

Algebra 1 4.5

Investigate relationships between quantities by using scatterplots

Use lines of fit to make and evaluate predictions

bivariate data

line of fit (prediction equation)

independent variable (x)

Dependent variable (y)

interpolation

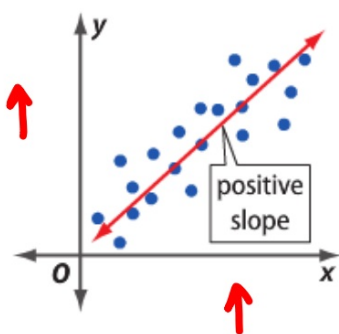
extrapolation

correlation



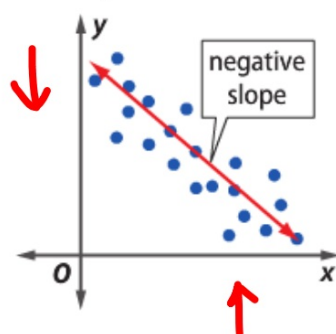
ConceptSummary Scatter Plots

Positive Correlation



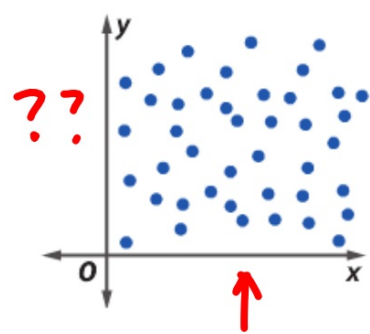
As x increases, y increases

Negative Correlation



As x decreases, y decreases

No Correlation



x and y are not related

Guided Practice

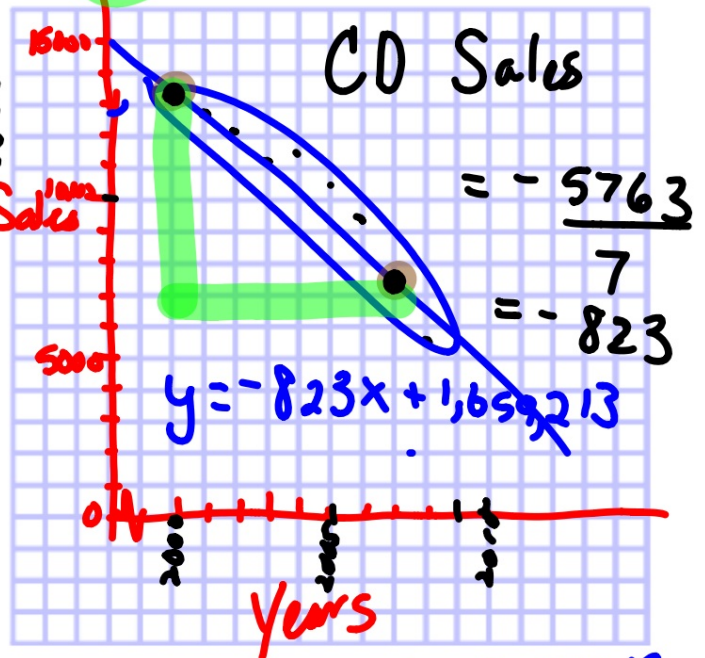
2. **MUSIC** The table shows the dollar value in millions for the sales of CDs for the year. Make a scatter plot and determine what relationship exists, if any.

x	Year	2000	2001	2002	2003	2004	2005	2006	2007	2008
y	Sales	13,215	12,909	12,044	11,233	11,447	10,520	9373	7452	5471

(2000, 13,215) (2007, 7452)

$$m = \frac{\text{vert}}{\text{horiz}} = \frac{7452 - 13215}{2007 - 2000} = -\frac{5763}{7} = -823$$

$y = mx + B$
 $2000 \quad 13,215 \quad 7452 = -823(2007) + B$
 $7452 = -1651761 + B$
 $+1651761 \quad +1651761$
 $1659213 = B$
 Correlation: negative
 As years pass, sales decrease.



- Graph the scatterplot
- Where would a reasonable line go?
- Use 2 points on the line:
 - far apart is better than close together
- Write an equation
- Sometimes follow-up question

$\text{Sales} = -823(\text{yr}) + 1,659,213$
 2015 $\$68,000,000$

► **GuidedPractice**

3. **MUSIC** Use the equation for the line of fit for the data in Guided Practice 2 to estimate CD sales in 2015.
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