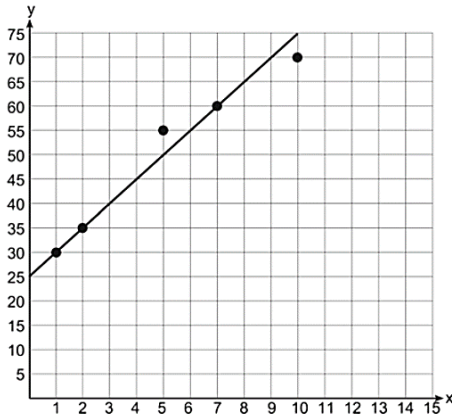


Unit 11: Comparing Linear, Quadratic, & Exponential Functions

Day 3 – Linear Regression Models

Calculating a Line of Best Fit

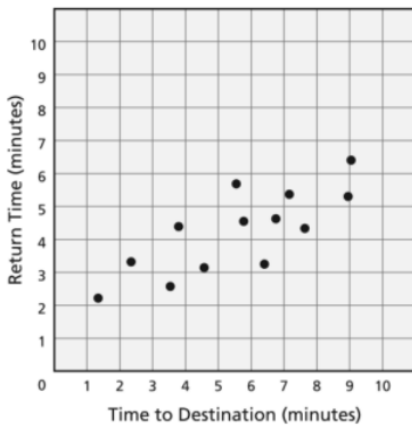
Example 1: A scatterplot was constructed on the graph below and a line of best fit was drawn. What is the equation of this line of best fit?



- a. $y = x + 5$
- b. $y = x + 25$
- c. $y = 5x + 5$
- d. $y = 5x + 25$

Example 2: An airport terminal runs shuttle buses to different parts of the airport. The scatterplot shows the times for each part of the airport and a number of round trips. Which equation is closest to the line of best fit?

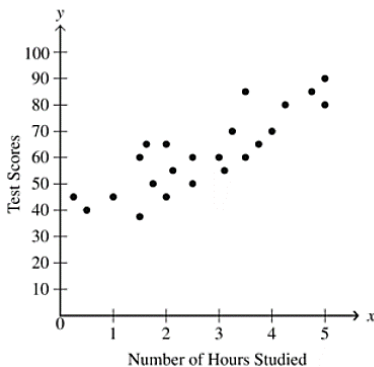
Shuttle Bus Runs



- a. $y = \frac{3}{5}x + 1$
- b. $y = \frac{3}{2}x + 1$
- c. $y = \frac{3}{4}x + 2$
- d. $y = \frac{5}{4}x + 2$

Example 3: Mrs. Dombrowski asked her students to report the number of hours they studied for their statistic test. The day after the test, she plotted the results on the scatterplot shown below.

Relationship of Hours of Study to Test Scores



- a. $y = -10x + 30$
- b. $y = -10x + 60$
- c. $y = 10x + 30$
- d. $y = 10x + 60$
- e. Interpret the y-intercept in relation to the context of the problem.

f. Interpret the slope in relation to the context of the problem.

Example 4: A weather team records the weather each hour after sunrise one morning in May. The hours after sunrise and the temperature in degrees Fahrenheit are in the table below. Calculate a line of best fit.

a. Line of best fit:

b. Interpret what the slope of each equation means in terms of the problem context.

c. Interpret what the y-intercept of each equation means in terms of the problem context.

d. Explain what the correlation coefficient indicates:

Hours after sunrise	Temperature in °F
0	52
1	53
2	56
3	57
4	60
5	63
6	64
7	67

Example 5: Charles thinks there may be a relationship between class size and student performance on standardized tests. She tracks the average test performance of students from 12 different classes and notes the number of students in each class in the table below. Is there a linear relationship between class size and average test score?

Class Size	Average Test Score
14	45
17	41
19	38
21	36
23	37
25	34
26	28
27	30
28	27
31	27
36	25
37	23

a. Line of best fit:

b. Interpret what the slope of each equation means in terms of the problem context.

c. Interpret what the y-intercept of each equation means in terms of the problem context.

d. Explain what the correlation coefficient indicates:

Example 6: This graph plots the number of wins in the 2006 season and the 2007 season for a sample of professional football teams. Create a line of best fit for the graph.

