1.1 Modeling & Equation Solving
Target 1B: Connecting Numeric, Algebraic, and Graphical Models

Review of Prior Concepts

Which of the following equations represents the linear relationship between time, t, and velocity, v, shown in the table below?

t	0	1	2
v	120	152	184

A. $v = 32t$ **B.** $v = 32t + 120$ **C.** $v = 120t$ **D.** $v = 120t + 32$ **E.** $v = 120t + 120$

$v(0) = 120$, so not A, C, or D

$$\text{slope} = \frac{\Delta v}{\Delta t} = \frac{152 - 120}{1 - 0} = 32, \text{ so B}$$

More Practice

Data and Linear Relationships
http://www.mathplanet.com/education/algebra-1/formulating-linear-equations/scatter-plots-and-linear-models
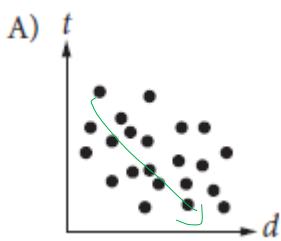https://www.youtube.com/watch?v=sa7hGpfdUzM

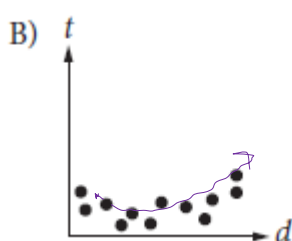**SAT Connection**
Problem Solving and Data Analysis
4. Given a scatterplot, use linear, quadratic, or exponential models to describe how the variables are related.
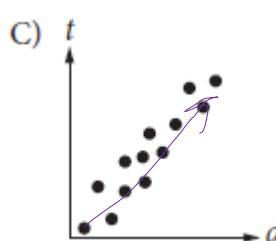
Example:

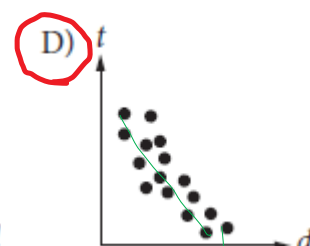Which of the following graphs best shows a strong negative association between d and t?
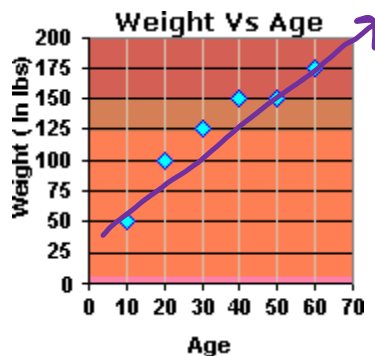

A) negative spaced out, so weak

B) positive
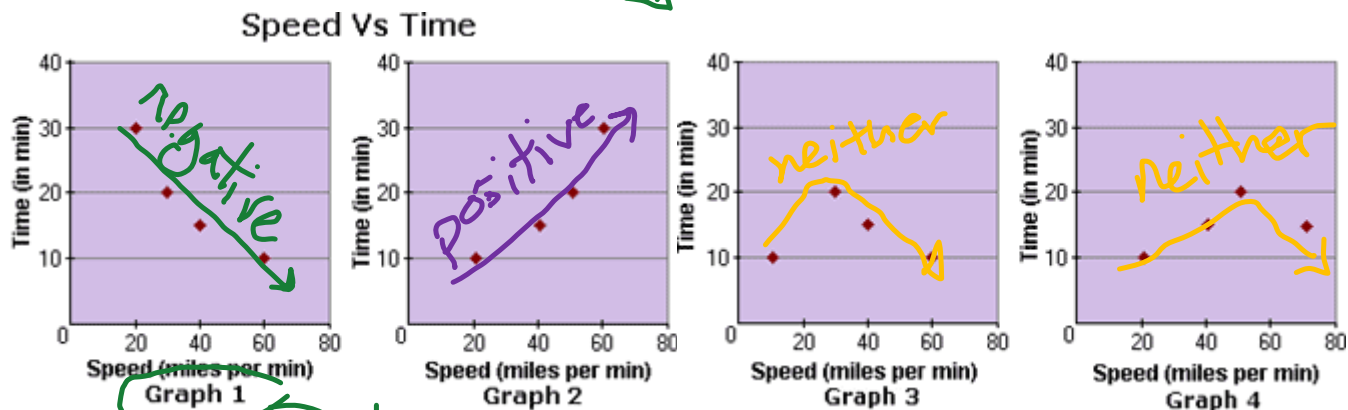
C) positive

D) negative close together, so strong

Solution

Graphical Models and Trends

Example: What sort of trend is shown in the scatter plot?

Weight Vs Age

A. No trend   **B.** Negative trend   **C.** Constant trend   **D.** Positive trend

Example: Which scatter plot shows the negative relationship between the times taken to reach City A
from City B at different speeds?

Speed Vs Time

Graph 1   Graph 2   Graph 3   Graph 4

A. Graph 3   **B.** Graph 1   **C.** Graph 4   **D.** Graph 2

More Practice

Interpreting Data
https://www.ixl.com/math/algebra-1/interpret-a-scatter-plot
https://www.youtube.com/watch?v=CWnfwZRAuaY

Homework Assignment
p.76 #1,3,5,6,21,24-27all,57-60all

Choice D is correct. A graph with a strong negative association between d and t would have the points on the graph closely aligned with a line that has a negative slope. The more closely the points on a graph are aligned with a line, the stronger the association between d and t, and a negative slope indicates a negative association. Of the four graphs, the points on graph D are most closely aligned with a line with a negative slope. Therefore, the graph in choice D has the strongest negative association between d and t.

Choice A is incorrect because the points are more scattered than the points in choice D, indicating a weak negative association between d and t. Choice B is incorrect because the points are aligned to either a curve or possibly a line with a small positive slope. Choice C is incorrect because the points are aligned to a line with a positive slope, indicating a positive association between d and t.