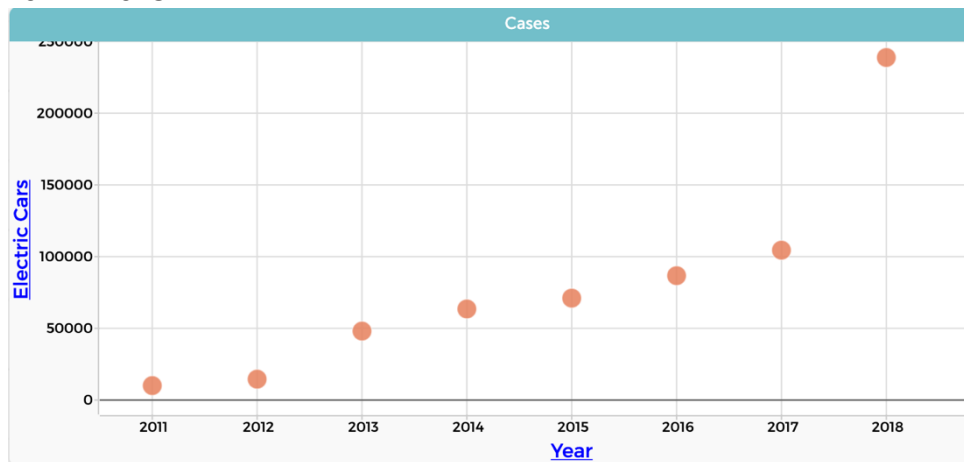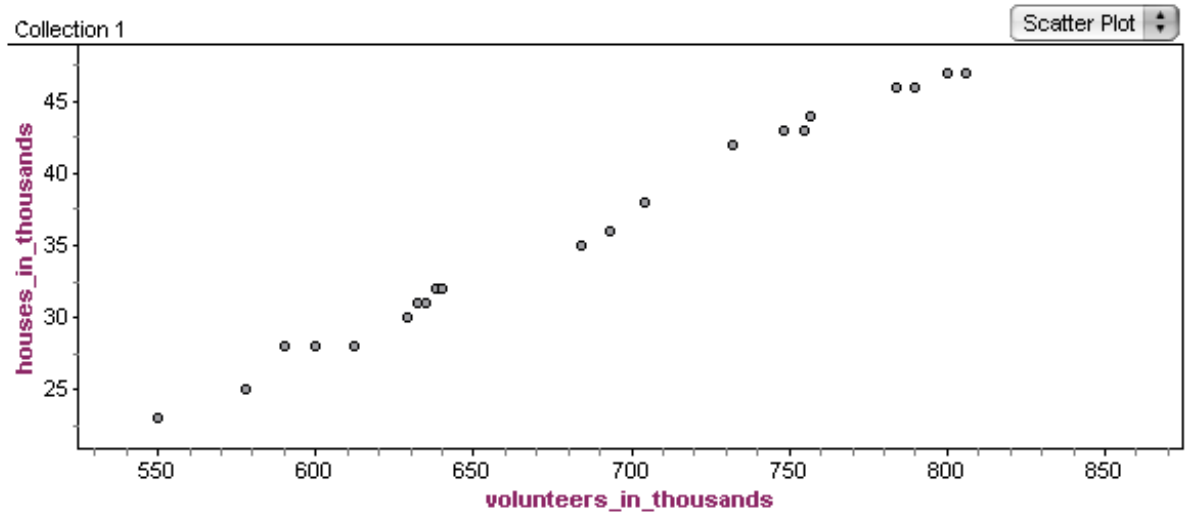**2.2 Check for Understanding**

1.) The scatter plot below represents the total number of electric cars that are in active use in the United States from 2011 – 2018.

a) Write a quadratic model to fit the data in the scatterplot below. Show all of the algebraic work that leads to your answer.

b) How many electric cars does your model anticipate will be on the road in 2030?

c) In what year will there be 500,000 electric cars on the road? *Hint – There should be two years that your model yields. List both years and then state which one makes sense in the context of the problem?

2.) Habit for Humanity is a nonprofit organization that builds houses for those in need that was formally funded in 1976. They rely on volunteers to come to the construction sites and build each house with one volunteer contractor who is in charge of each project. They conducted a study of the past 30 years to determine how many houses they can build if they know how many volunteers they can rely on showing up. The data is in the scatter plot below. The independent variable (number of volunteers) is the total number of volunteers that show up to job sites each year. The dependent variable (number of houses built) is the total number of houses built in the year. Both variables are in thousands.

a) Write a linear model for the total number of houses that can be built based on the number of volunteers that show up for Habitat in one year.

b) How many houses can Habitat for Humanity expect to build if they have 455 thousand volunteers based on your model?

c) How many volunteers does Habitat for Humanity need to recruit if they have a goal to build 100 thousand houses based on your model?