

## Section 4.2: Least-Squares Regression

### StatCrunch Steps

#### Stat > Regression > Simple Linear

- Select the columns for the independent variable (x) and dependent variable (y).
- If you need to predict a value for y, enter the value of x in the Prediction box.
- Click Compute.

If there is a P-value in the “Slope” row that is below 0.05 then there is a linear association and you can use the regression equation to predict values of y.

Otherwise, the predicted value of y should be the mean of the y-values ( $\bar{y}$ ).

You can compute that using Stat > Summary Stats > Columns, selecting the column for y.

**Example 1** A random sample of 10 students was asked how many hours they studied to prepare for a final exam. The number of hours, as well as each student’s score, is listed in the table.

<b>Hours</b>	7	8	4	9	13	5	9	6	16	3
<b>Score</b>	70	76	57	77	91	66	82	64	96	50

a) If a linear relation exists, compute the linear regression equation. Treat “hours” as the independent variable. Round to 2 decimal places.

b) Interpret the slope and intercept of the equation.

c) Predict the score of a student who studies for 10 hours.

**Example 2** Use the heights (in inches) and weights (in pounds) of nine players on the COS baseball team from the StatCrunch Section 4.1 data sheet.

Predict the weight of a player who is 71 inches tall.

**Example 3** Use the median income (in \$1000s) and median home price (in \$1000s) for sixteen randomly selected cities from the StatCrunch Section 4.1 data sheet.

a) If a linear relation exists, compute the linear regression equation. Treat “Income” as the independent variable. Round to 2 decimal places.

b) Predict the median home price of a city whose median income is \$50,000.