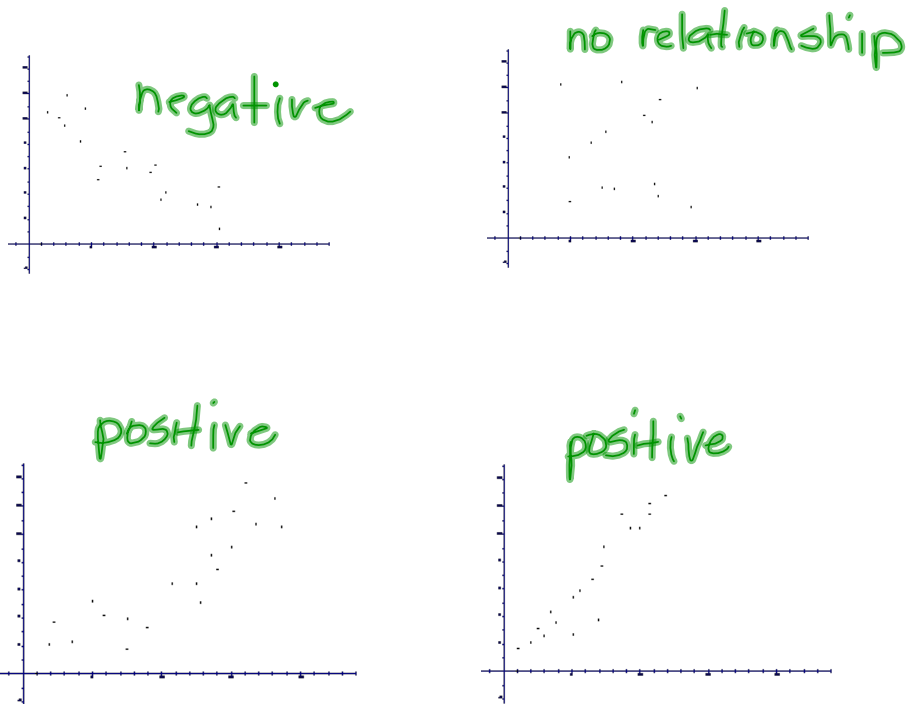


Chapter 6 Review: Investigating Relationships

6.1 - Scatterplots

Example One

State the relationship that exists in the below graphs.

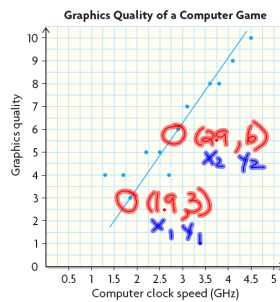


6.2 - Lines of Best Fit

- If the relationship between two variables on a graph appears to be linear, a line of best fit can be drawn through the data points
- The line of best fit should be drawn such that a similar number of points are on either side of the line and the distance from each point to the line is minimized
- The line of best fit can then be used to determine values of one variable at a given value of the other variable

Example Two

Determine the equation of the line for the scatter plot below.



$$y = mx + b$$

Slope (m)

$$\begin{aligned} m &= \frac{y_2 - y_1}{x_2 - x_1} \\ &= \frac{6 - 3}{2.9 - 1.9} \\ &= \frac{3}{1} \\ &= 3 \end{aligned}$$

Y-intercept

$$\begin{aligned} b &= 3(2.9) + b \\ b &= 8.7 + b \\ b &= -2.7 \end{aligned}$$

Equation

$$y = 3x - 2.7$$

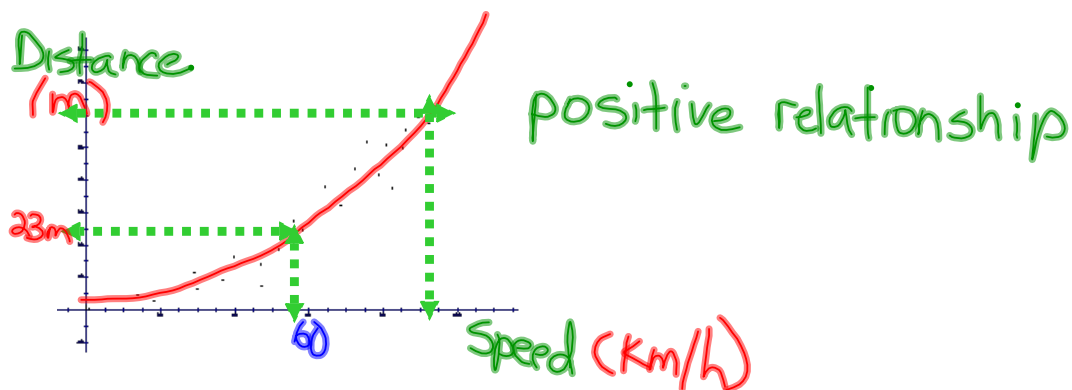
6.3 - Curves of Best Fit

- If there is a relationship between the two variables on a scatter plot, but the relationship is non-linear, a curve can be used to model the situation.
- As was the case with the line of best fit, the curve can then be used to determine values of one variable at a given value of the other variable.

Example Three

The relationship between the speed of a car and the distance it takes for that car to come to a stop can be seen in the scatter plot below.

1. If it is appropriate, draw a line or curve of best fit.
2. If one exists explain whether the relationship is positive or negative.
3. Use your graph to estimate how much space a car traveling at 60km/h would need to stop.
4. If a car needed to stop in 60m, what is the maximum speed at which it could be traveling?



6.4 - Reasoning about Data

- Scatter plots can be used to either confirm or reject a hypothesis about the relationship between two variables.

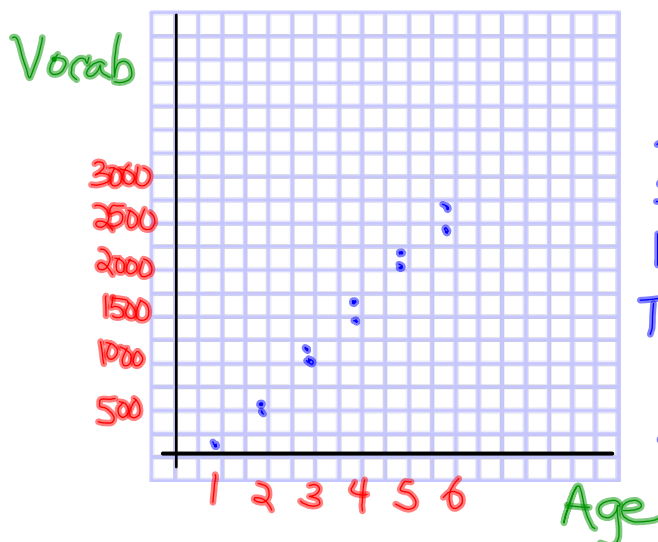
Example Four

3. Research suggests that there is a relationship between age and vocabulary size for young children.

vocabulary size for young children.

Explain how the following data can be used to support that statement.

Age (years)	1	2	2	3	3	4	4	5	5	6	6
Vocabulary Size (number of words)	10	450	500	1000	1150	1400	1600	2000	2150	2400	2750



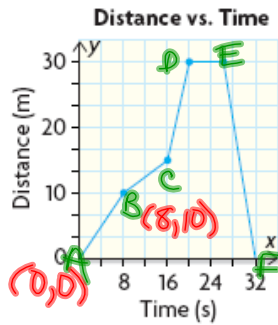
∴ the data supports the hypothesis.
There is a positive relationship.

6.5 - Describing Situations from a Graph

- Distance vs. Time graphs are often used in physics to describe the motion of an object over time.
- Horizontal lines indicate the object is not moving over a given period of time.
- Sloped lines indicate the object is moving at a constant rate (the steeper the slope the faster the object is moving).
- Curves represent that the object is speeding up or slowing down.

Example Five

Describe the situation in the graph below.



AB - away + tell me the speed. $(\frac{10}{8}) \text{ m/s}$

BC - slower than AB + speed.

CD - faster + speed. $(\frac{15}{4}) \text{ m/s}$

DE - stopping + how long

EF - coming back + speed
 $\frac{-30}{6} = -5 \text{ m/s}$

Additional Review Questions

Pg. 374 #3, 4, 6, 8-10

Pg. 376 #1-4, 6, 7