

Sample Problems for Linear Correlation

1) A researcher studies text messages and sleep in teenagers. Consider the following data for text messages sent per day and average hours of sleep for 10 teenagers.

| Texts per day | Hours of sleep |
|---------------|----------------|
| 20 | 7.3 |
| 132 | 3.9 |
| 63 | 6.8 |
| 103 | 6.1 |
| 185 | 6.1 |
| 52 | 8.4 |
| 77 | 6.0 |
| 115 | 5.2 |
| 209 | 3.2 |
| 52 | 5.1 |

a) In the space provided, make a scatterplot.

Use the indicated scale.

b) Find the equation of best-fit line. Use texts per day for x .

Plot the line on your scatterplot above.

c) Find the correlation coefficient r . Describe what your value of r means.

d) If a teenager sends 100 texts in a day, what is the predicted hours of sleep?

2) A stats teacher wonders if he can predict course grades based on a student's score on the first exam. See the following data.

| Exam 1 score | Percent for the class |
|--------------|-----------------------|
| 32 | 23.3 |
| 43 | 40.6 |
| 49 | 43.9 |
| 57 | 67.7 |
| 65 | 66.1 |
| 71 | 40.3 |
| 73 | 69.3 |
| 75 | 81.3 |
| 77 | 77.3 |
| 85 | 81.8 |
| 87 | 92.0 |
| 96 | 91.1 |

Same a, b, c. For d, find the observed y -values farthest above and below the line.