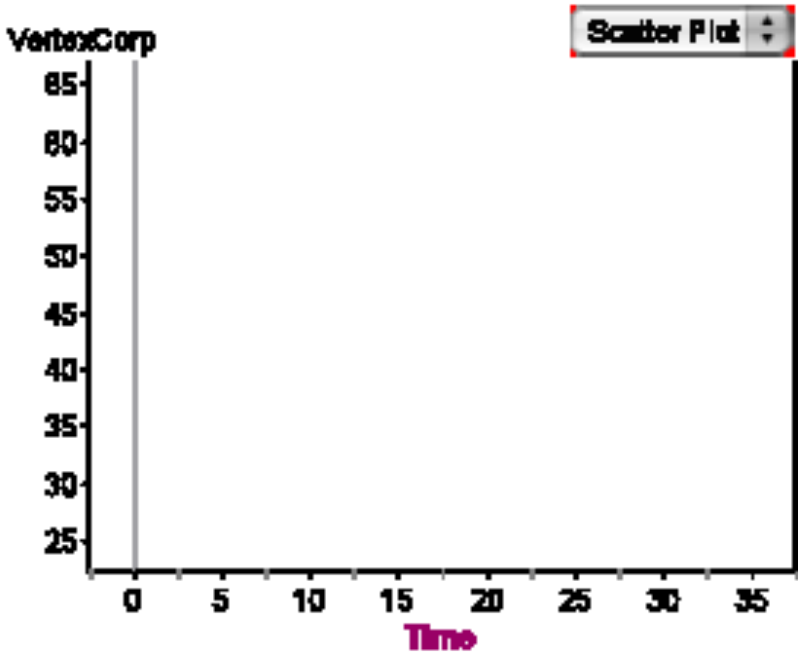
After watching the video**, *Regression*,** complete the following problems. A graphing calculator or other similar technology will be helpful for #1 and #2. An online tool can be found at http://www.shodor.org/interactivate/activities/Regression/.

1. Vertexcorp is a large company that hires hundreds of people. Ten of the employees are picked at random for a survey. The results of the survey are given below:

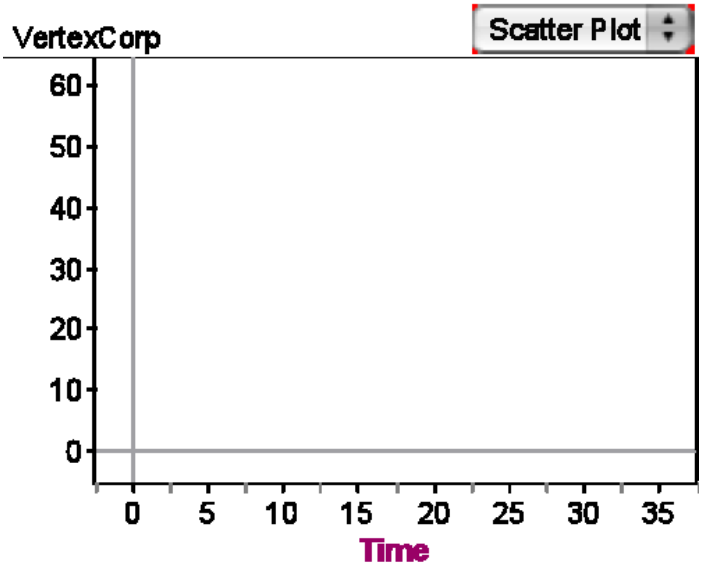
Interviewee number	Time with company (in months)	Salary (in thousands of dollars per year)	Job Satisfaction (scale from 0 - 50)
1	13	25	23
2	33	42	50
3	6	30	14
4	16	48	30
5	31	32	48
6	25	62	40
7	4	36	10
8	17	52	25
9	20	26	32
10	3	50	10

a. Make a scatter plot of salary vs. time with company.



b. Recall from the video that the data has a "linear correlation" if the data looks close to being a line. For this sample, is time with company correlated with salary?

c. Make a scatter plot of time with company vs. job satisfaction.



d. Is time with company correlated with salary?

e. Can we conclude that working at the company for a long time causes an increase in job satisfaction? Why or why not?

2. Use your scatter plot from (1c): time with company vs. job satisfaction.
   a. Draw your best estimate of the least-squares regression line on your plot above.

   b. Graph the following line on your grid above: $y = 1.36x + 5.3$.

c. The line $y = 1.36x + 5.3$ is the least-squares regression line. Was your estimate close to this line?

3. Josh Helmcrease has been with Vertexcorp for two years.
   a. Use the least-squares regression line from problem 2 to predict Josh's Job Satisfaction on our scale from 0 – 50.

   b. Josh fills out the job satisfaction survey, and it turns out his Job Satisfaction is 35. This isn't exactly what our line predicted. How would you compute the residual?

4. Which of the following quantities for United States adults have a positive correlation?
   a. Height and shoe size?

   b. Height and weight?

   c. Shoe size and GPA?

   d. Years of education and annual salary?

   e. Hours of cell-phone use and incidence of cancer

   f. Annual income and happiness