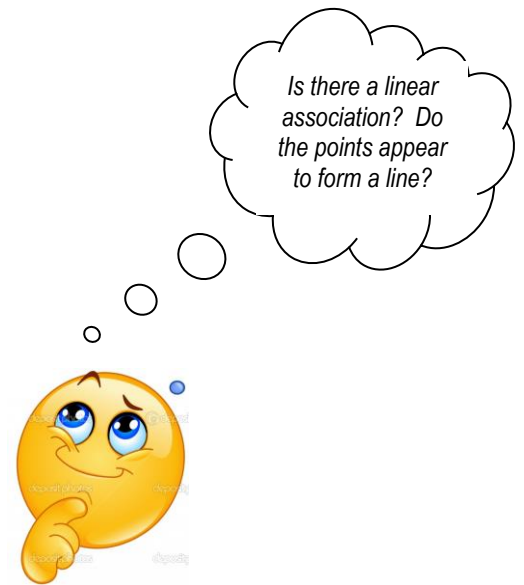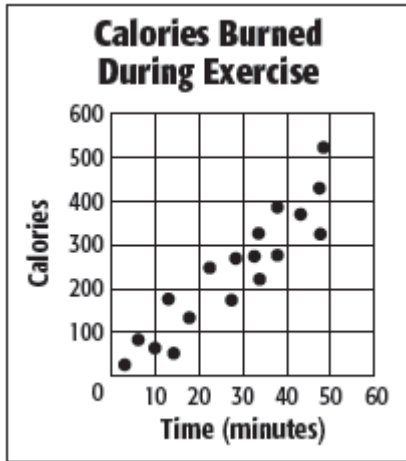**Essential Question:** How can we represent a data set with a linear model?

Do Now: Does the graph show a positive correlation, negative correlation, or no correlation? If there is a positive or negative correlation, describe its meaning in the situation.

Is there a linear association? Do the points appear to form a line?

_____

Line of Fit

When a **bivariate data** set displays a *strong positive* or *negative correlation*, you can use a linear equation to represent the data. The process is called finding a **line of fit** for the data. This line is referred to as a **trend line** or **linear regression model**.

Drawing a Line of Fit for Data
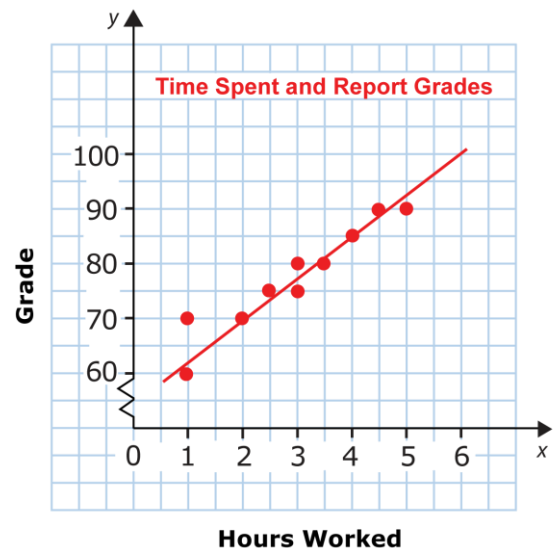Draw a line that passes as close as possible to the plotted points.
- Your line does not necessarily have to pass through any of the plotted points.
- You should try to have about the same number of points above and below the line.

Finding the Equation of the Line of Fit

Choose two points on the line of best fit._____

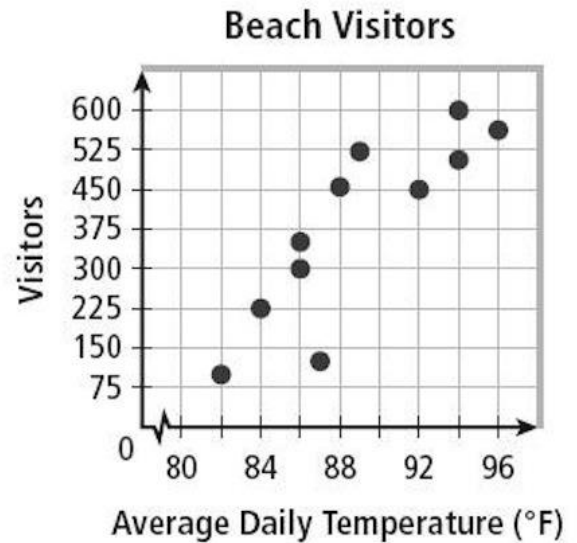Find the slope   Find the y-intercept

Equation of Best Fit Line _____

Let's Try Another!

➤ Draw a line of best fit.
➤ Choose two points on the line. _____
➤ Find slope and the y-intercept.

Beach Visitors

➤ Write the equation of the line of fit._____

Using the Line of Fit to Make Predictions

When you use a trend line or its equation to predict a value within the data points, you **interpolate** the predicted value.

When you make a prediction that is *outside* the data, you **extrapolate** the predicted value.

Using the equation of the line of fit for the beach visitors,

(a) Predict the number of beach visitors if the temperature is 90° (interpolation).

(b) Predict the number of beach visitors if the temperature is 102° (extrapolation).

A _____ can help us summarize a set of data. The line and its equation can help us make predictions about the relationship between the two variables. When you use the trend line or its equation to predict a value within the set of data, you are _____.

When you make a prediction outside the set of data, you are _____.

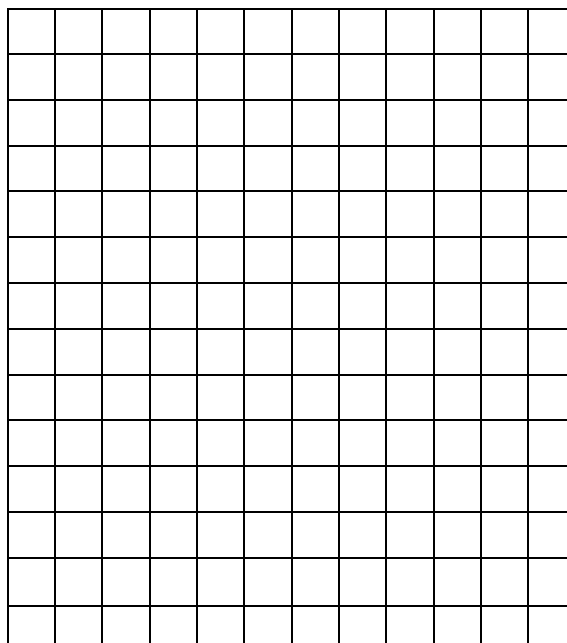**8 Algebra CC**   HW # _____

Joyce is training for a 10K race. For some of her training runs, she records the distance she ran and how many minutes it took her.

(a) Make a scatter plot of Joyce's running data.

Distance (mi)	Time (min)
4	38
2	25
1	7
2	16
3	26
5	55
2	20
4	45
3	31

(b) Describe the correlation.

(c) Draw a trend line and write the equation of the line.