Name: _____ Hour: _____ Date: _____

How many iPhones will be sold?

Here is the data of all iPhone sales during their opening weekends:

iPhone	Year	Units Sold (millions)
Original	2007	0.5
3G	2008	1
3Gs	2009	1
4	2010	1.7
4S	2011	4
5	2012	5
5C, 5S	2013	9
6, 6 Plus	2014	10
6S, 6S Plus	2015	13

1. Use stapplet.com to create a scatterplot of the data with year as the explanatory variable and units sold as the response. Sketch the scatterplot in the space above.

2. Describe the **form** of the distribution.

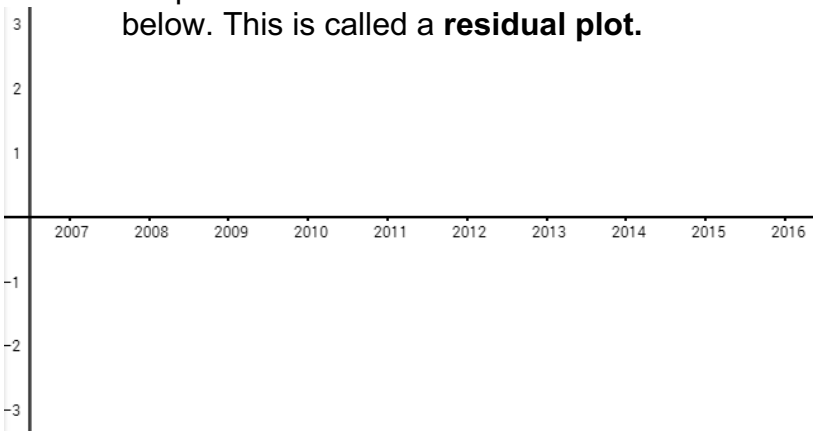
3. Use the applet to find the least squares regression line. Write the equation below and graph it on your scatterplot above.

4. Use the least squares regression line to calculate the residual for 2007. Interpret the residual.

5. Complete the table below.

Year	Actual Units Sold (millions)	Predicted Units Sold (millions)	Residual
2007	0.5		
2008	1		
2009	1		
2010	1.7		
2011	4		
2012	5		
2013	9		
2014	10		
2015	13		

6. Graph the residuals on the axes below. This is called a **residual plot.**



7. For which points was the actual greater than the predicted? Which were less than predicted? Identify these on the graph.

8. Do you think the regression line is a good fit for the data? Why or why not? Explain using the residual plot.

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LSRL and Residual Plots

Important Ideas:

Check Your Understanding:

Fueleconomy.gov gives the city and highway fuel economy for all makes and models of vehicles back to 1984. The table gives the city and highway fuel economy (mpg) for a random sample of ten 2021 vehicles.

City fuel economy (mpg)	14.4	24.3	27.2	29.9	20.4	28.8	20.9	23.2	28.6	25.4
Highway fuel economy (mpg)	25.5	37.4	36.5	45.5	28.7	46.1	33.6	38.3	41.3	35.3

a. Calculate the equation of the least-squares regression line.

b. Make a residual plot for the linear model in Question 1.

c. What does the residual plot indicate about the appropriateness of the linear model? Explain your answer.