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)

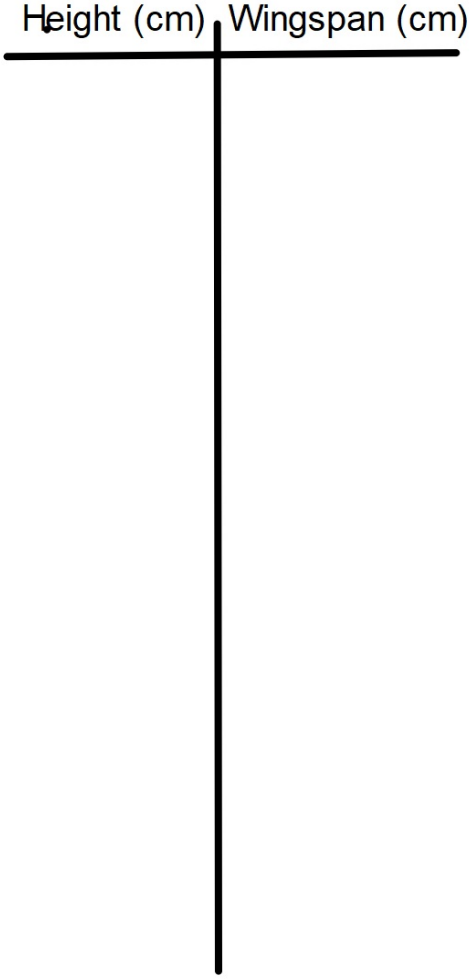
Dependent variable (y)

interpolation

extrapolation

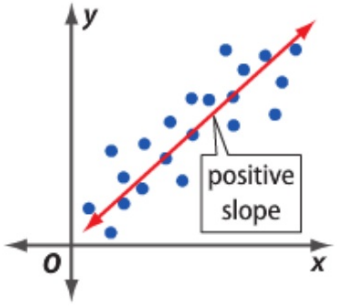
correlation

Height (cm) Wingspan (cm)



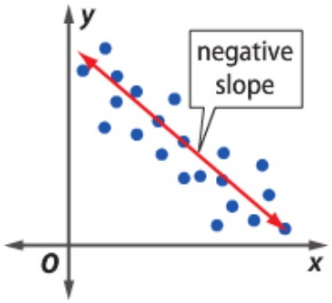
ConceptSummary Scatter Plots

Positive Correlation



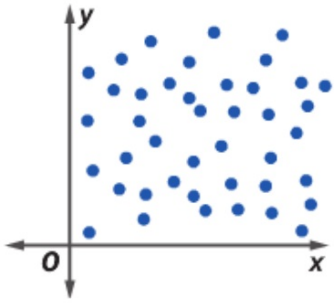
As x increases, y increases

Negative Correlation



As x decreases, y decreases

No Correlation



x and y are not related

GuidedPractice

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.

since 2000

x	0	1	2	3	4	5	6	7	8
Year	2000	2001	2002	2003	2004	2005	2006	2007	2008
Sales	13,215	12,909	12,044	11,233	11,447	10,520	9373	7452	5471

(2000, 13,215) $y = mx + B$

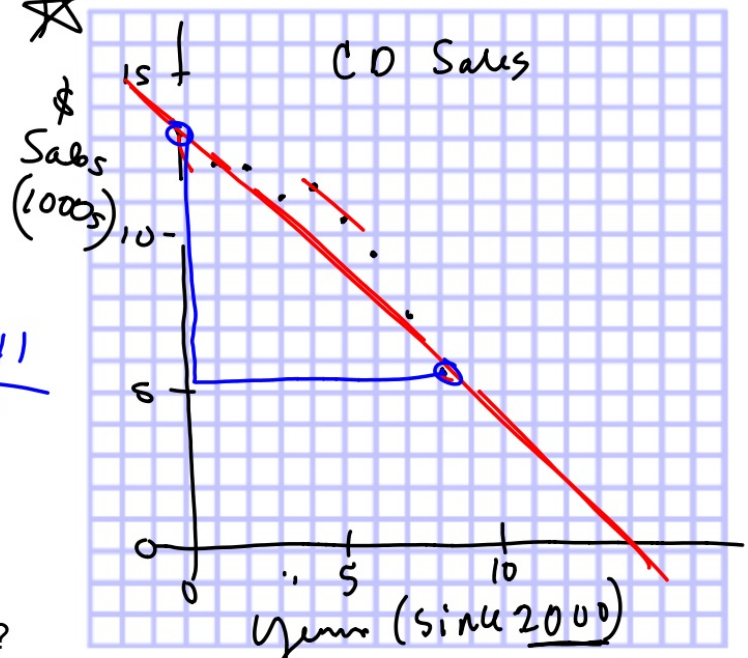
(0, 13,215)

(8, 5471)

$m = \frac{13{,}215 - 5471}{0 - 8} = \frac{7741}{-8}$

$m = -968$

$y = -968x + B$



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

$5471 = -968 \cdot 8 + B$

$5471 = -7744 + B$

$+7744 \quad +7744$

$13{,}215 = B$

$y = -968x + 13{,}215$

$Sales = -968(yr) + 13{,}215$

$Sales = -968(15) + 13{,}215$

$Sales = -1305 \rightarrow \$0$ (Out of business)

GuidedPractice

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