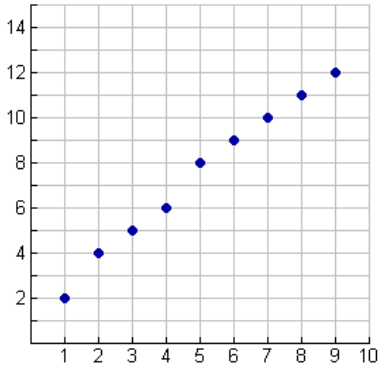
Math 8C
Unit 3 – Statistics

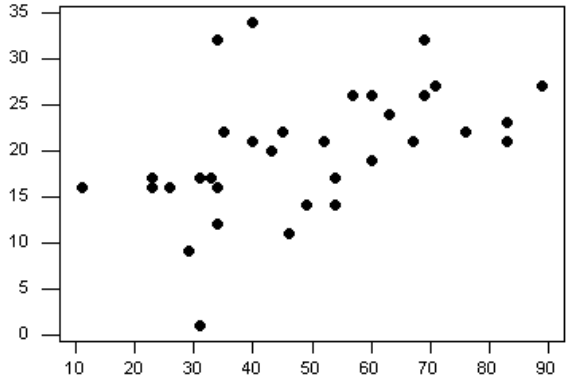
Unit 3 – Day 1 (U3D1)

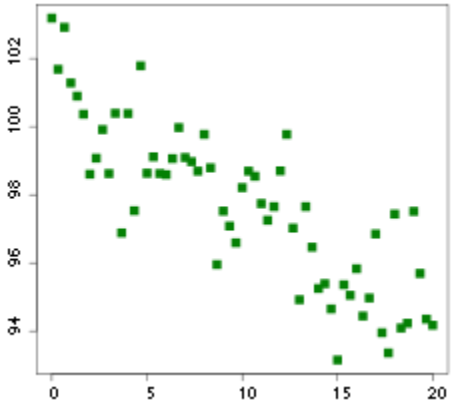
- Standards Addressed:
  - Create a scatter plot and label any trends and clustering.
  - Explain why a linear model may fit a scatter plot and create a line of best fit for the data.

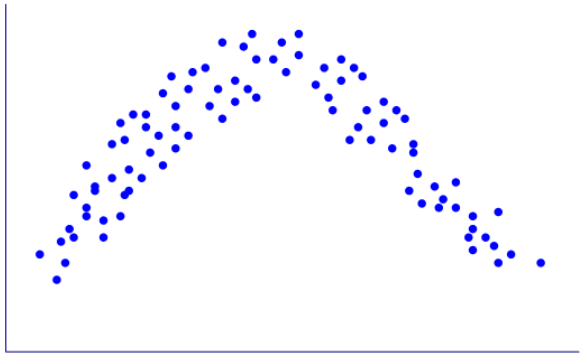
Scatter Plots

- Scatter plots can be used to display trends in sets of data.



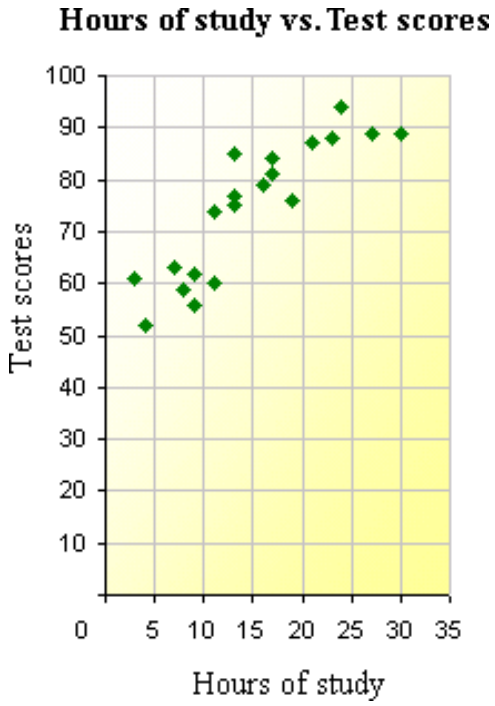






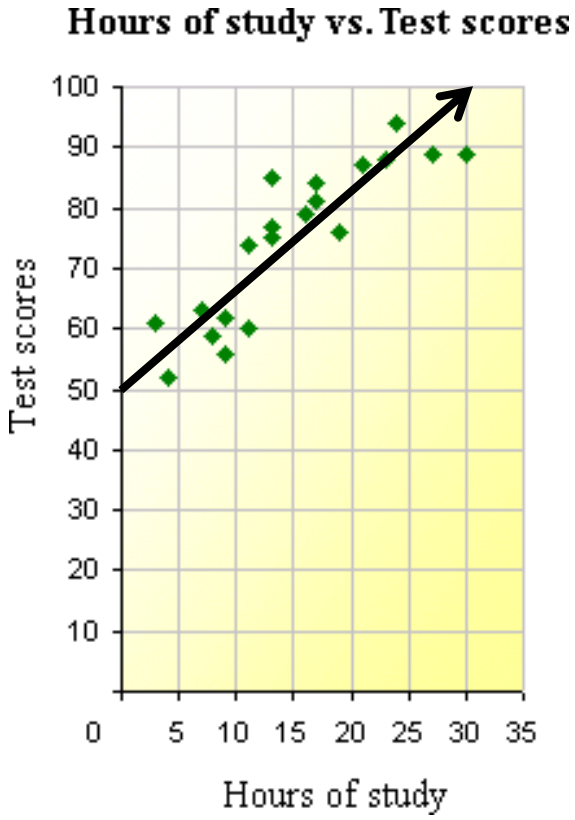
Vocabulary

- A scatter plot is a graph that shows the relationship between data sets using ordered pairs in a coordinate plane.



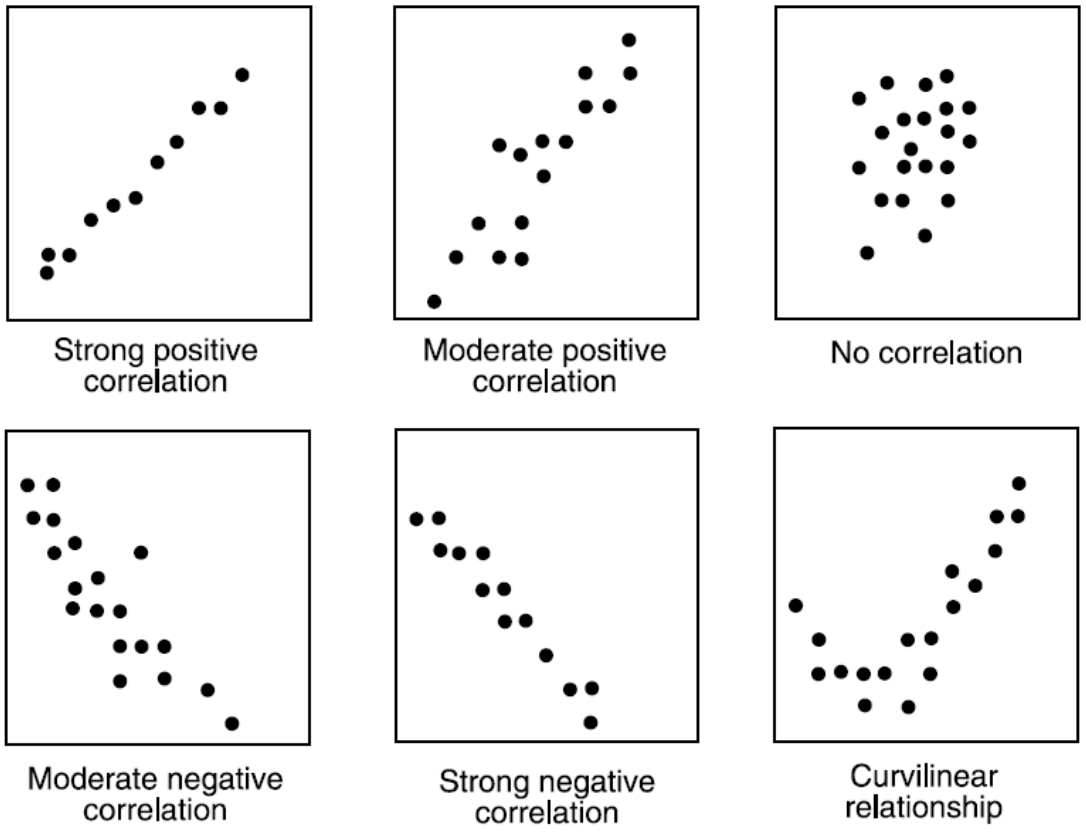
Vocabulary

- What is a line of best fit?
  - A line of best fit is a line drawn on a scatter plot that is close to *most* of the data points. The line *models* the trend (correlation) of the data. It can be used to estimate data on a graph or make predictions.



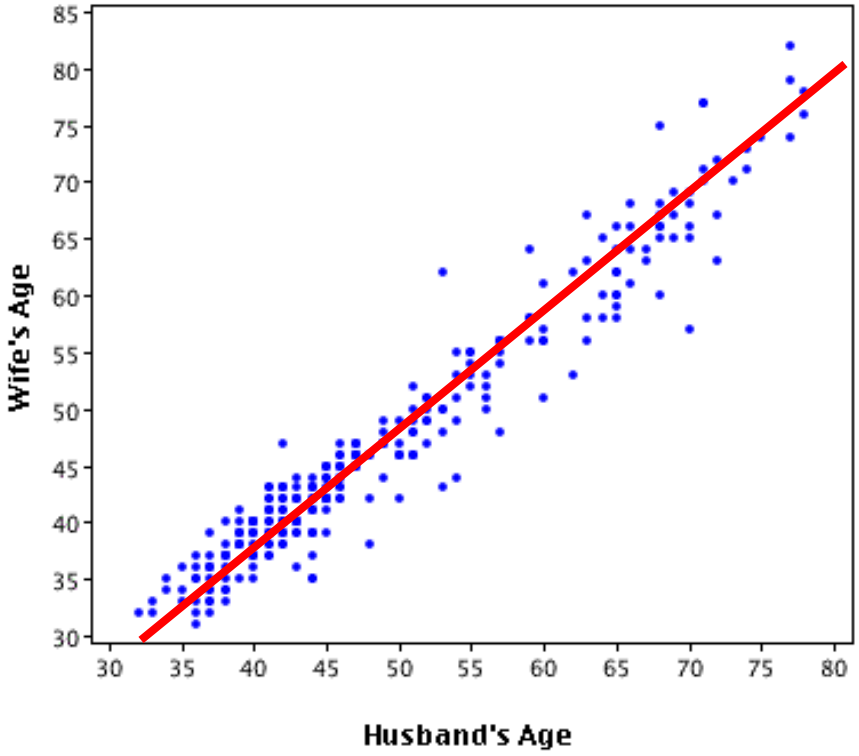
Vocabulary

- What is correlation?
  - A correlation, or trend, is how two sets of data are related. It's the *co-* relation of the data.



Example

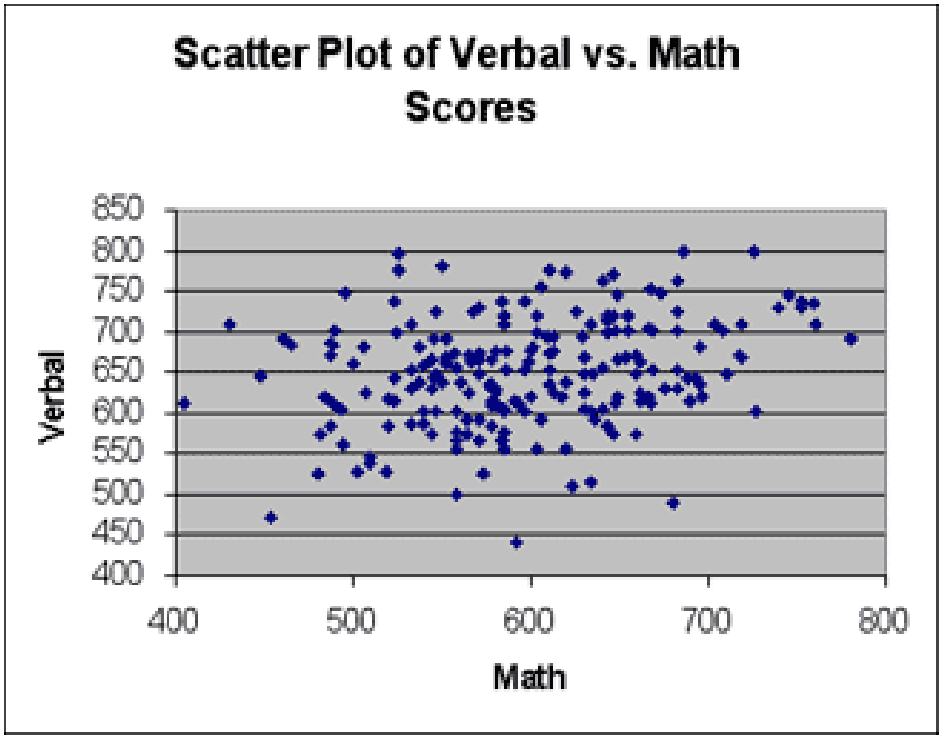
- Describe the trend and draw a line of best fit if possible.



Positive Correlation

Example

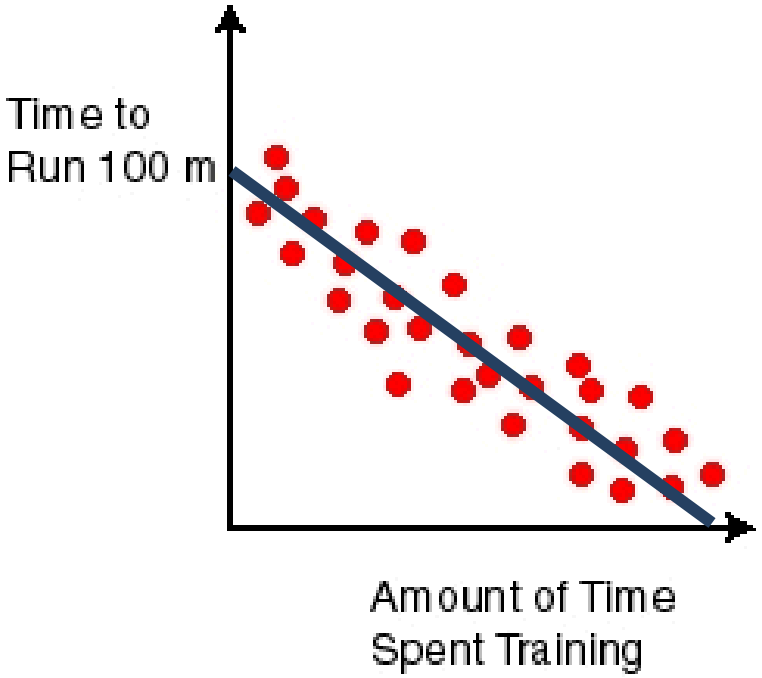
- Describe the trend and draw a line of best fit if possible.



No Correlation

Example

- Describe the trend and draw a line of best fit if possible.



Negative Correlation

Example!

- The local ice cream shop keeps track of how much ice cream they sell versus the temperature on that day. Here's what they found:

Ice Cream Sales vs Temperature	
Temperature °C	**Ice Cream Sales**
14.2°	$215
16.4°	$325
11.9°	$185
15.2°	$332
18.5°	$406
22.1°	$522
19.4°	$412
25.1°	$614
23.4°	$544
18.1°	$421
22.6°	$445
17.2°	$408

- What do you think this data would look like on a graph?

Example!

- The local ice cream shop keeps track of how much ice cream they sell versus the temperature on that day. Here's what they found:

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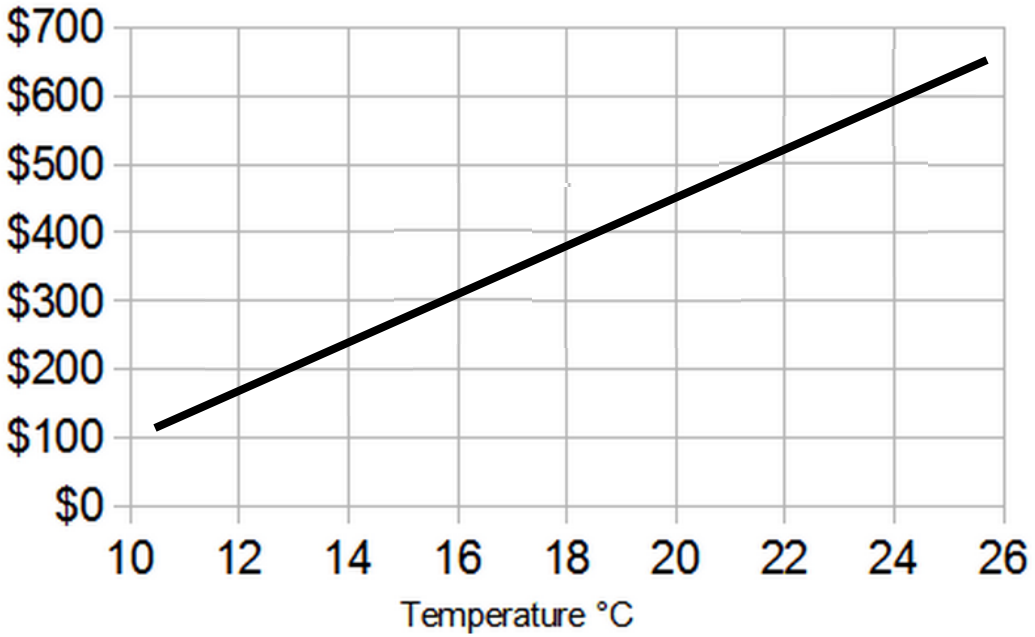


- Correlation? positive
- Line of best fit?

In Class Practice

U3D1 - ICP

Unit 3 – Day 2

Standards Addressed:

- ✓Create a scatter plot and describe any trends.
- ✓Explain why a linear model may fit a scatter plot and create a line of best fit for the data
- ✓Determine the equation of the line of best fit.

- You have been working on a science project for 8 months. Each month you have measured and recorded the length of a baby alligator in a table.

- The table below shows your measurements.

	September							April
Month, *x*	0	1	2	3	4	5	6	7
Length (in.), *y*	22.0	22.5	23.5	25.0	26.0	27.5	28.5	29.5

Use the following steps to predict the baby alligator's *next* September

1. Graph the data in the table.

Month, x	0 (September)	1	2	3	4	5	6	7 (April)
Length (in.), y	22.0	22.5	23.5	25.0	26.0	27.5	28.5	29.5

2. Draw the straight line that you think best approximates the points (line of best fit)

3. Write an equation of the line you drew.

4. Use the equation you wrote to predict the baby alligator's length next September.

Work with a partner to complete this problem:

- You and your super awesome science team have been asked to predict the number of bats that will be living in an abandoned mine in 3 years.

- To start, you find the number of bats that have been living in the mine during the past 8 years.

  – The table shows the results of your research:

	7 years ago							this year
Year, *x*	0	1	2	3	4	5	6	7
Bats (thousands), *y*	327	306	299	270	254	232	215	197

Use the following steps to predict the number of bats living in the mine after 3 years

1. Graph the data in the table.

	7 years ago						this year
Year, *x*	0	1	2	3	4	5	6	7
Bats (thousands), *y*	327	306	299	270	254	232	215	197

2. Draw the straight line you think best approximates the data.

3. Write the equation of the line you drew.

4. Use the equation to predict the number of bats in three years.

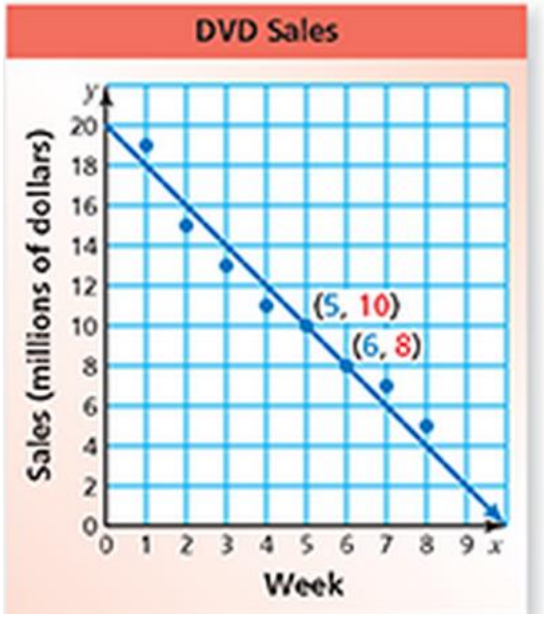
Let's try another one!

- The table shows the weekly sales of a DVD and the number of weeks since its release. (a) Make a scatter plot of the data. (b) Draw a line of best fit. (c) Write an equation of the line of best fit. (d) Predict the sales in week 9.

Week, x	Sales (millions), y
1	\$19
2	\$15
3	\$13
4	\$11
5	\$10
6	\$8
7	\$7
8	\$5

a)

b)



c) $y \approx -2x + 20$

d) Sales in week 9 should be about \$2 million.

In Class Practice

U3D2 – ICP