees. A sample of one year's recipients yields the following ages.

37	24	33	37	43
41	28	44	27	36

- Find the median of this data.
 - Find the sample mean for this data.
 - Find the sample standard deviation for this data.
- The Richter Scale readings of the previous 17 earthquakes in California are shown in the table.

3.7	3.9	4.2	7.1	6.3
3.7	3.8	4.5	8.1	5.3
5.6	3.7	2.9	5.1	5.0
4.6	5.1			

- Determine a five number summary for this data.
 - Determine any potential outliers for the data.
- According to USA today, last week's top five movies and their profits (in millions) are as follows:

Rank	Movie	Profit
1	<i>The Sum of All Fears</i>	18.7
2	<i>Divine Secrets of the Ya-Ya Sisterhood</i>	16.35
3	<i>Star Wars II: Attack of the Clones</i>	13.9
4	<i>Bad Company</i>	10.5
5	<i>Spider-Man</i>	10

- (a) Find the mean profit.
- (b) Find the population standard deviation of the top five profits.

6. Consider the following set of data points.

x	0	1	2	3	4
y	2	0	1	-2	-1

- (a) Find the regression equation for the set of points.
 - (b) Find the coefficient of determination for the points.
7. A physician did a study to determine how the maximum heart rate an individual can reach during intensive exercise is related to that person's age. He recorded the age and maximum heart rates of 10 people. The results are shown in the table.

Age x	30	38	41	38	29	39	46	41	42	24
Heart Rate y	186	183	171	177	191	177	175	176	171	196

Notice that for this data, $S_{xx} = 425.6$, $S_{xy} = -485.4$, and $S_{yy} = 642.1$.

- (a) Determine the regression equation for the data.
- (b) What does the slope of the regression line represent in terms of age and peak heart rate?
For each additional year of age, the peak heart rate goes down by 1.14 beats per minute.
- (c) How much of the variation in the data is explained by the regression equation?
- (d) Use the regression equation to predict the peak heart rate of a 28 year old and a 50 year old person.
- (e) Which of the estimates in the previous problem would you have more confidence in? Explain.

More confidence in the estimate for the 28 year old, since 28 is in the range of our original data, while 50 is not.

8. Consider the following set of points.

x	1	2	3	4	5	6
y	0	2	3	5	5	7

- (a) Find the regression equation for the set of data points.
 - (b) Compute the linear correlation coefficient.
 - (c) What percentage of the variation in the data is explained by the regression?
9. The salaries for the players on the 2000 New York Yankees are listed below, as reported by CBS Sportsline.

Player	2000 Salary	Player	2000 Salary
Bernie Williams	\$12,357,143	Jorge Posada	\$1,250,000
David Cone	12,000,000	Jim Leyritz	1,000,000
Derek Jeter	10,000,000	Roberto Kelly	800,000
Mariano Rivera	7,250,000	Jason Grimsley	750,000
Andy Pettitte	7,000,000	Lance Johnson	350,000
Paul O'Neill	6,500,000	Shane Spencer	250,000
Roger Clemens	6,350,000	Ricky Ledee	240,000
Chuck Knoblauch	6,000,000	Wilson Delgado	213,000
Scott Brosius	5,250,000	Clay Bellinger	206,650
Tino Martinez	4,800,000	Todd Erdos	203,800
Mike Stanton	2,400,000	Ted Lilly	201,000
Orlando Hernandez	1,950,000	Luis De Los Santos	200,000
Jeff Nelson	1,916,667	D'Angelo Jimenez	200,000
Ramiro Mendoza	1,400,000	Nick Johnson	200,000
Allen Watson	1,300,000		

- (a) Find the percentile rank that corresponds to Lance Johnson.
- (b) Which player is in the 70th percentile in terms of their 2000 salary?
10. In Marissa's calculus course, attendance counts for 5% of the grade, quizzes count for 10% of the grade, exams count for 60% of the grade, and the final exam counts for 25% of the grade. Marissa had a 100% average on attendance, 93% for quizzes, 86% for exams, and 85% on the final. Determine Marissa's course average.