

Homework – Least Squares Regression

1. Create the scatter diagram and pick two “good” points and find the equation of the line containing them:

x	y
1	8
2	12
3	15
4	16
5	25
6	32

2. Given the following data:

x	y
1	7
2	12
3	15
4	16

Find the least squares regression line by hand.

3. Given the following data:

x	y
5	17
8	22
9	32
11	41
15	82

Find the least squares regression line using technology.

4. Given the following data:

x	y
1	33
2	29
3	27
4	25
5	15
6	12

Find the least squares regression line using technology.

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5. Using the following data and its corresponding regression equation, predict sales after 10 years:

time (x)	sales (y)
1	5000
2	5500
3	6200
4	8150
5	10000
6	15000

Is it a good model?

6. Using the following data and its corresponding regression equation, predict the score on the test for a 21 year old:

age (x)	score (y)
15	90
15.5	89
14	85
14.5	80
13	60

Is it a good model?

7. Based on the least-squares regression line below, find the residual at $x = 5$ given the actual data point below:

$$\hat{y} = 5.2x + 1$$

actual data point (5, 25)

8. Find the sum of the squared residuals for the least-squares regression line using the following data:

x	y
1	95
2	93.2
3	90
4	89.5
5	70

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9. Find the sum of the squared residuals for the least-squares regression line using the following data:

x	y
1	12
2	15
3	27
4	33
5	41