

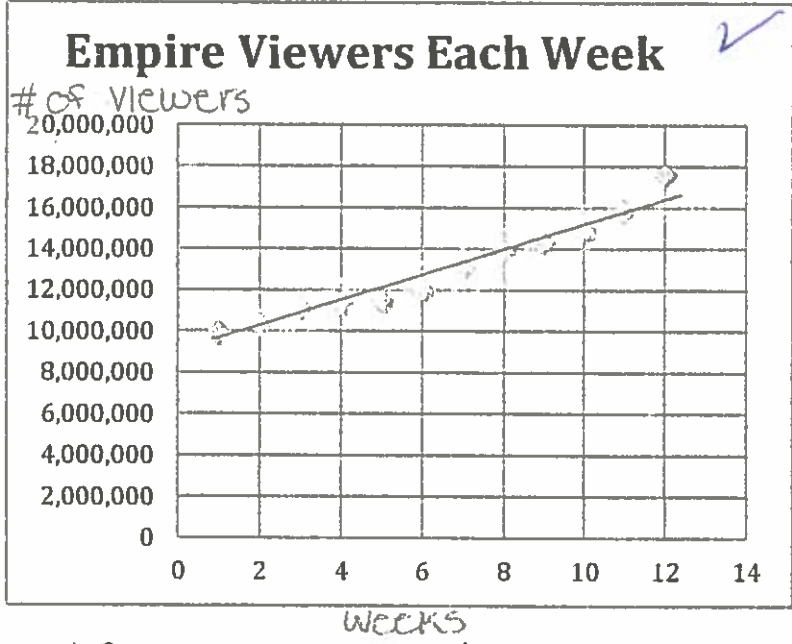
Name "Teacher"

d 5/6 Date 1/22/18

Section 2.E.8

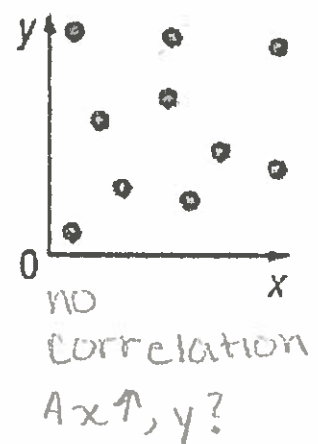
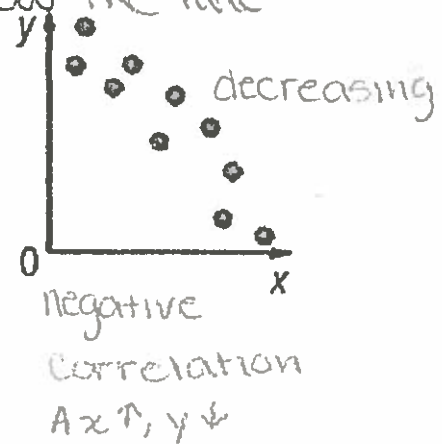
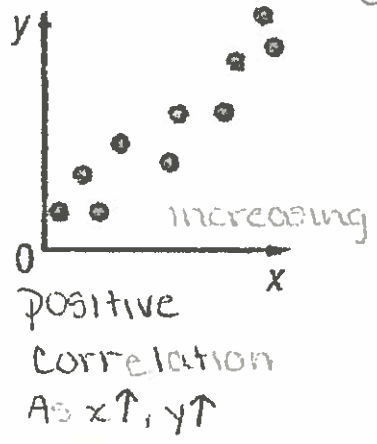
Writing Linear Equations from Scatterplots

Week x	Empire Season 1 - Episode Titles	Number of Viewers y
1	Pilot	9,900,000
2	The Outspoken King	10,320,000
3	The Devil Quotes Scripture	11,070,000
4	False Imposition	11,360,000
5	Dangerous Bonds	11,470,000
6	Out, Damned Spot	11,960,000
7	Our Dancing Days	13,020,000
8	The Lyon's Roar	13,900,000
9	Unto the Breach	14,330,000
10	"Sins of the Father"	14,900,000
11	Die But Once	15,820,000
12	Who I Am	17,620,000



Scatterplots are graphs that relate two different sets of data by displaying them as ordered pairs (x, y).

Even though a lot of data from real life does not EXACTLY follow a specific pattern, you can often see a trend. A trend line is a line on a scatterplot that models this correlation. It should have about the same # of points are above and below the line.



(1) Describe the correlation for the Empire viewer data.

Positive correlation

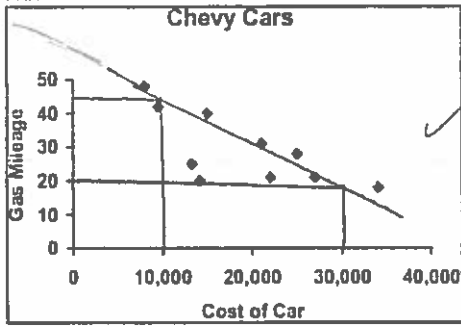
(2) If you drew a trend line to model the Empire viewer data, what kind of slope would it have?

Increasing

(3) What does this correlation actually mean? Write a complete sentence.

This correlation means that every week the number of viewers increases.

If we can draw a trend line on a scatterplot, we can write a linear equation to **model** the data.



Steps

- 1) Sketch trendline - same number of points above and below.
- 2) Choose two points **on the line** and calculate slope.
- 3) Use one point and the slope to write in point-slope form.
- 4) Solve for y to write in slope-intercept form.

$(10,000, 45)$ $(30,000, 20)$

$$m = \frac{20 - 45}{30,000 - 10,000} = \frac{-25}{20,000} = \frac{-1}{800}$$

$$m = -0.00125$$

$$y - 45 = -0.00125(x - 10,000)$$

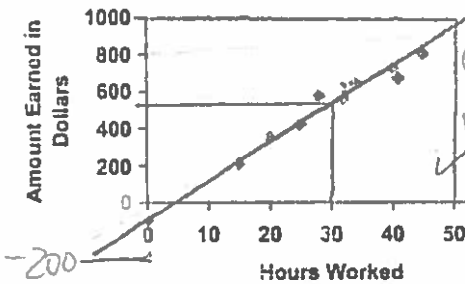
$$\begin{array}{r} y - 45 = -0.00125x + 12.5 \\ +45 \qquad \qquad +45 \end{array}$$

$$y = -0.00125x + 57.5$$

Does the slope we have make sense? Why? Yes, slope is negative + decreasing graph

Does the y-intercept we have make sense? Why? Yes b/c my trend line crosses y-axis at about 57.5

Ex. 2



Draw and write a linear equation for the trend line of the data.

$(30, 580)$ $(50, 1000)$

$$m = \frac{1000 - 580}{50 - 30} = \frac{420}{20} = \frac{21}{1} = 21$$

$$y - 1,000 = 21(x - 50)$$

$$\begin{array}{r} y - 1,000 = 21x - 1050 \\ +1,000 \qquad \qquad +1000 \end{array}$$

$$y = 21x - 50$$

Does the slope make sense? Does the y-intercept make sense? Why?

Yes, positive slope for increasing graph.

Yes, my trend line crosses y-axis around -50.