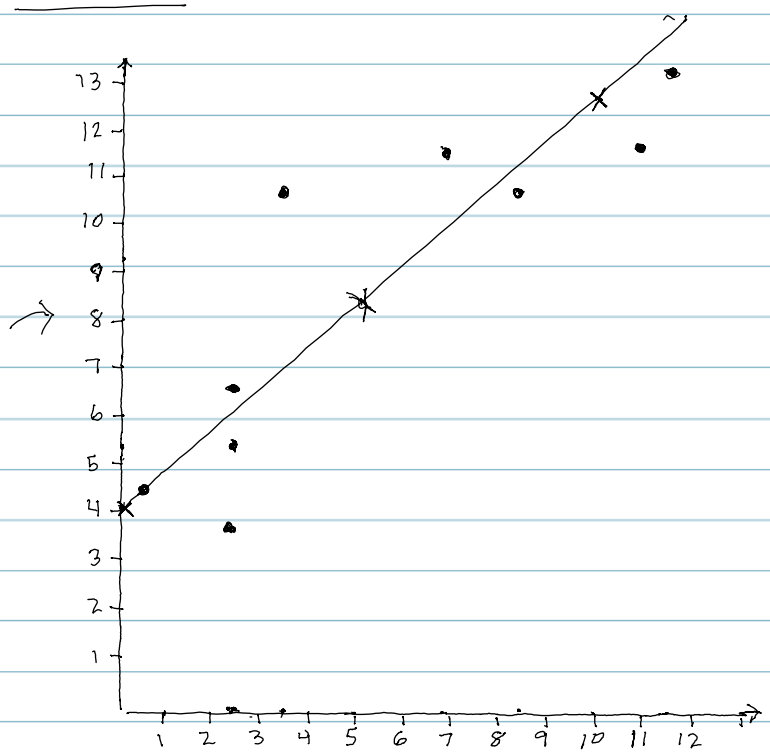
Section 3.2

Linear Regression

PART VI

x = auto weapons	y = murder rate
11.6	13.1
8.3	10.6
3.6	10.1
0.6	4.4
6.9	11.5
2.5	6.6
2.4	3.6
2.6	5.3



Least Squares Regression Line

$\hat{y} = 4.0473 + 0.8525x$

Graph the Line.

x	$\hat{y} = 4.0473 + 0.8525x$
0	4.0473
10	12.5723

Predictions

Estimate y when $x = 5$

$\hat{y} = 4.0473 + 0.8525 \cdot 5 = 8.3098$

Making Predictions: It probably isn't appropriate to use x to predict y when x & y do not correlate ($r \approx 0$).

Do x & y Correlate?	Tool for predicting y values
Yes ($r \approx 1$ or $r \approx -1$)	$\hat{y} = a + bx$
No ($r \approx 0$)	$\hat{y} = \bar{y}$