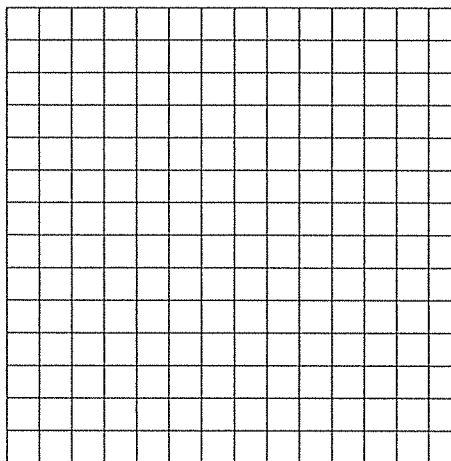


## More Linear, Quadratic, and Exponential Regression!

1. The following table shows the number of students enrolled in public elementary schools in the US (source: US Census Bureau). Make a scatterplot with the number of students as the dependent variable, and the number of years since 1990 as the independent variable. (Year 1990 = Year 0)

Year	Number of Students (millions)
0	26.6
1	26.6
2	27.1
3	27.7
4	28.1
5	28.4
6	28.1
7	29.1
8	29.3
13	32.5



a. Create a scatterplot of the data on the graph above.

b. Find the equations for the linear, quadratic, and exponential regression functions that fit this data. Round your numbers to two decimal places.

linear:

quadratic:

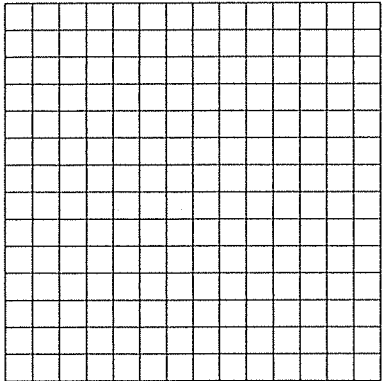
exponential:

c. Investigate whether you think a linear, quadratic, or exponential curve fits this data the best. Note: There isn't necessarily a right answer! State below which equation you think is best and why. Then graph the equation you chose on the scatterplot above.

Use the curve that you think fits the data the best and use it to predict the school enrollment in the year 2007.

2. The following data is taken from a study comparing the speed of a car ( $x$ ) in miles per hour to its fuel economy ( $y$ ) in miles per gallon.

(15, 22.3), (20, 25.5), (25, 27.5), (30, 29), (35, 28.8), (40, 30),  
 (45, 29.9), (50, 30.2), (55, 30.4), (60, 28.8), (65, 27.5), (70, 25.3)



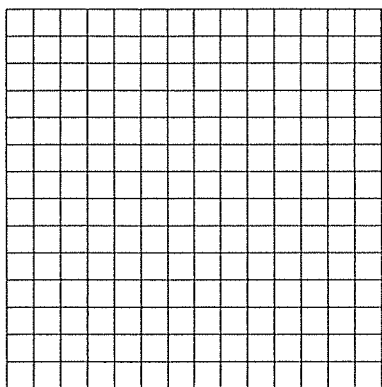
a. Regression equation (pick one):

b. According to your equation, how fast should you drive if you want your car to get the best gas mileage possible?

c. According to your equation what gas mileage can you expect from the average car going 90 mph? How can you explain this?

3. The following data was collected over the course of several months of the year 2014. It shows the number of shark attacks along the American coastline vs. the number of ice cream cones sold (in millions).

Shark Attacks	20	16	10	13	15	21	25	31	28
Ice Cream	8.7	8	6.8	7.5	7.9	9.2	12	13.1	12



a. Regression equation (pick one):

b. In one of the months that was not listed above, there were 11 shark attacks. Predict how many ice cream cones were sold that month?

c. Describe the strength of this relationship using the correlation coefficient. Can you explain why these two variables are related?