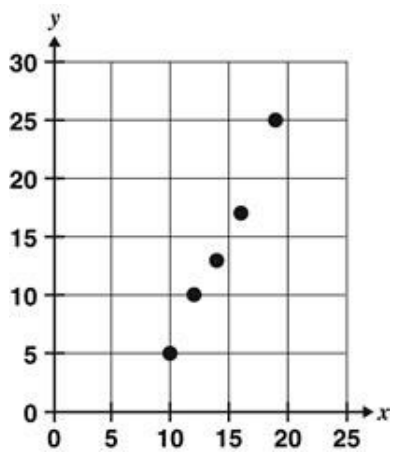TEST NAME: **SP.2 NEW #2**
TEST ID: **885923**
GRADE: **08 - Eighth Grade**
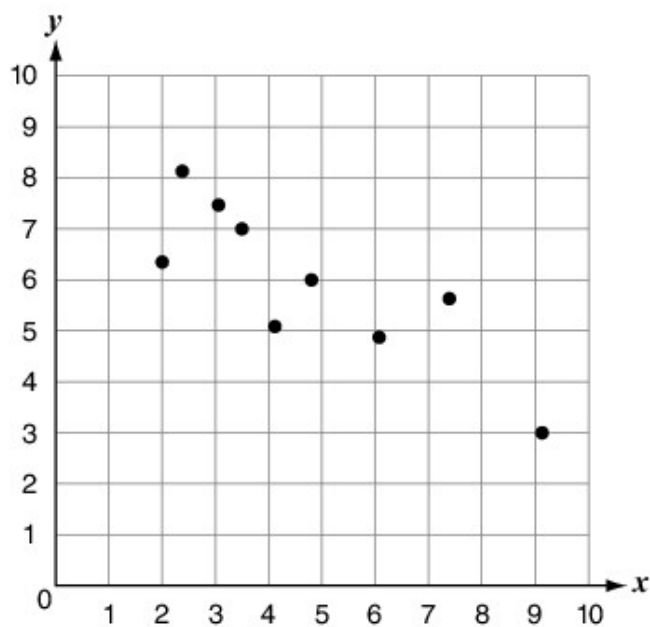SUBJECT: **Mathematics**
TEST CATEGORY: **School Assessment**

1. **Which equation represents a line of best fit for the data graphed below?**

A. $y = \frac{1}{2}x$
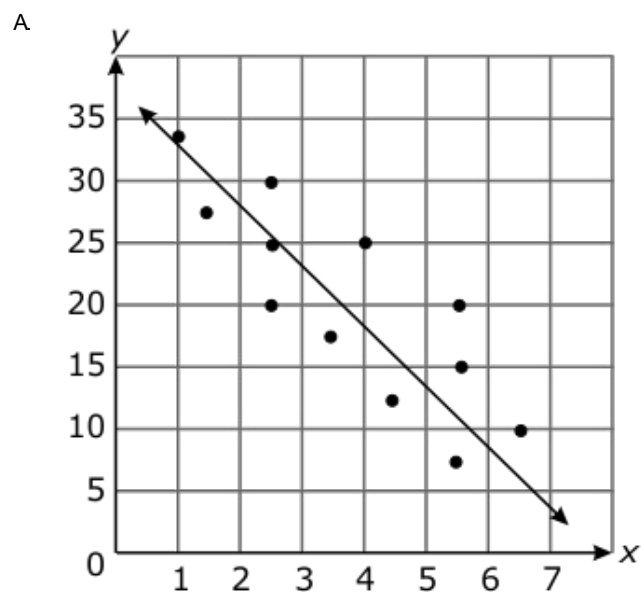
B. $y = 2x - 17$

C. $y = 3x + 4$
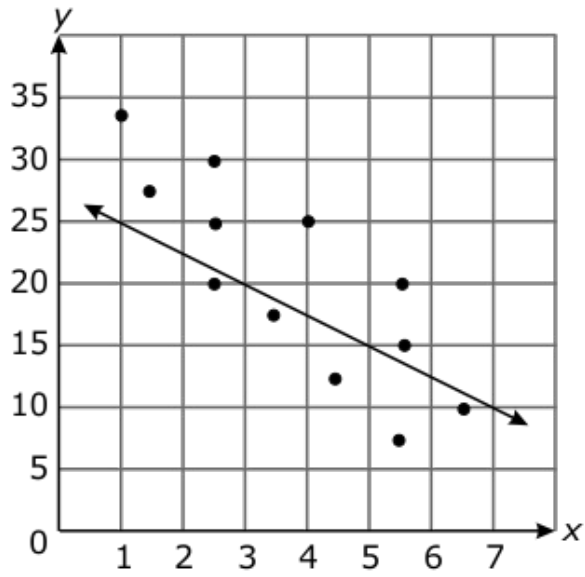
D. $y = 3x - 20$

2. The figure below shows a scatter plot.

Which linear equation **best** represents the data in the scatter plot?

A. $y = -8x + 0.5$
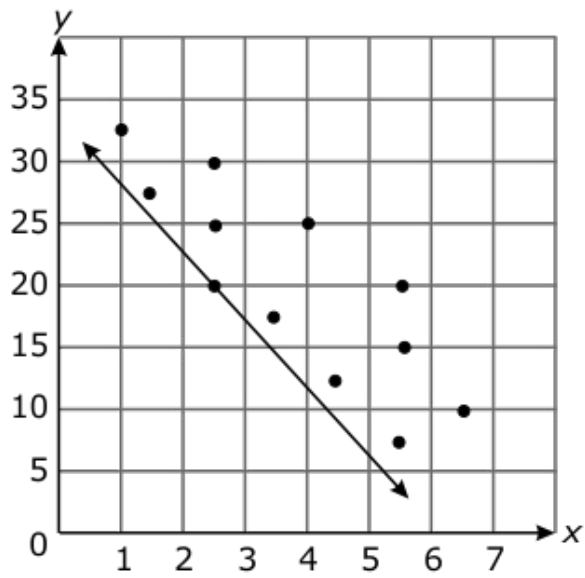
B. $y = -0.5x - 8$

C. $y = -0.5x + 8$

D. $y = -x + 8.5$

3. Which scatterplot shows a line that ***most closely*** fits the data?

A.

B.

C.

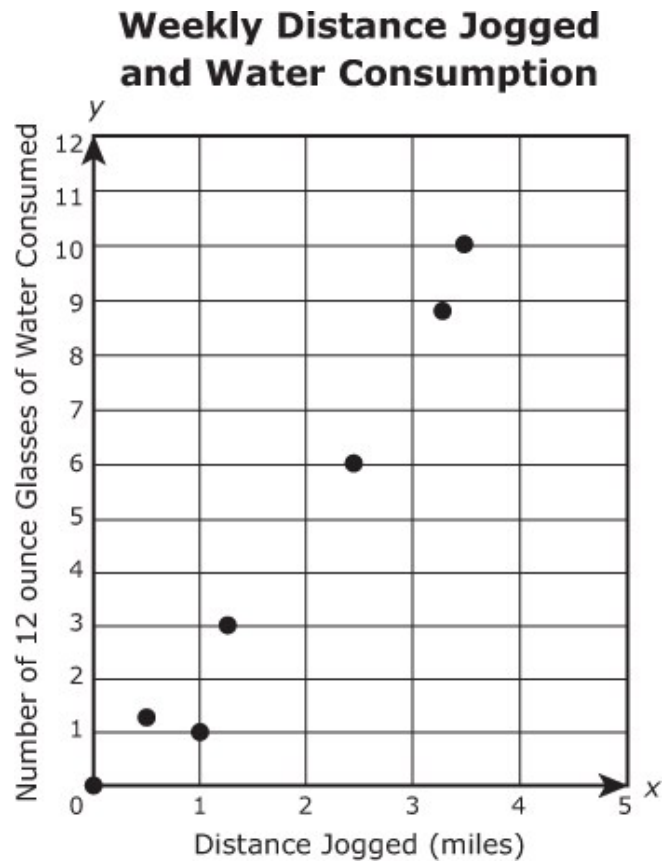4. The line of best fit was calculated for the following scatter plot.

Weekly Distance Jogged and Water Consumption

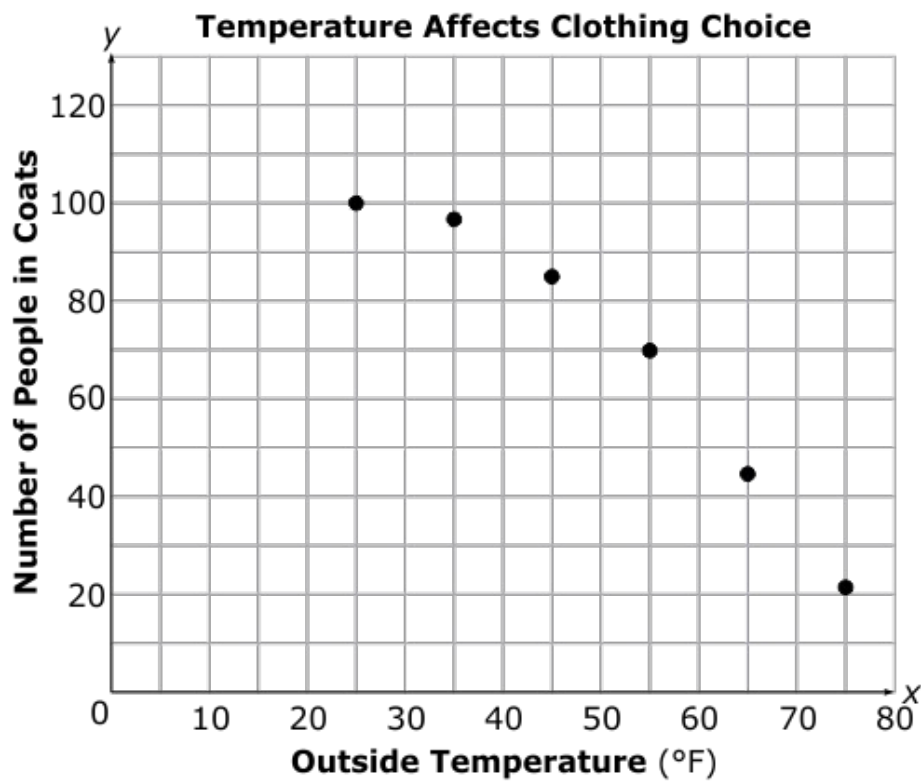Which equation **best** represents the line of best fit?

A. $y = \dfrac{x}{3}$

B. $y = \dfrac{x}{2}$

C. $y = 3x$

D. $y = 2x$

5. When $x = 6$, which number is closest to the value of *y* on the line of best fit in the graph below?
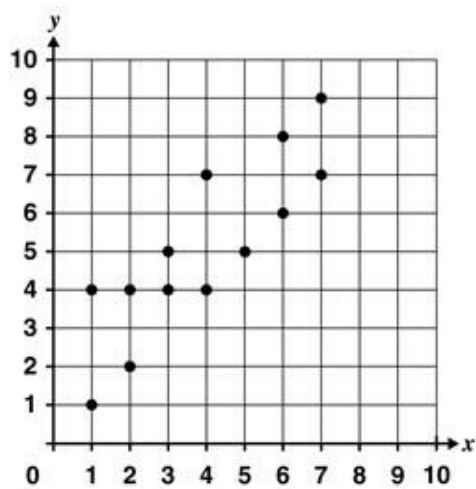
A. 1
B. 6
C. 7
D. 9

6. The scatterplot below shows the number of people wearing coats in relation to the outside temperature.

Temperature Affects Clothing Choice

Using a linear model, which equation *best* fits the data?

A. $y = {}^-0.5x + 110$

B. $y = {}^-x + 120$

C. $y = {}^-1.2x + 190$

D. $y = {}^-1.6x + 150$
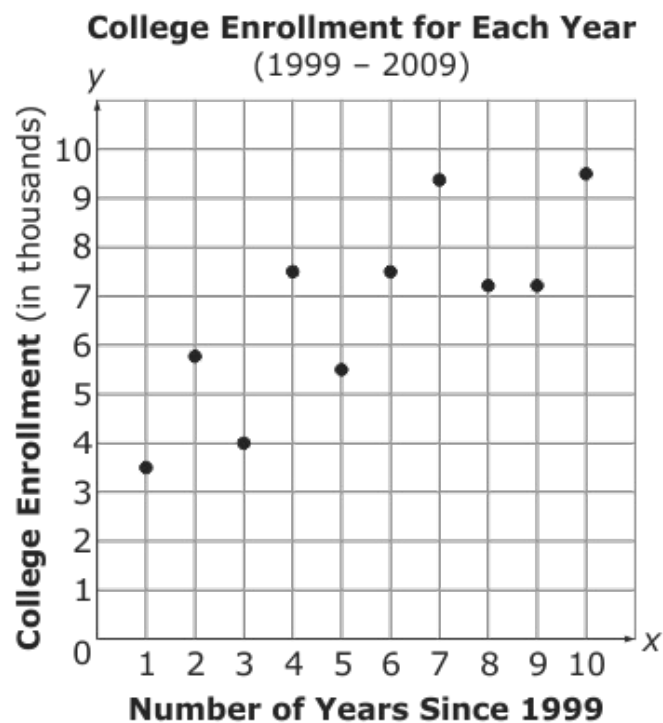
7. The scatterplot below shows the amount of money Susan had in her savings account for the past 12 months.

Susan's Savings
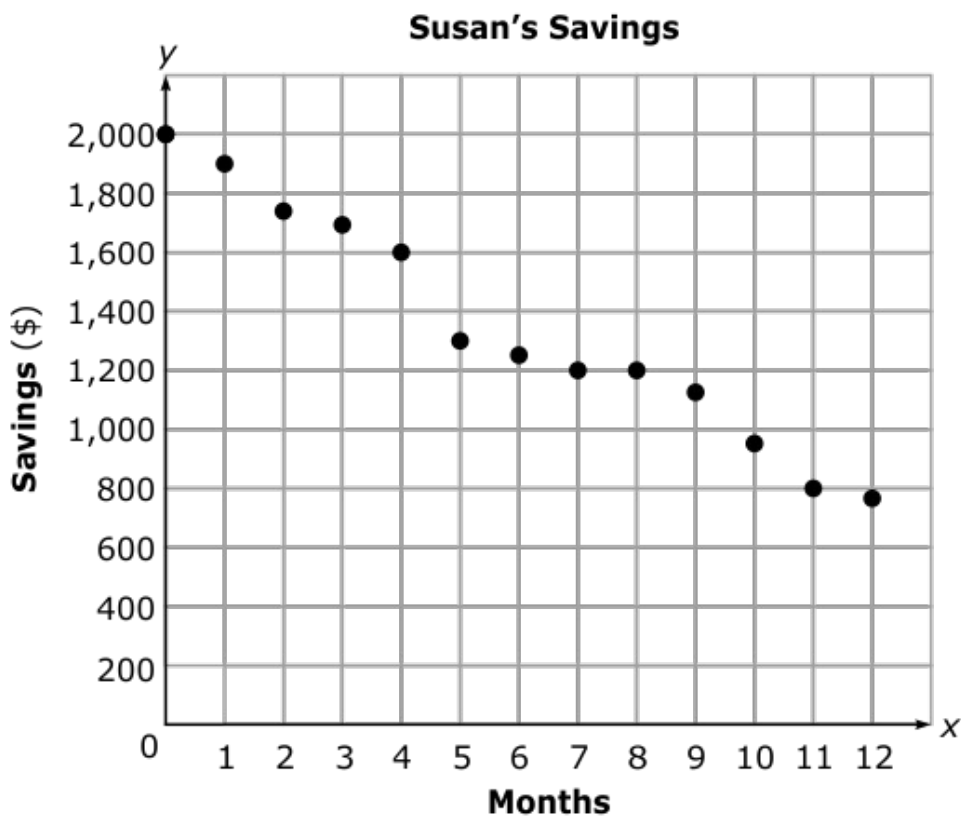
Which equation **best** fits the data?

A. $y = 2,000x - 100$

B. $y = 100x + 2,000$

C. $y = {}^-100x + 2,000$

8. The graph shows the enrollment for a local college over a ten-year period.

College Enrollment for Each Year
(1999 – 2009)

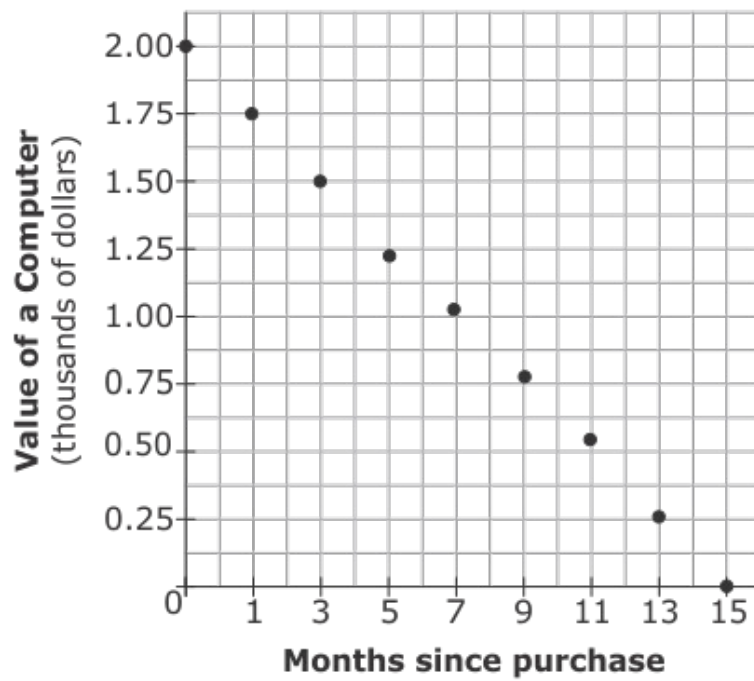Which equation would **best** fit the data?

A. $y = 3{,}000x + 100$

B. $y = 800x + 3{,}000$

C. $y = 100x + 3{,}000$

D. $y = 5x + 3$

9. **Which equation represents the line of best fit for this graph?**
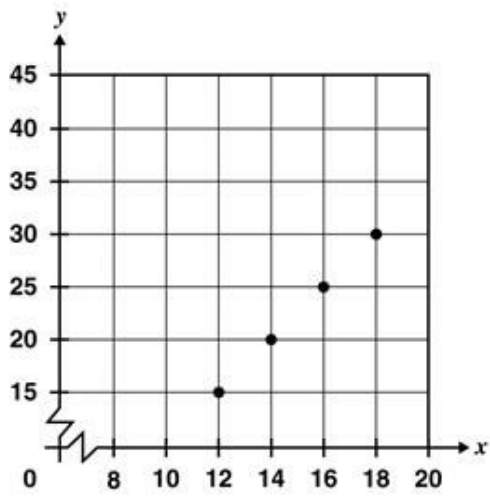
A. $y = -\frac{5}{2}x + 15$

B. $y = -\frac{5}{2}x - 15$

C. $y = \frac{5}{2}x + 15$

D. $y = \frac{5}{2}x - 15$

10. The graph below shows the value of a computer given the age of the computer.

Which equation would **best** fit the data?

A. $y = {}^-250x + 2{,}000$

B. $y = 250x + 2{,}000$

C. $y = {}^-250x - 2{,}000$

D. $y = 2{,}000x - 250$

11. A health club charges a monthly membership fee, plus a fee for the number of monthly visits. The graph shows the total monthly cost, y, given the number of monthly visits, x.

Membership Fees

Which equation **best** fits this data?

A. $y = {}^-35x + 3.5$

B. $y = {}^-3.5x + 35$

C. $y = 3.5x + 35$

D. $y = 35x + 3.5$

12. The graph shows the amount of money earned by students after several hours of babysitting.

Money Earned from Babysitting
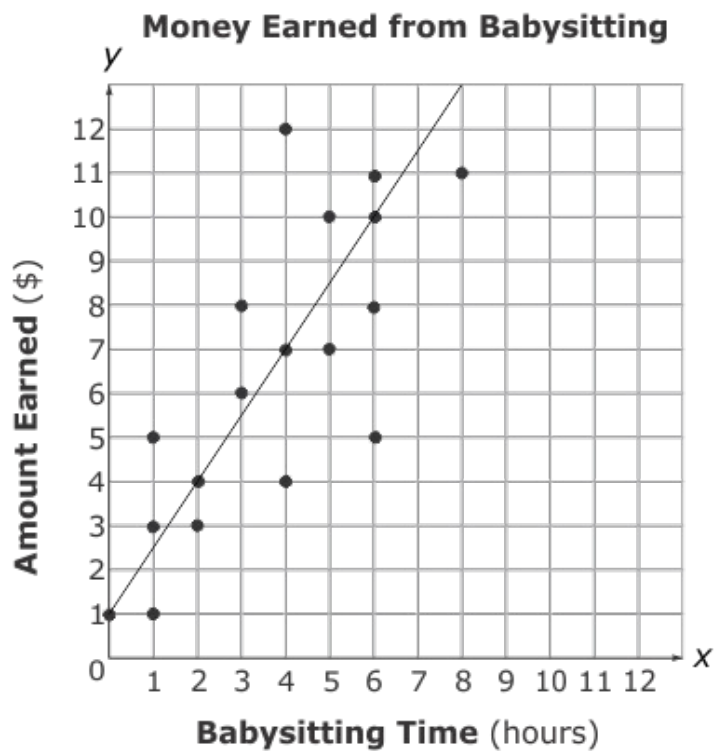
Which equation would **best** fit the data?

A.
$$y = \frac{3}{2}x + 1$$

B.
$$y = \frac{3}{2}x + 3$$

C.
$$y = \frac{2}{3}x + 1$$

D.
$$y = \frac{2}{3}x + 3$$

13. The scatterplot below shows Susan's heart rate while exercising.

Susan's Heart Rate
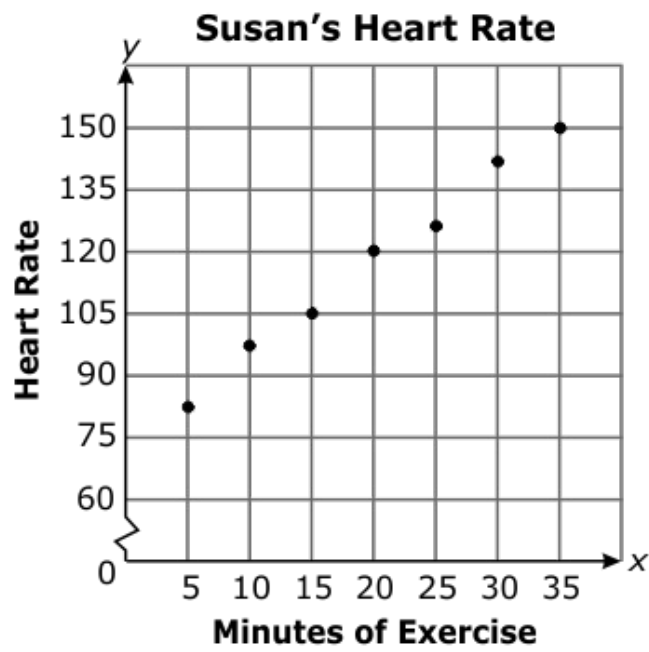
Which equation *best* fits the data?

A. $y = 2x + 75$

B. $y = 5x + 70$

C. $y = 15x + 60$

14. **The scatterplot below shows the relationship between the number of hours spent watching television the day before a test and the test scores earned by a group of students.**

Test Scores vs. Hours Watching TV
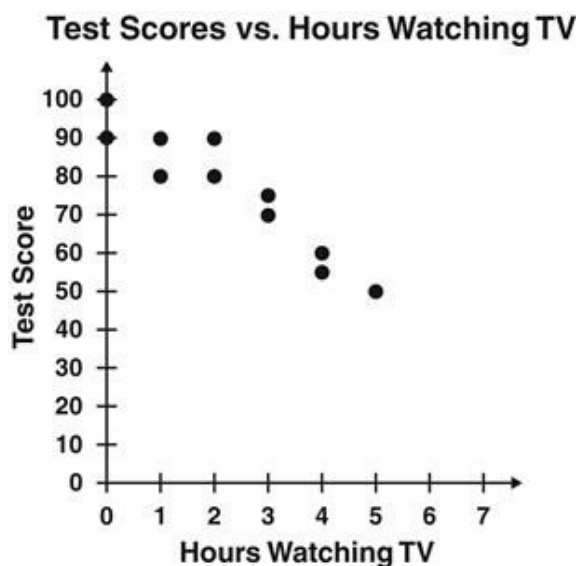
Which equation represents the line of best fit for the scatterplot?

A. $y = -10x + 50$

B. $y = -10x + 100$

C. $y = 10x - 50$

D. $y = 10x - 100$

15. Which scatter plot shows the line that **best** fits this data set?

A.

B.

C.

D.
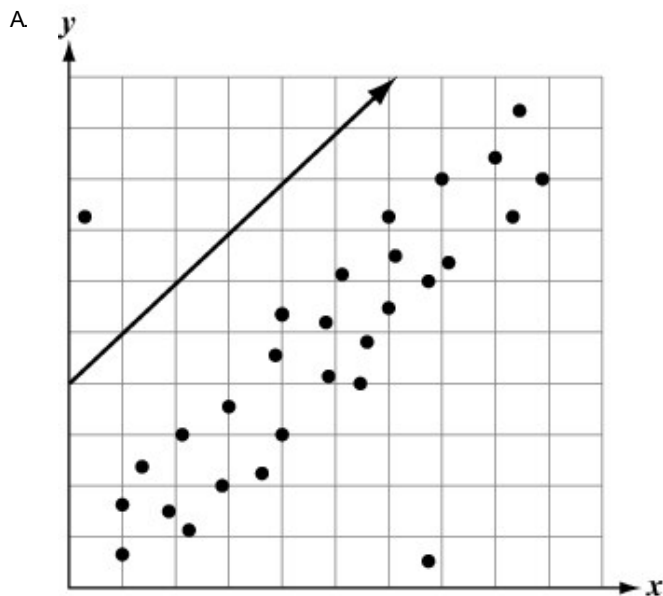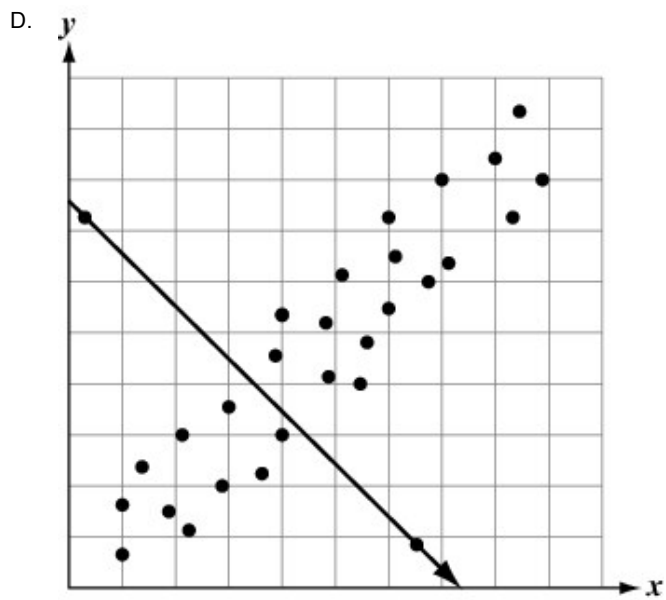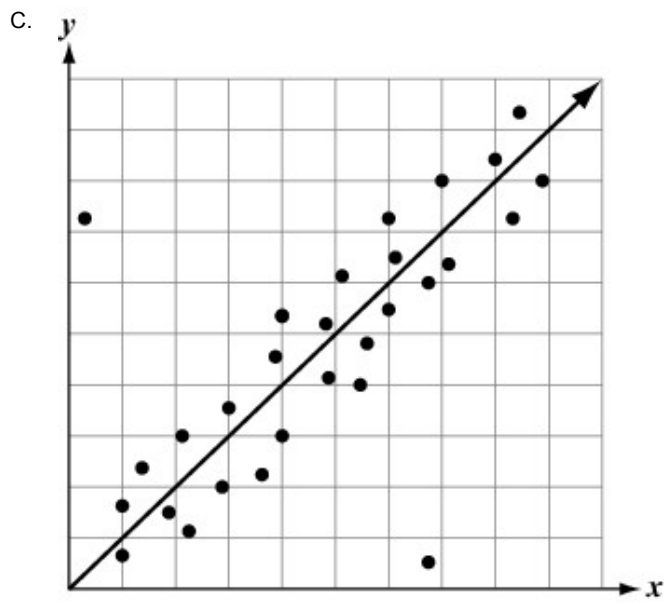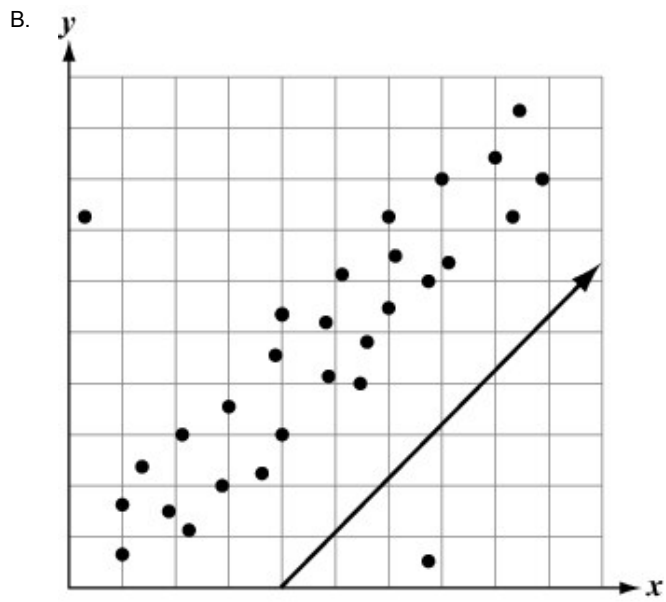
16. The Charter Book Club tracked the number of pages their members read each week and the number of hours they spent reading. The graph of their data is shown below.

Book Club Reading Hours
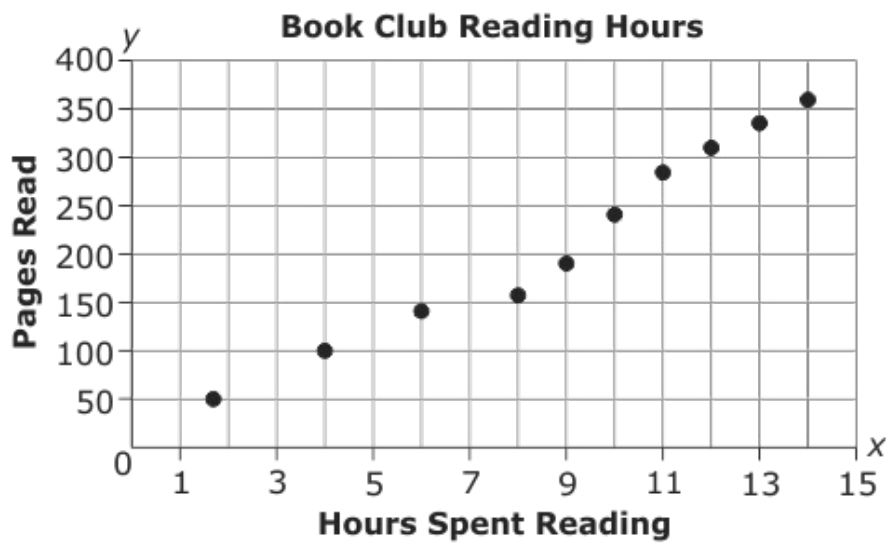
Which equation would **best** fit this data?

A. $y = {}^-25x + 50$

B. $y = {}^-25x$

C. $y = 25x$

D. $y = 25x + 50$

17. The graph below displays the amount of time spent studying for a test and the score received on the test.

Test Scores vs. Time Studying
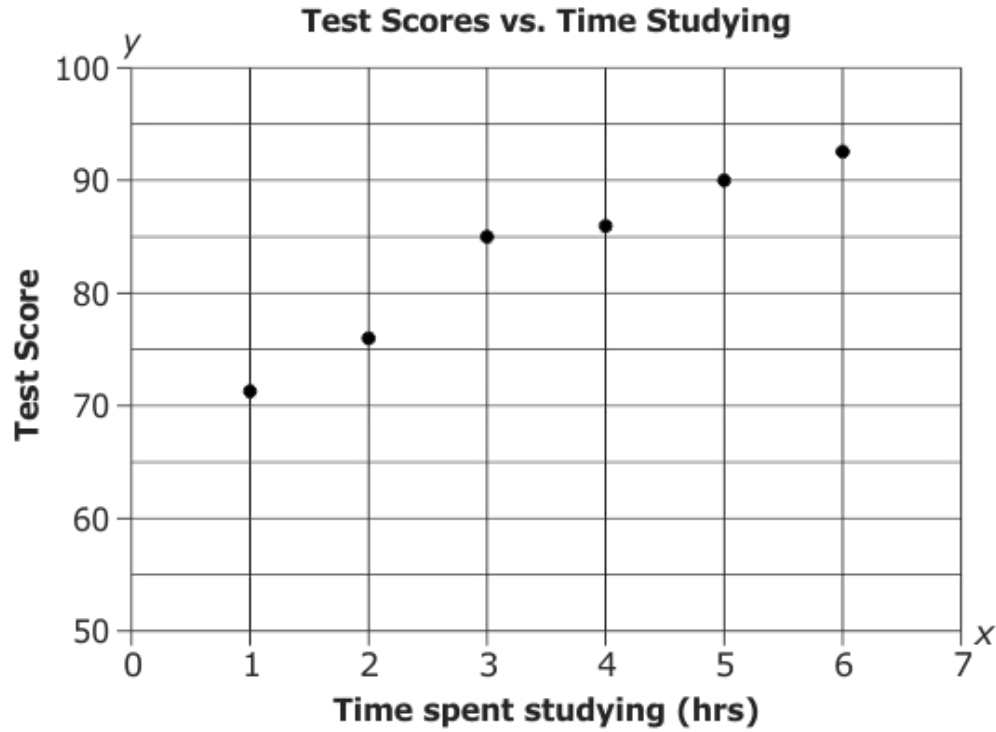
Using a linear model, which equation **best** fits this data?

A. $y = 4x + 68$

B. $y = 6x + 60$

C. $y = 8x + 72$

D. $y = 10x + 70$

18. The graph below shows the amount of money remaining, *y*, after purchasing *x* items.

Money Remaining After Purchases
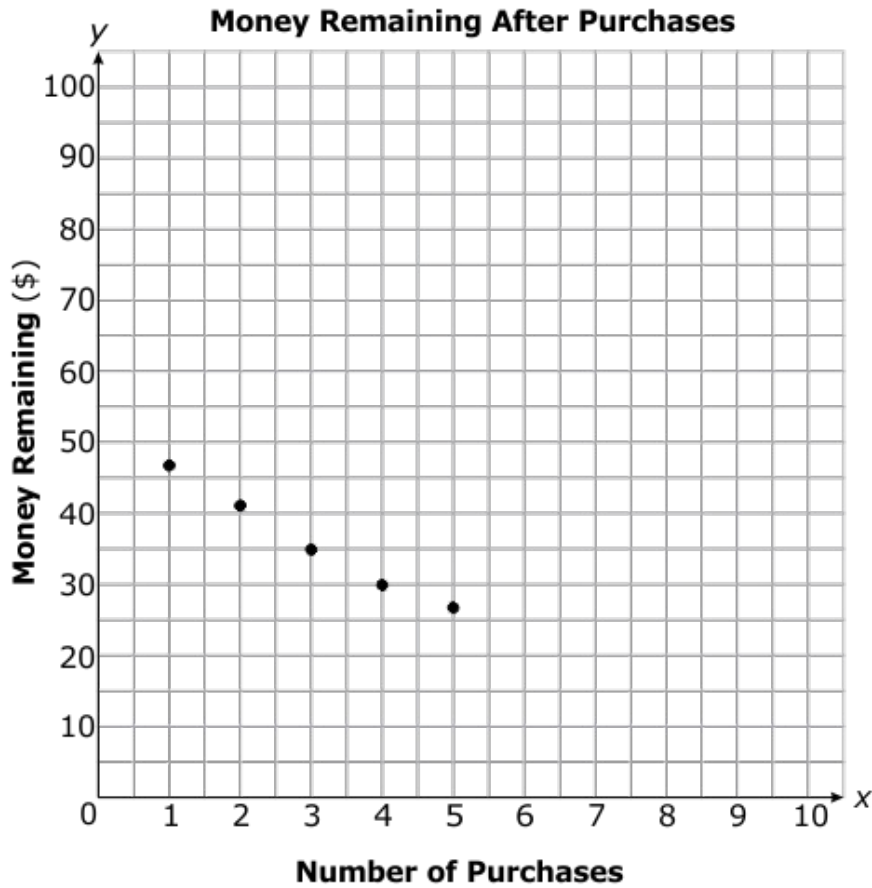
Using a linear model, which equation *best* fits the data?

A. $y = {}^-3x + 51$

B. $y = {}^-3x + 45$

C. $y = {}^-5x + 45$

D. $y = {}^-5x + 51$

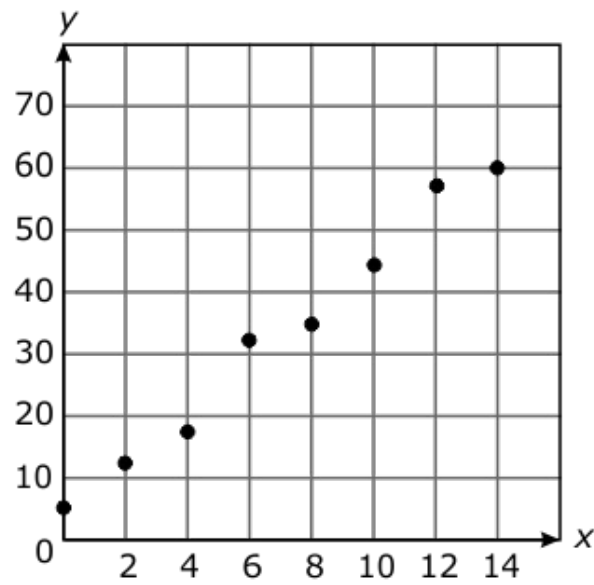19. Which equation **best** fits the data in the scatterplot below?
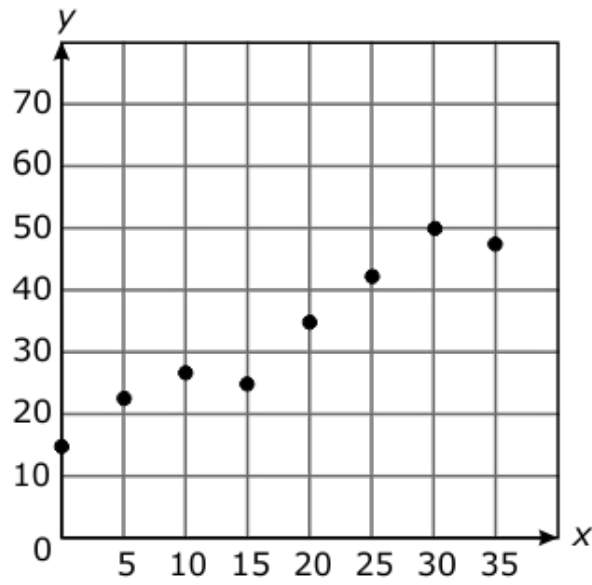
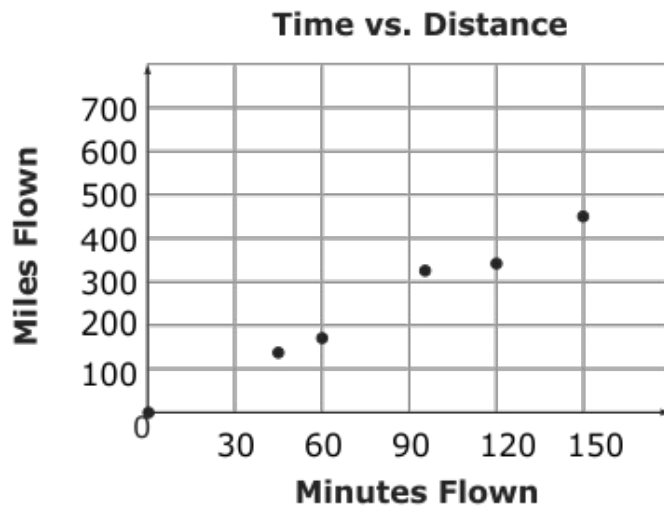A. $y = x + 15$

B. $y = 4x + 15$

C. $y = 15x$

20. Which equation would **best** fit the data in the scatterplot below?

A. $y = x + 5$

B. $y = 2x + 5$

C. $y = 4x + 5$

21. The graph below shows the relationship between the number of miles flown in a plane after several minutes.

Time vs. Distance

Which equation **best** fits the data?

A. $y = 2x$

B. $y = 3x$

C. $y = 30x$

D. $y = 60x$

22. Theo is looking for the line of best fit for the scatter plot below.

Line of Best Fit
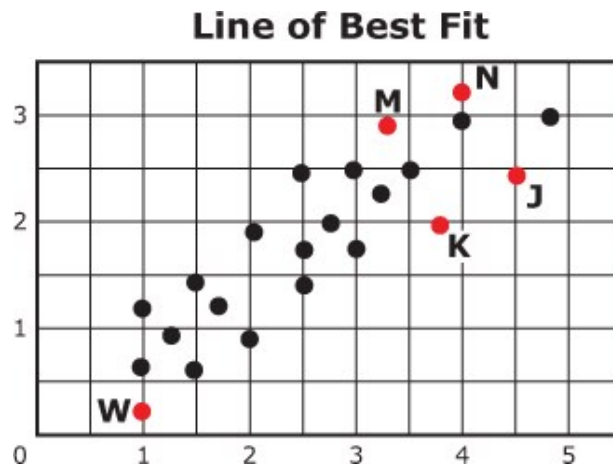
Which of the labeled points *J*, *K*, *M* or *N* should Theo connect with point *W* in order to form a line that **most** closely represents the data in the scatter plot?

A.   point *J*

B.   point *K*

C.   point *M*

D.   point *N*

23. The scatter plot below displays the average weight of males at certain ages in their lifetime.

Average Weights of Males
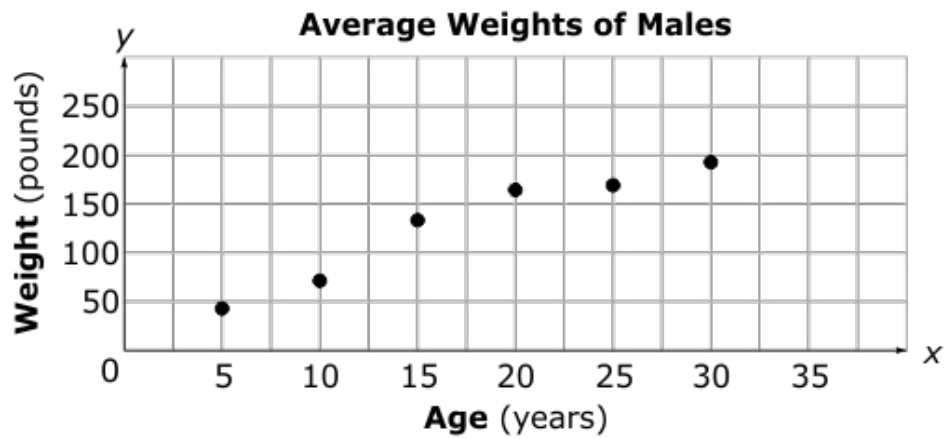
Which equation *most closely* models the data?

A. $y = 6x + 25$

B. $y = 6x + 50$

C. $y = 10x + 25$

D. $y = 10x + 50$

24. The scatterplot shows the stopping distances of a car on a wet road given the weight of the car.

Stopping Distance of Cars on a Wet Road
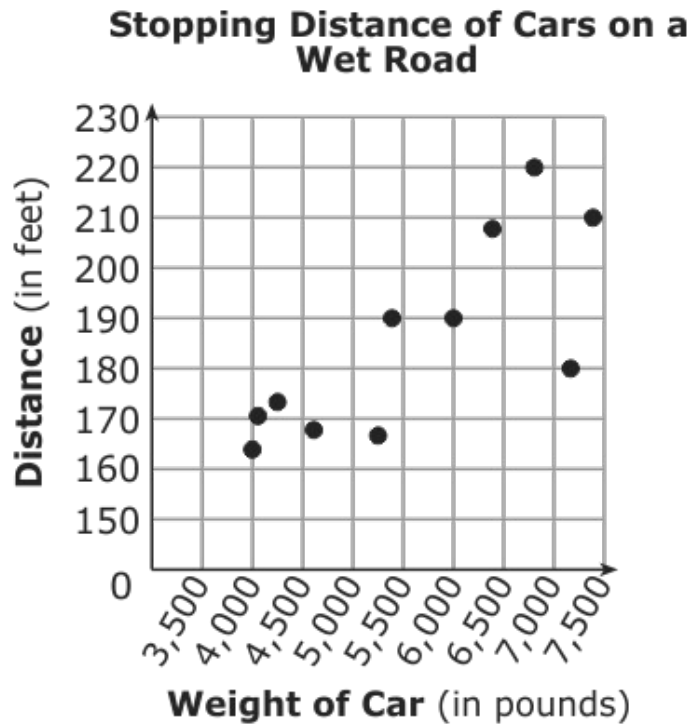
Which equation **best** fits the data?

A. $y = 0.01x + 120$

B. $y = 0.04x + 180$

C. $y = {}^-0.01x + 120$

D. $y = {}^-0.04x + 180$

25. Which equation **best** fits the data in the scatterplot below?
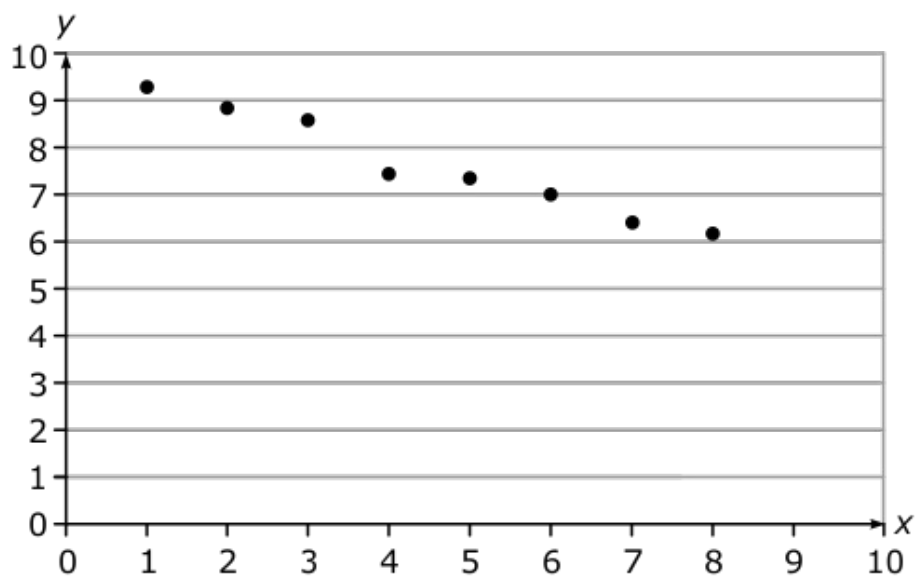
A. $y = {}^{-}2x + 10$

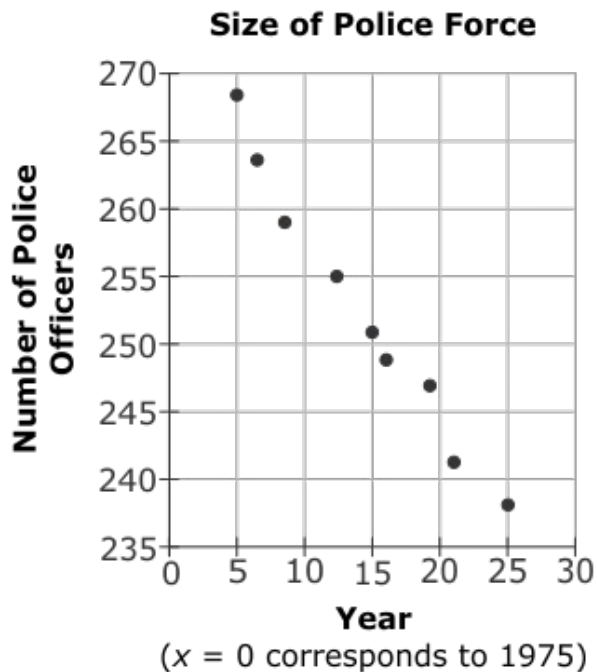B. $y = \frac{{}^{-}1}{2}x + 10$

C. $y = 10x - 2$

26. A police department created a scatterplot using data showing the number of police officers in a city over several years.

Size of Police Force

Year
(x = 0 corresponds to 1975)

In 1983, there were 258 police officers. In 1994, there were 247 police officers. Which equation **best** fits this data?

A. $y = {}^-x + 266$

B. $y = {}^-x + 250$

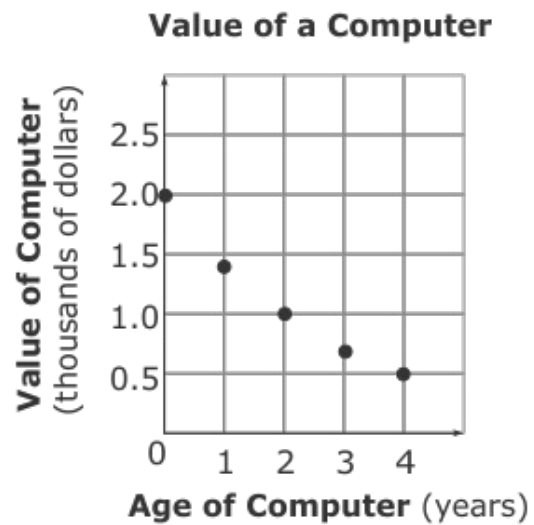C. $y = {}^-11x + 266$

D. $y = {}^-11x + 250$

27. The harvest results of a farm are shown in the graph below.

HARVEST RESULTS
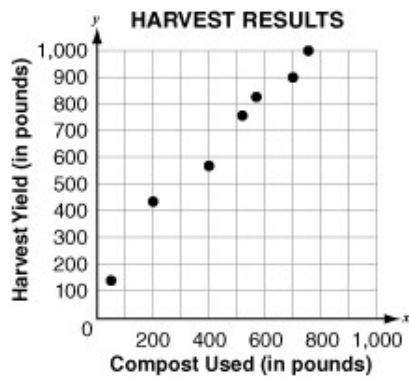
Which equation best models the relationship between the amount of compost used, x, and the harvest yield, y?

A. $y = x$

B. $y = 200x$

C. $y = x + 200$

D. $y = 200x + 200$

28. The graph below displays the value of a computer after so many years.

Value of a Computer

Age of Computer (years)

Using a linear model, which equation **best** fits the data?

A. $y = {}^{-}400x + 2{,}000$

B. $y = {}^{-}100x + 2{,}000$

C. $y = 2{,}000x - 100$

D. $y = 2{,}000x - 400$

29. The graph below shows the age of a car and its value over several years.

Car's Value
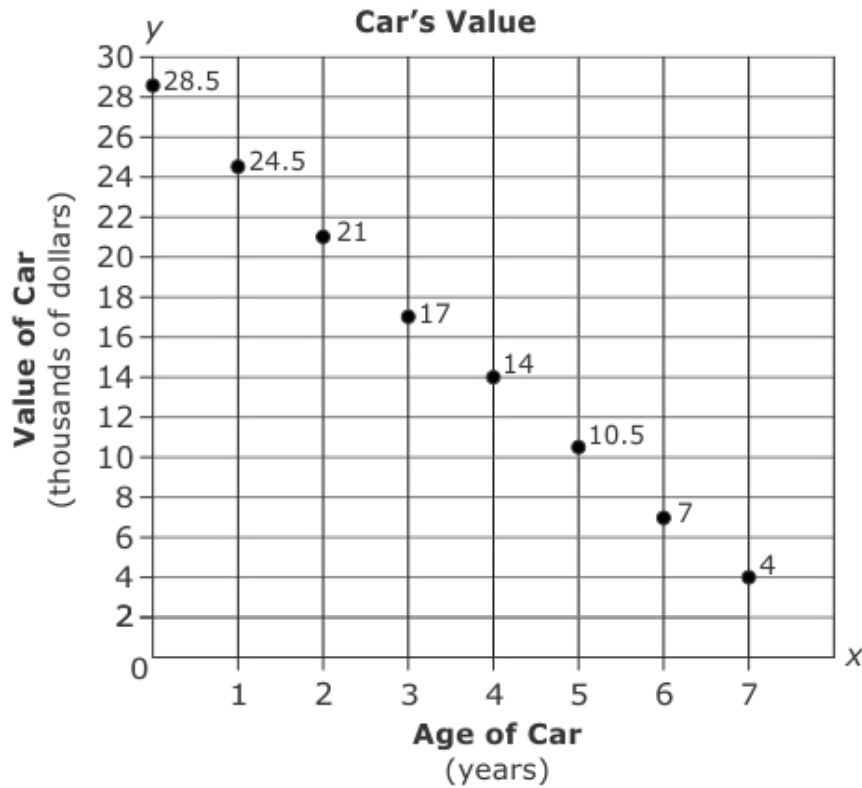
Which equation would **best** fit the data?

A. $y = 28{,}500x - 3{,}500$

B. $y = 28{,}500x + 3{,}500$

C. $y = 28{,}500 - 3{,}500x$

D. $y = 28{,}000 + 3{,}500x$

30. Griffin picked five states and graphed the number of United States House of Representatives and the population for each state. His data is shown in the scatter plot below.

**Number of U.S. House of Representatives and the State's Population**
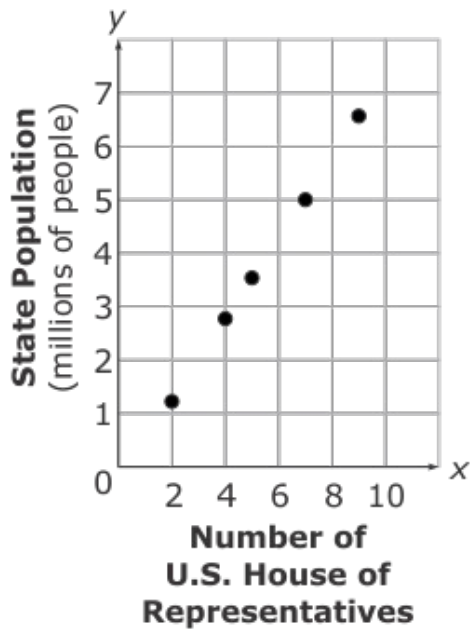
Data

Maine - # of Reps = 2, Pop. = 1.3 million

Kansas - # of Reps = 4, Pop. = 2.9 million

Connecticut - # of Reps = 5, Pop. = 3.6 million

Colorado - # of Reps = 7, Pop. = 5.0 million

Massachusetts - # of Reps = 9, Pop. = 6.6 million

Assuming a linear model, what is the slope of the line?

A. 0.5 million

B. 0.75 million

C. 1 million

D. 1.5 million

31. Which relationship between x and y in the scatter plots below could be **best** represented with a linear model?

A.

B.

C.
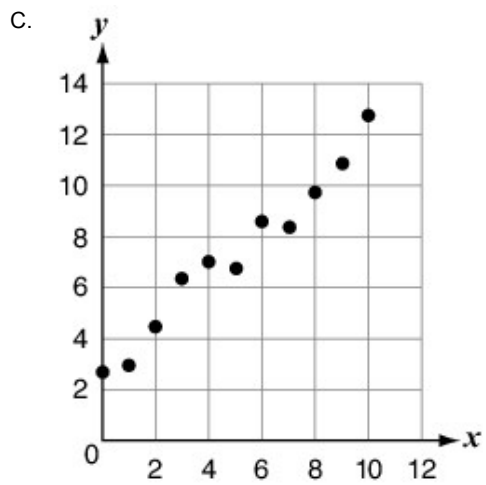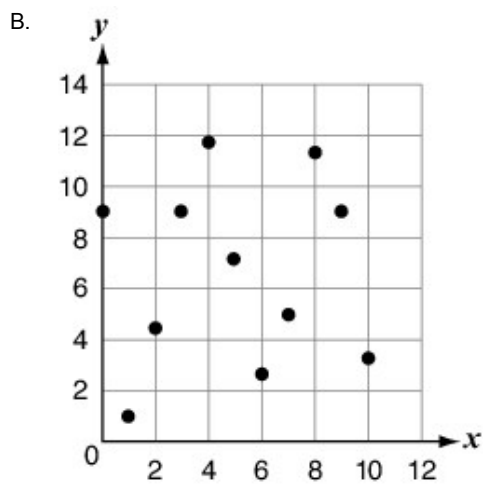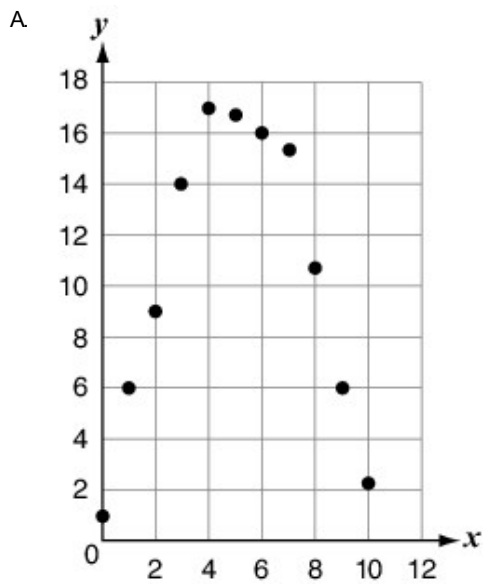
D.
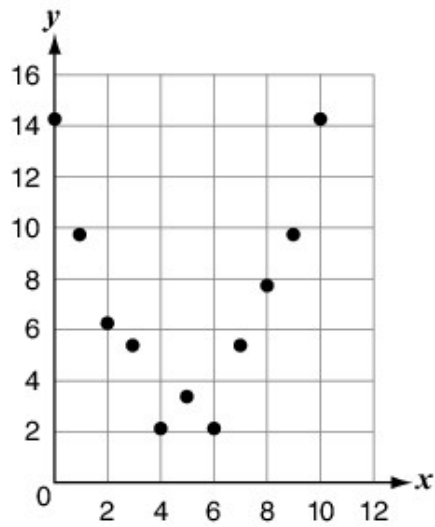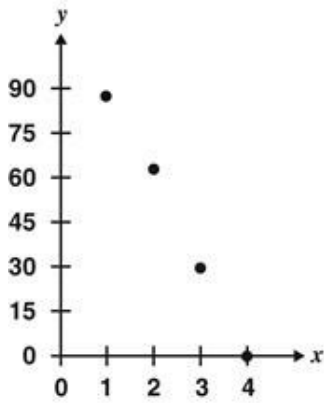

32. The table below shows the cumulative amount of time, in hours, Meghan reads over five weeks.

Number of Weeks	Cumulative Number of Hours Read
1	2
2	5
3	7
4	10
5	13

If the data in the table is graphed, what is the **approximate** slope of a line that best fits the data?
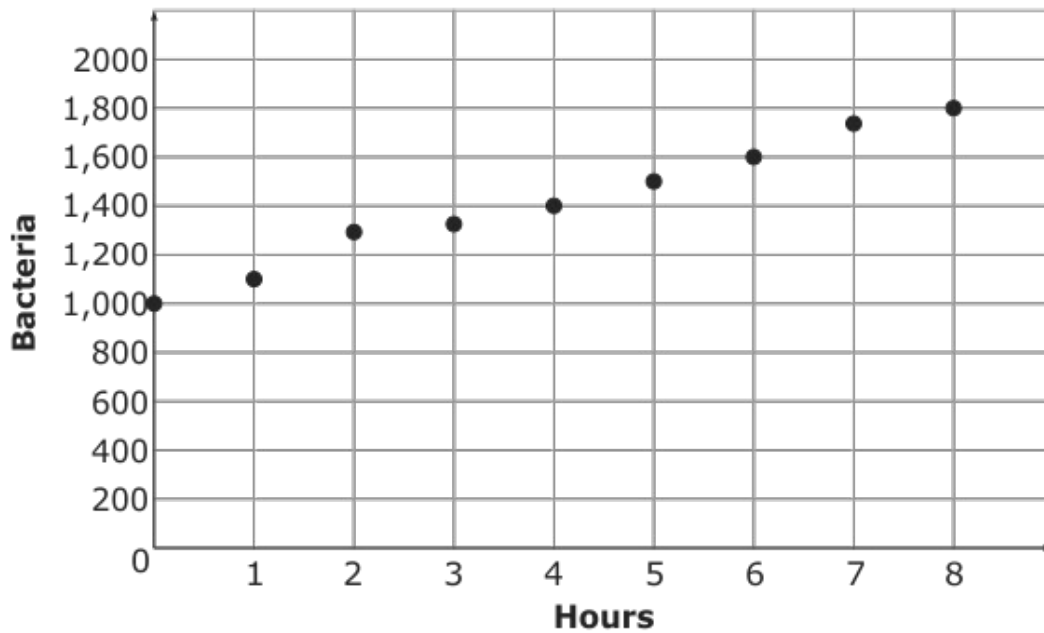
A. $\dfrac{2}{5}$

B. $\dfrac{1}{2}$

C. 2

D. $\dfrac{5}{2}$

33. **Which equation represents the line of best fit for the data?**

A. $y = 30x$

B. $y = -30x + 120$

C. $y = 30x + 60$

D. $y = -30x + 90$

34. The graph shows bacteria growth over several hours.

Which equation *best* fits the data?

A. $y = 1,000 - 50x$

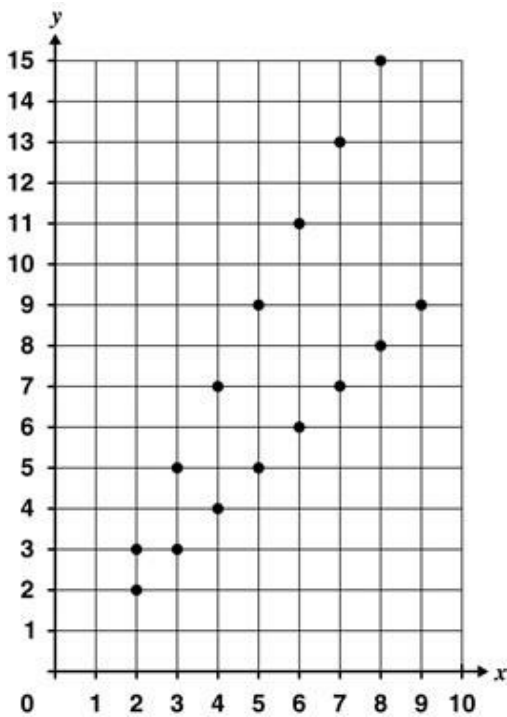B. $y = 1,000 + 50x$

C. $y = 1,000 - 100x$

D. $y = 1,000 + 100x$

35. The table shows the age and value of a vehicle over several years.

| Age of Vehicle (years)	Value ($)
1	20,000
2	18,500
3	16,000
4	14,500
5	12,000

Which equation would **best** fit the data?

A. $y = {}^-1,500x + 20,000$

B. $y = 1,500x + 20,000$

C. $y = {}^-2,000x + 22,000$

D. $y = 2,000x + 22,200$

36. **When$_{x = 9}$, which number is closest to the value of *y* on the line of best fit in the graph below?**
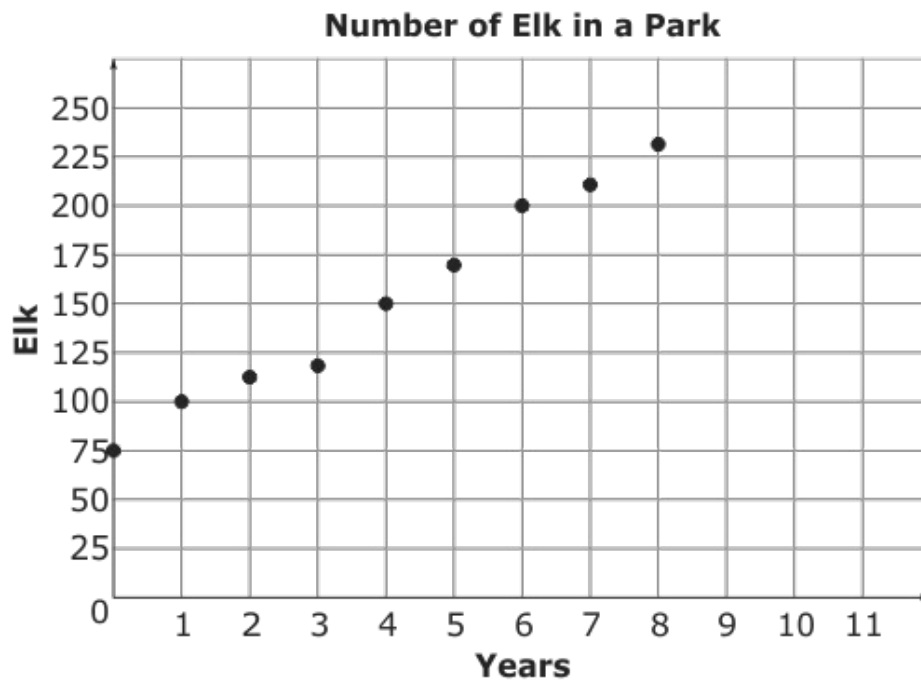

A. 1
B. 9
C. 12
D. 17

37. The graph below shows the value of a home over 10 years. The graph starts in the year 2000 ($x = 0$) and each x value represents the number of years after 2000.

Value of a Home
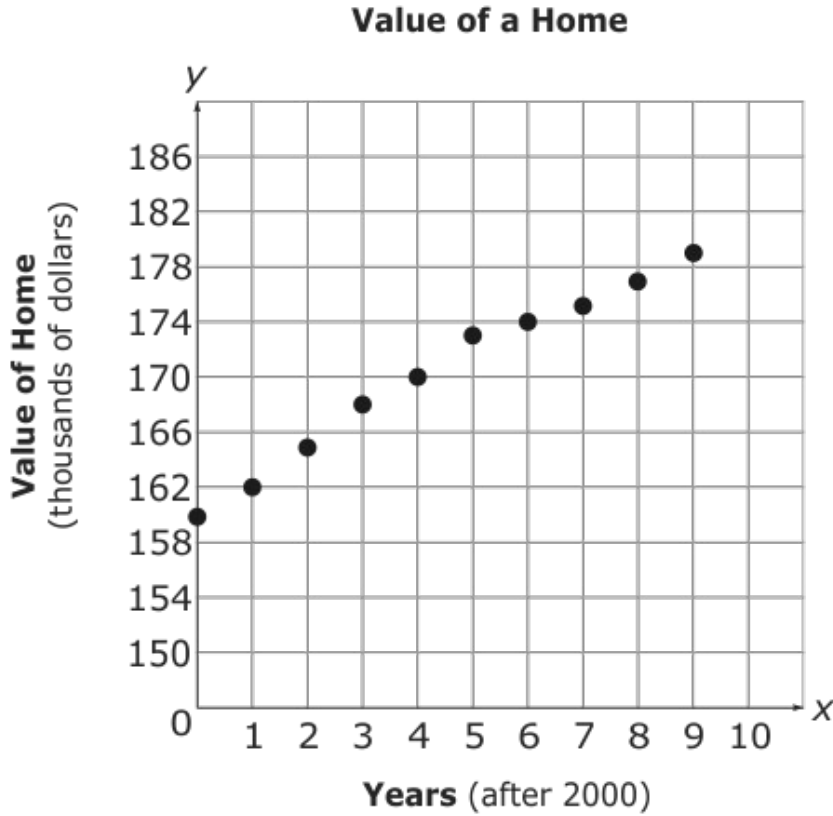
Which equation would **best** fit the data?

A. $y = 160{,}000x + 1$

B. $y = 160{,}000x + 2$

C. $y = x + 160{,}000$

D. $y = 2x + 160{,}000$

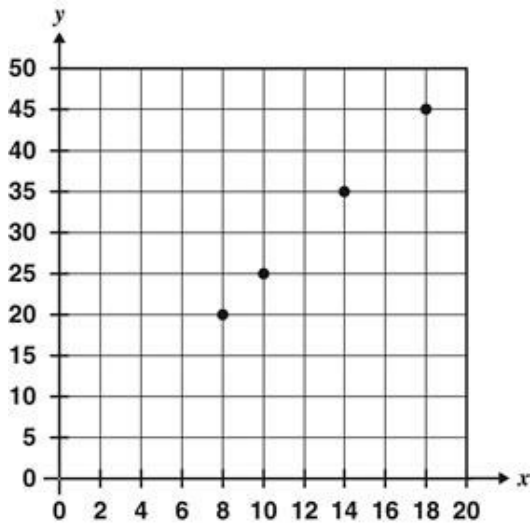38. The graph shows the number of elk in a national park over several years.

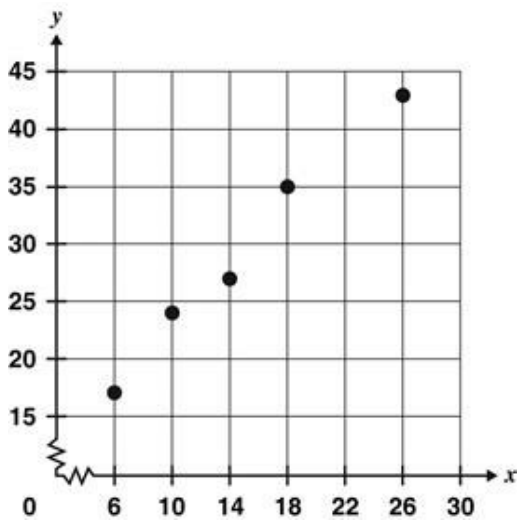**Number of Elk in a Park**

Which equation *best* fits the data?

A. $y = 75 + 20x$

B. $y = 75 + 40x$

C. $y = 75 - 20x$

D. $y = 75 - 40x$

39. **Which equation represents a line of best fit for the data in this graph?**

A. $y = \dfrac{5}{2}x$

B. $y = \dfrac{5}{2}x + 10$

C. $y = -\dfrac{5}{2}x$

D. $y = -\dfrac{5}{2}x + 10$

40. **A scatterplot showing a relationship between *x* and *y* is shown below.**

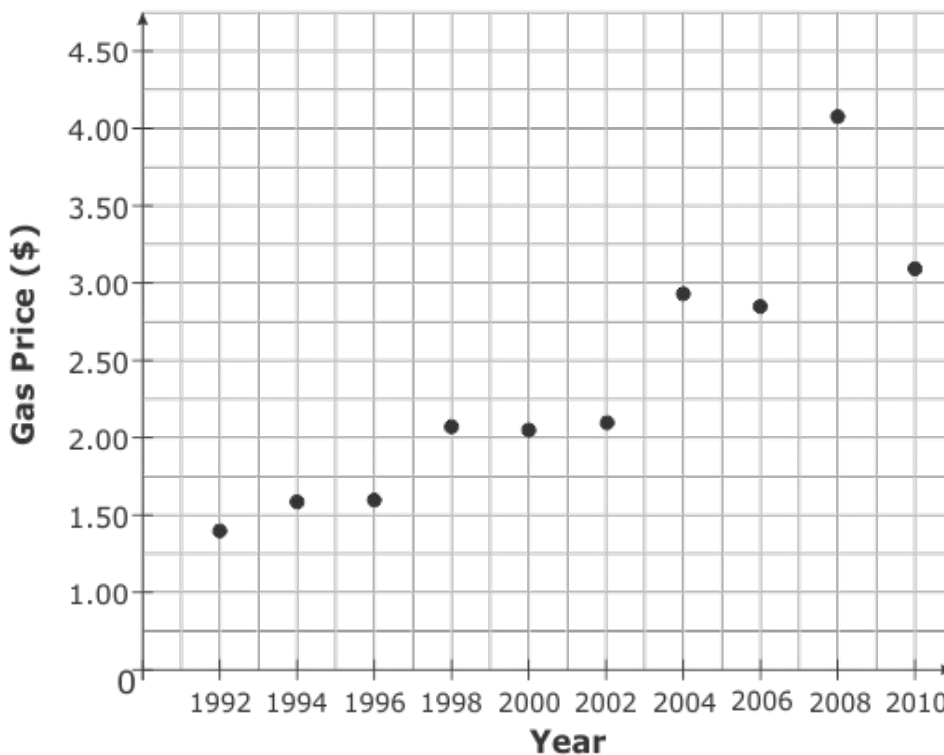**Which equation represents the line of best fit for the graph?**

A. $y = x + 5$

B. $y = x - 5$

C. $y = x + 15$

D. $y = 2x - 15$

41. The table shows the value of a video game system since introduced in 2003.

| Year (since 2003)	0	1	2	3
Value ($)	700	520	250	120

Which equation **best** fits the data?

A. $y = {}^-700x + 200$

B. $y = {}^-200x + 700$

C. $y = 200x - 700$

D. $y = 700x - 200$

42. The graph below shows the average price of a gallon of gas over several years.

Which equation would **best** fit the data?

A. $y = 1.20 - 0.10x$

B. $y = 1.20 + 0.10x$

C. $y = 0.10 - 1.20x$

D. $y = 0.10 + 1.20x$

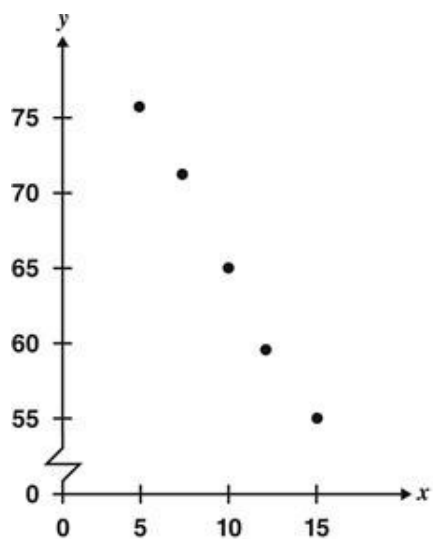43. The graph shows the age and weight of an average child from birth to age 16.

Age and Weight of Average Child
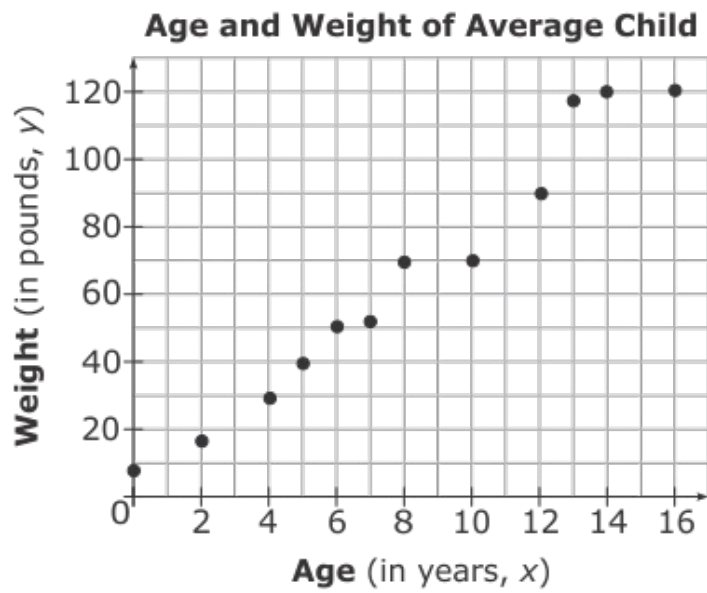
Which equation **best** fits the data?

A. $y = x + 8$

B. $y = 2x + 10$

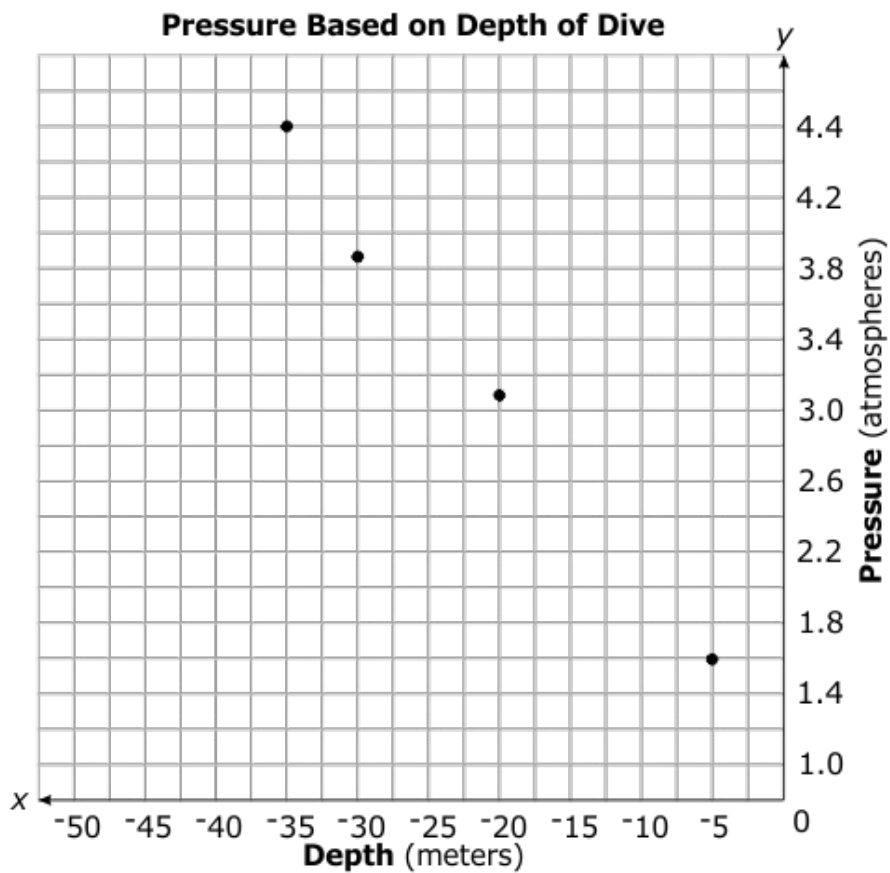C. $y = 6x + 18$

D. $y = 8x + 8$

44. **A scatterplot is shown below.**

Which equation represents a line of best fit for the scatterplot?

A. $y = -3x + 100$

B. $y = -2x + 86$

C. $y = x + 40$

D. $y = 2x + 66$

45. A diver approximates the water pressure, measured in atmospheres, based on the depth at which she dives. The graph of her results is shown below.

Pressure Based on Depth of Dive

Which equation *best* represents the water pressure, y, for a depth, x?

A. $y = \frac{^{-}1}{5}x - 1$

B. $y = \frac{^{-}1}{5}x$

C. $y = \frac{^{-}1}{10}x$

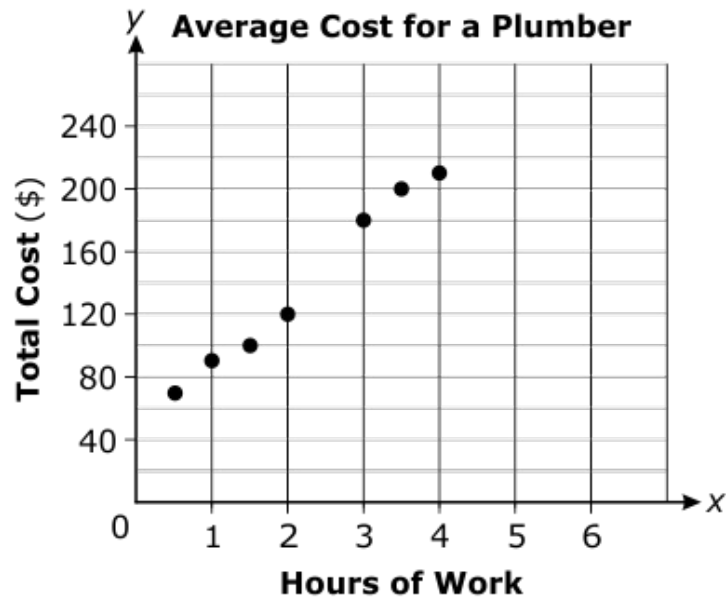D. $y = \frac{^{-}1}{10}x + 1$

46. The graph below shows the amount of fertilizer used in a garden and the number of pounds of corn that was produced.
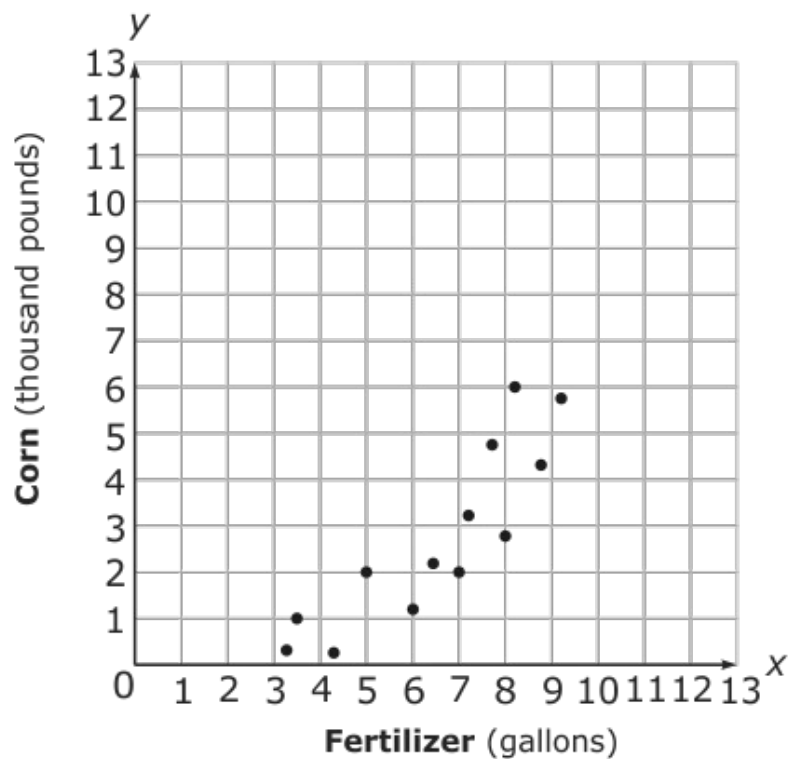
Which equation **best** models the data in the scatterplot?

A. $y = x - 3$

B. $y = x - 1$

C. $y = 3x - 3$

D. $y = 3x - 1$

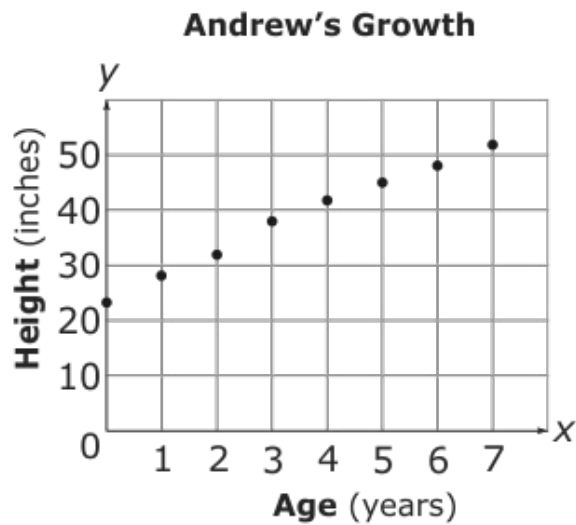47. The graph below shows the average cost of plumbers in a city based on the number of hours they work.

Average Cost for a Plumber

Which equation would *best* fit the data?

A. $y = {}^{-}40x + 50$
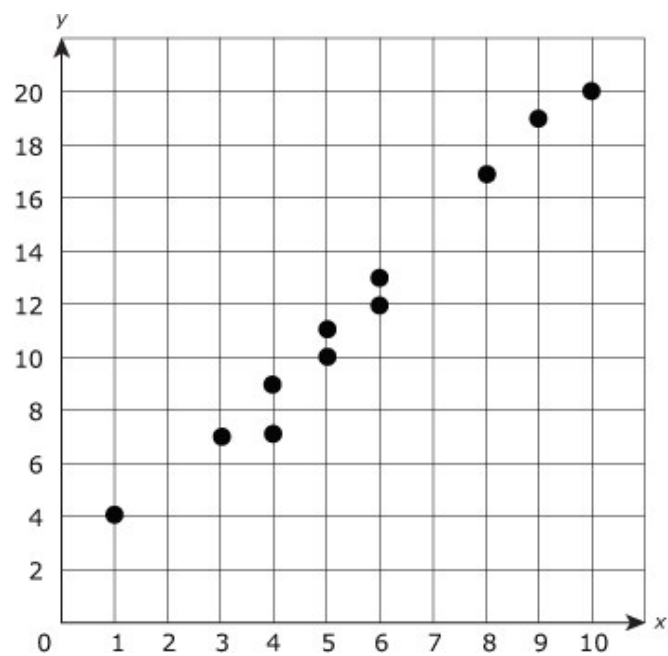
B. $y = 40x + 50$

C. $y = 40x$

48. Andrew created the graph below, showing his height over several years.

Andrew's Growth

Which equation would *best* fit the data?

A. $y = 24x + 4$

B. $y = 16x + 2$

C. $y = 4x + 24$

D. $y = x + 24$
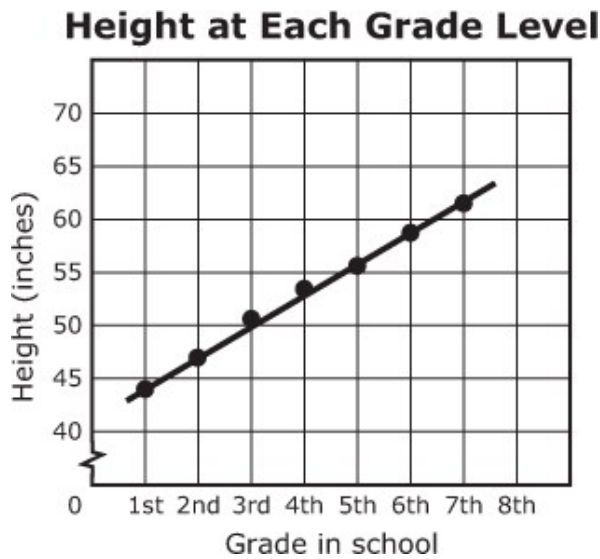
49. A set of data is shown on the scatter plot.

Which equation **best** models the line of best fit for the data?

A. $y = -2x - 1$

B. $y = -2x + 1$

C. $y = 2x - 1$

D. $y = 2x + 1$

50. Hubert has a record of his heights from first grade through seventh grade. He constructed a scatter plot and line of best fit to show his height at each grade level.

Height at Each Grade Level
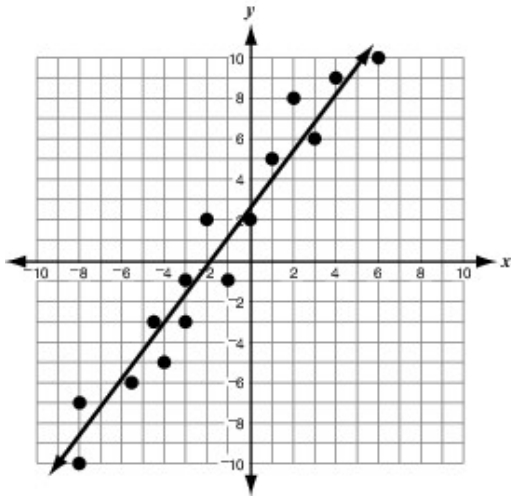

Which equation is **most** likely to represent the line of best fit?

A. $y = \frac{1}{41}x + \frac{1}{3}$

B. $y = 41x + 3$
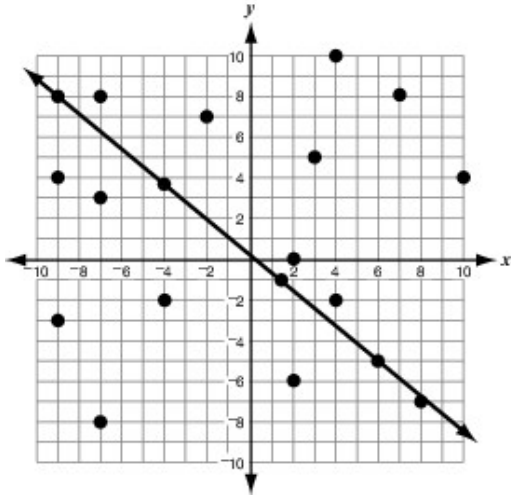
C. $y = \frac{1}{3}x + 41$

D. $y = 3x + 41$

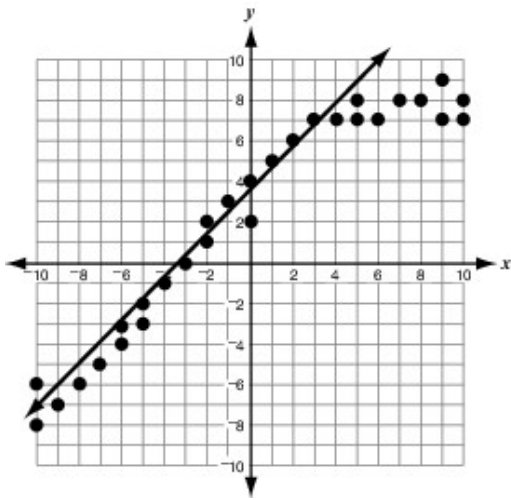51. Which graph shows the line of best fit that **most** accurately models the relationship between the two variables?

A.
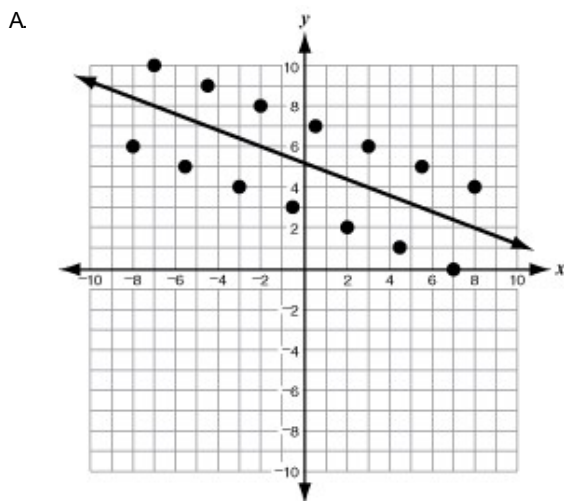
B.

C.

D.

52. **At the end of the basketball season, Chandi took a survey of the basketball team to find if there was a relationship between the hours practiced before a game and the average points scored per game. She displayed her data in the following scatterplot.**

Comparison between Practice Time and Points Scored
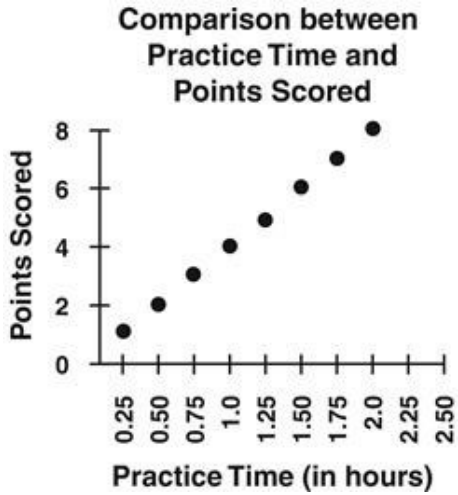
Which equation correctly shows the relationship between practice time per week (t) and average points per game (p)?

A. $pt = 4$

B. $p = \dfrac{t}{4}$

C. $p = 4t$

D. $p = 4t + 1$

53. Penelope constructed the scatter plot below.
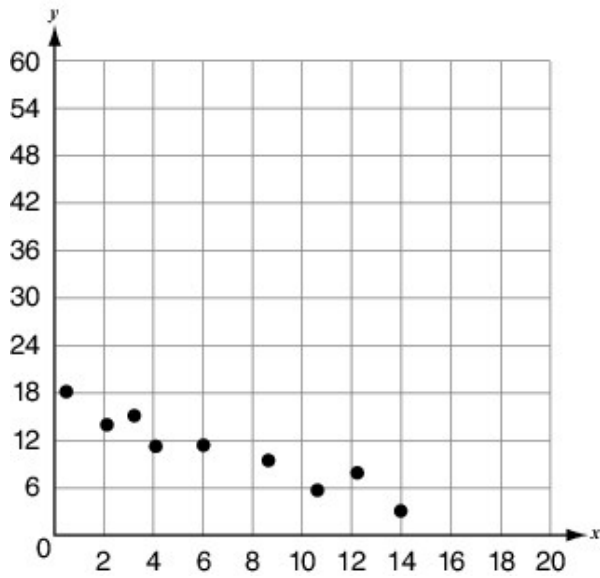
Which statement describes the function that would **most** appropriately model the data?

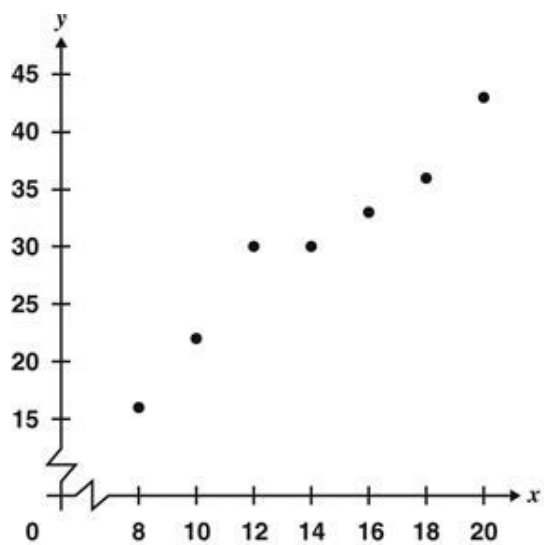A. a straight line with negative slope

B. a straight line with positive slope

C. a curved line that is increasing

D. a curved line that is decreasing

54. **Which equation represents a line of best fit for this graph?**

A. $y = x$

B. $y = 2x$

C. $y = -x - 2$

D. $y = 2x + 2$

55. The graph below shows students' scores on a math test and the number of hours they studied for the test.

Hours Studied and Test Scores
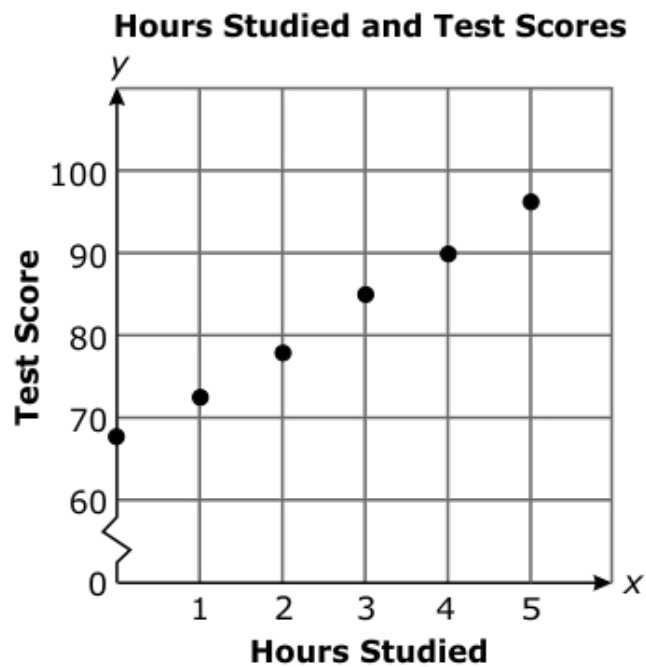
Which equation would *best* fit the data?

A. $y = 6x + 67$

B. $y = \dfrac{1}{6}x + 67$

C.

$y = {}^-6x + 67$

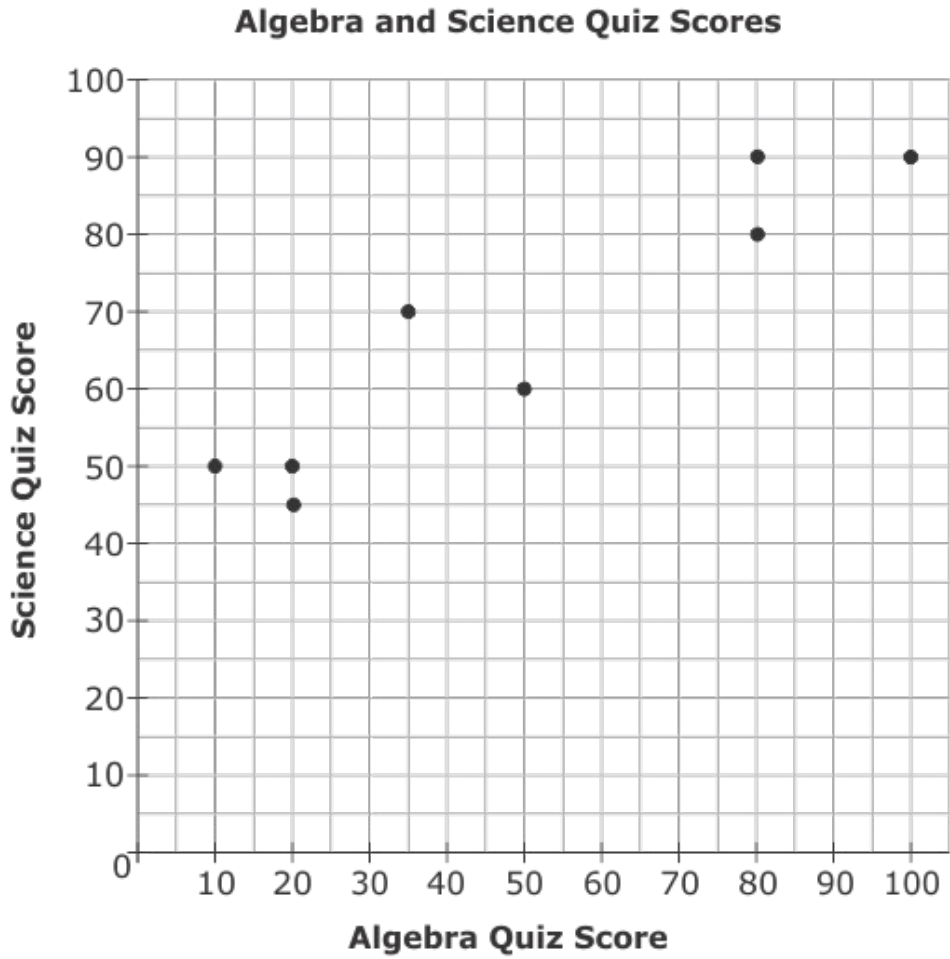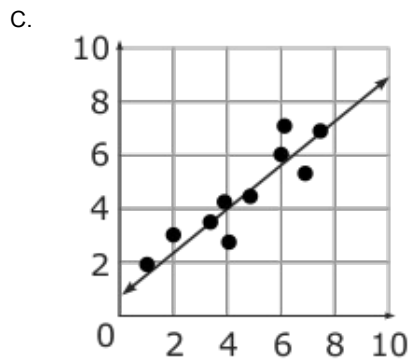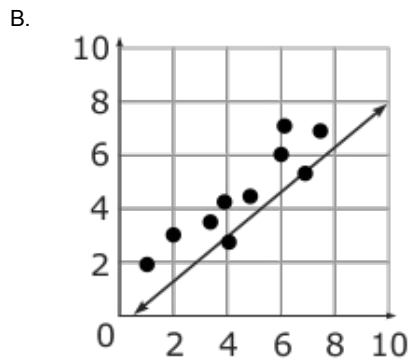56. Mr. Robinson gave a math and science quiz on the same day. He created the scatterplot below to compare several students' scores on both quizzes.

Algebra and Science Quiz Scores

Which equation would **best** fit the data?

A. $y = 30 + 0.5x$

B. $y = 40 + 0.5x$

C. $y = 30 + 5x$

D. $y = 40 + 5x$

57. Which scatterplot has a line that *most closely* fits the data?

A.

B.

C.
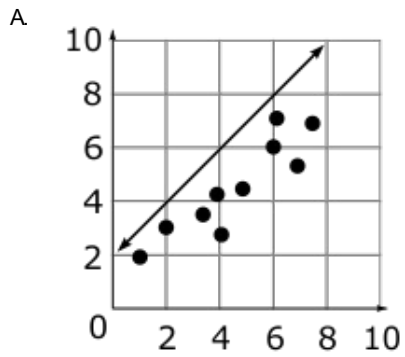
58. Brandon asked eight friends approximately how long they studied for the last test and what grade they received. The results are shown in this scatter plot.
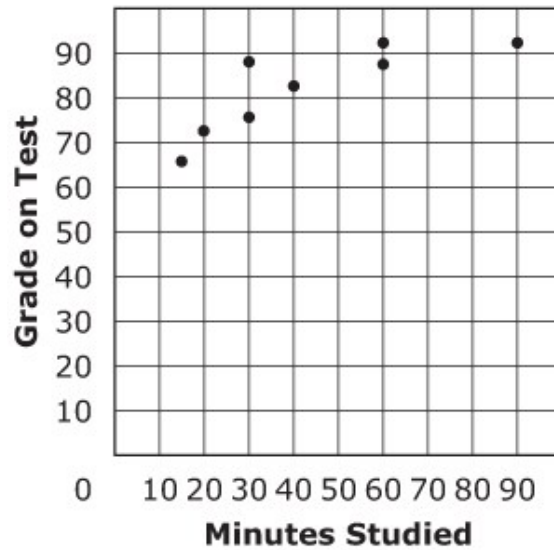
Which equation is the closest approximation of the line of best fit for this set of data?

A.
$$y = \frac{1}{3}x + 28$$

B.
$$y = \frac{1}{3}x + 68$$

C.
$$y = 3x + 68$$

D.
$$y = 3x + 28$$

59. The graph below shows the number of errors found in a book.

Errors per Chapter
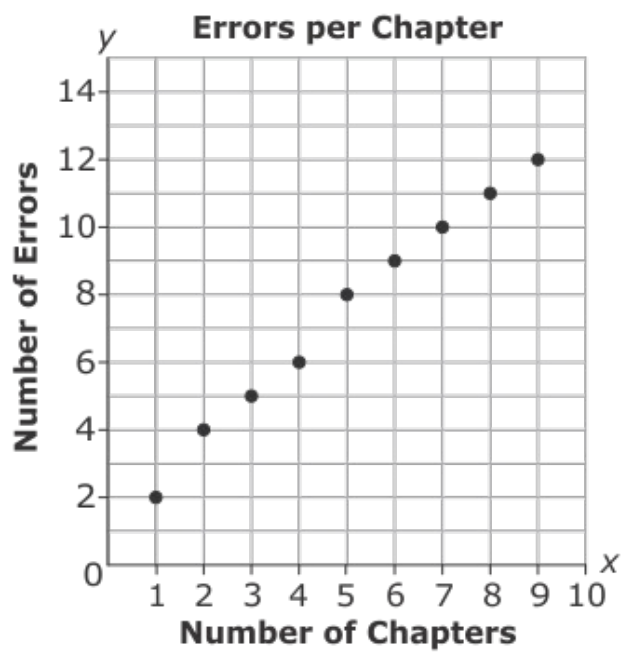
Which equation would *best* fit the data?

A. $y = x + 1$

B. $y = x - 1$

C. $y = {}^-x + 1$

D. $y = {}^-x - 1$

60. Morgan randomly gave tickets to each person who attended a carnival. The number of tickets she has remaining, y, after handing out tickets to x people is shown on the graph below.
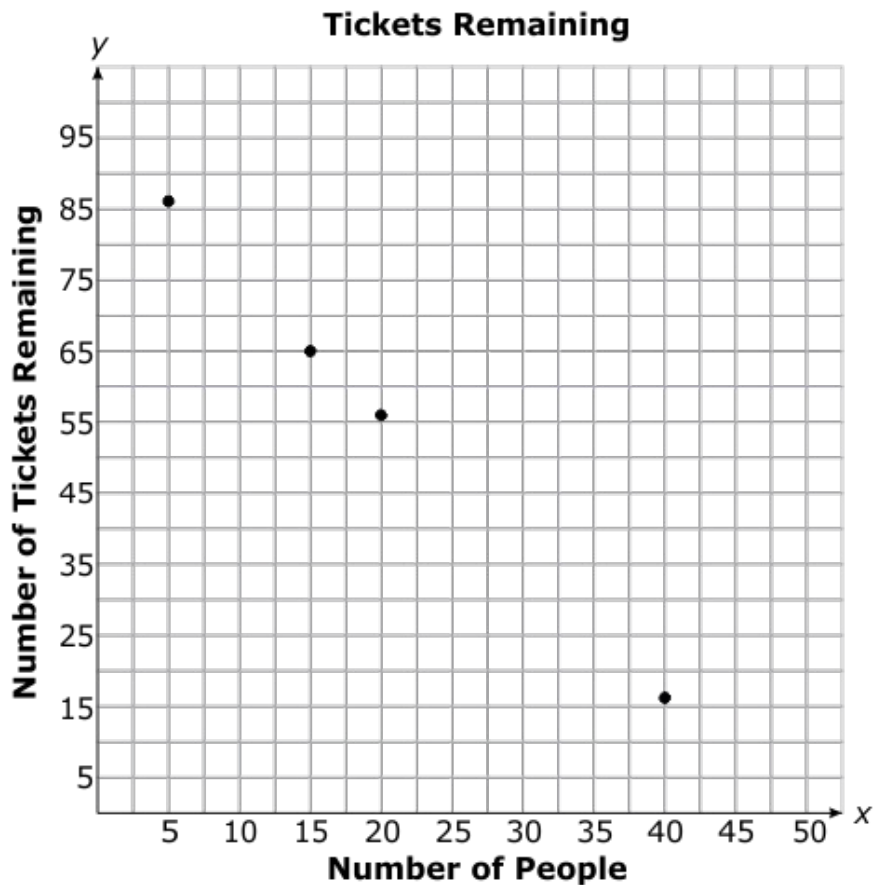
Tickets Remaining

Which equation **best** represents the number of tickets remaining, y, after handing out tickets to x people?

A. $y = 95 - 1.5x$

B. $y = 100 - 2x$

C. $y = 105 - 2.5x$

D. $y = 110 - 3x$

61. The graph shows Adrian's age compared to his height over several years.

Adrian's Age and Height
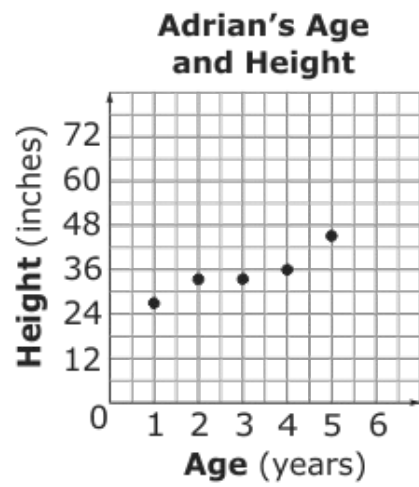
Which equation would **best** fit the data?

A. $y = x + 20$

B. $y = x + 30$

C. $y = 5x + 20$

D. $y = 5x + 30$

62. Justin is saving to buy a car. The graph below shows the total amount he has saved over 7 months.

Justin's Savings
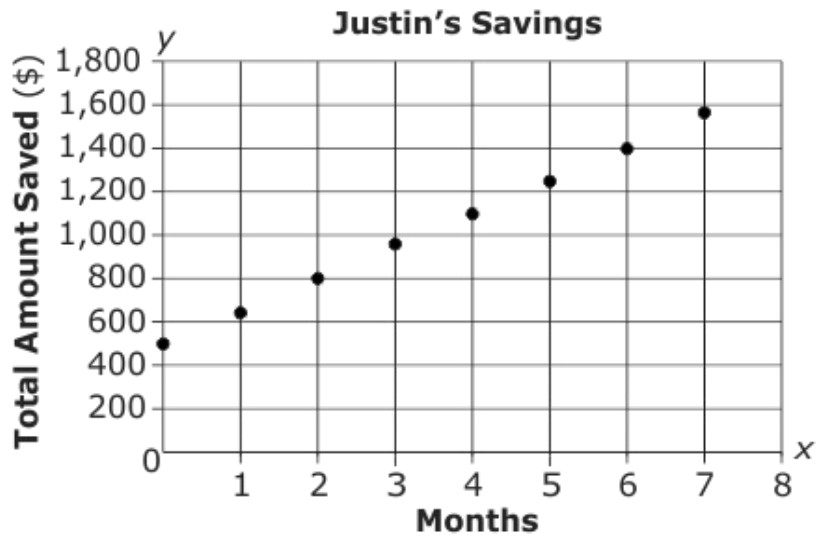
Which equation would *best* fit this data?

A. $y = {}^-500x + 150$

B. $y = {}^-150x + 500$

C. $y = 500x + 150$

D. $y = 150x + 500$

63. The scatterplot below shows what a city charges for water based on the amount of water used (CCF).

Cost of Water per Family
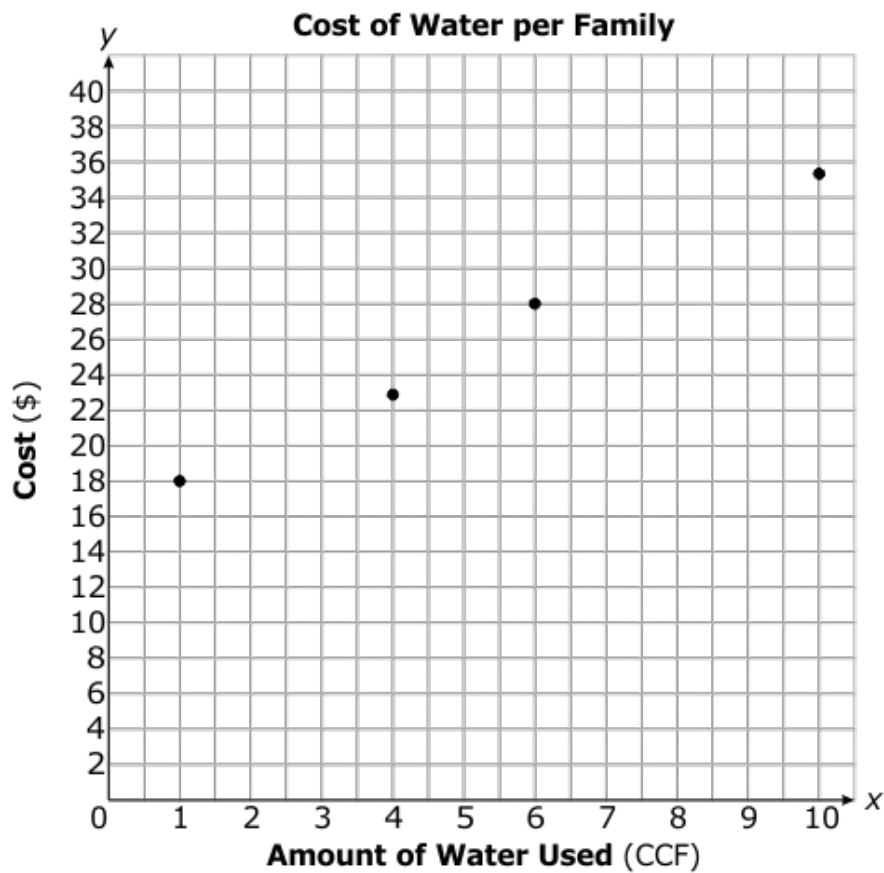
Using a linear model, which equation **best** fits the data?

A. $y = x + 2$

B. $y = x + 15$

C. $y = 2x + 2$

D. $y = 2x + 15$

64. For 4 nights, Nadia compares the amount of tips she receives working in a restaurant to the number of customers she serves. She plots her data on the graph below.

Tips Earned Based on Number of Customers
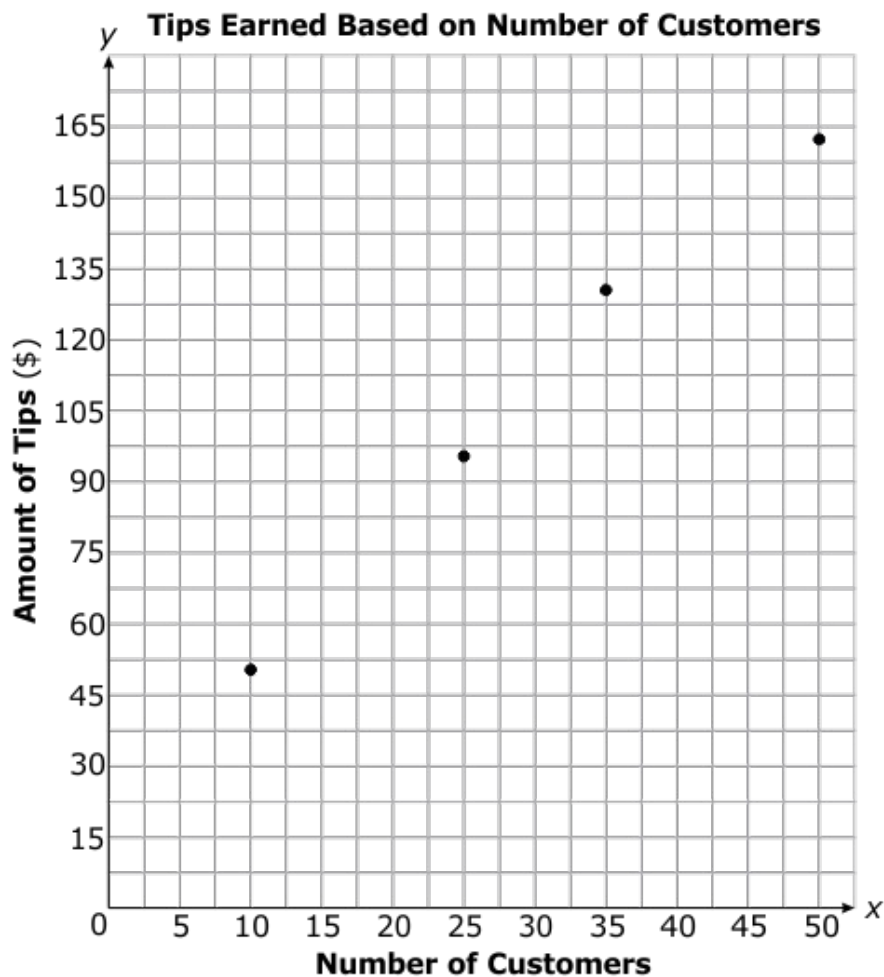
Based on the data in the scatterplot, which equation could Nadia use to estimate the amount of tips, y, based on the number of customers, x?

A. $y = 3x$

B. $y = 5x$

C. $y = 3x + 25$

D. $y = 5x + 25$

65. The graph below shows the number of hours students studied for a test and the score they received.

Study Time vs. Score
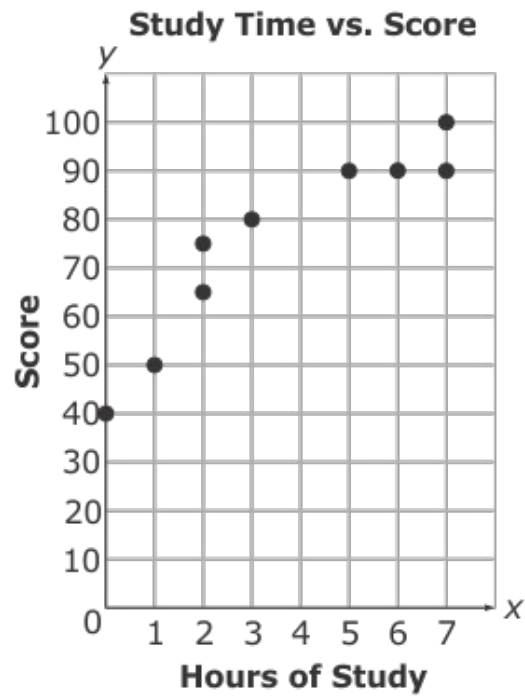
Which equation *best* fits the data?

A. $y = 10x + 50$

B. $y = 10x - 50$

C. $y = 50x + 10$

D. $y = 50x - 10$

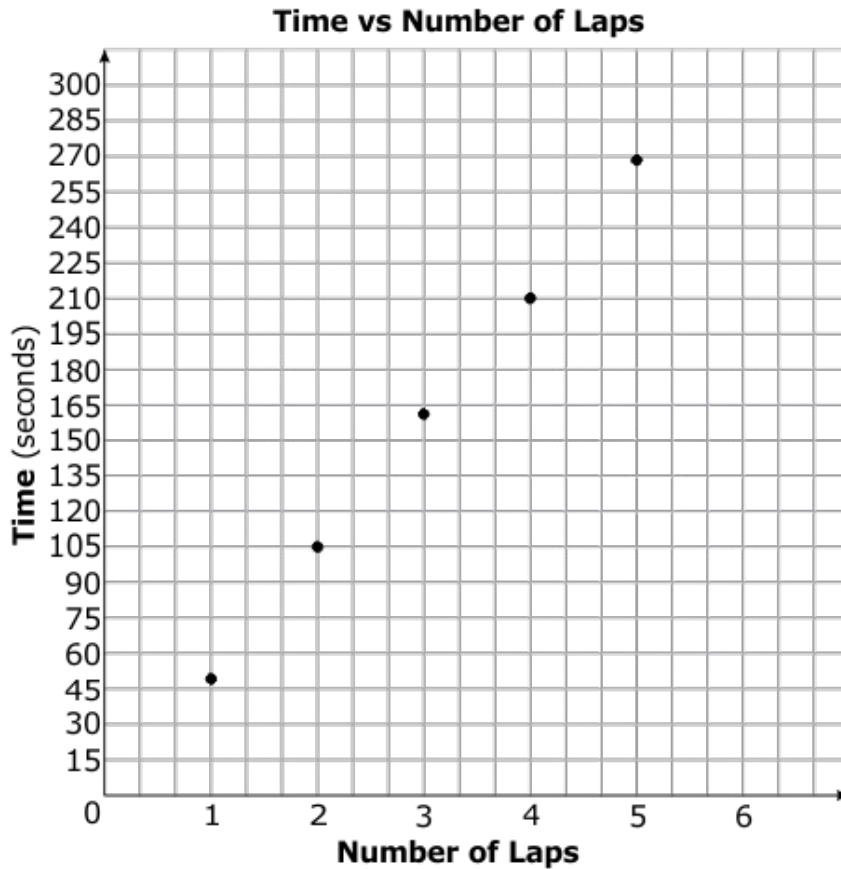66. Lucy recorded the amount of time it takes her to jog each of 5 laps around a playground. The graph of her data is shown below. She models the data with the equation $y = 54x$.

Time vs Number of Laps

Which statement **best** describes how the model fits the data?

A. The model is a good fit to the data because each point lies close to the line.

B. The model is a good fit to the data because it goes through the first and last points.

C. The model is a poor fit to the data because the line does not go through each of the points.

D. The model is a poor fit to the data because the slope of the line is incorrect.

67. **Javier made a scatterplot to show the data he collected on the growth of a plant.**

Plant Growth
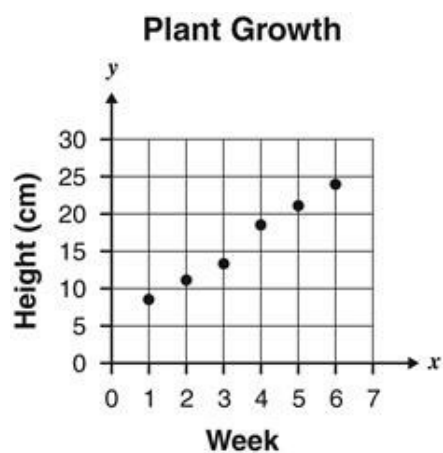

Which equation best represents Javier's data?

A. $y = 3.25x$

B. $y = x + 3.25$

C. $y = 3.25x + 4.60$

D. $y = 4.60x + 3.25$

68. Maria is creating a scatter plot for a science lab she is doing. She plotted the data from her lab on a grid and drew a line to represent the relationship between the variables as shown below. Which of these statements **best** describes whether or not Maria's line is the line of best fit?
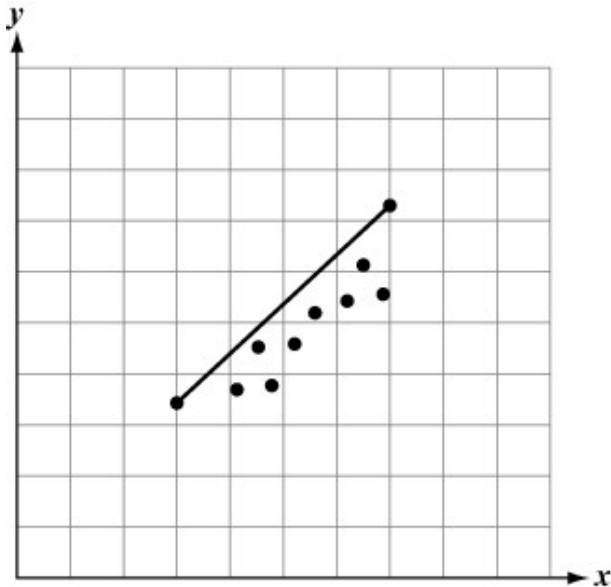
A. Maria's line is the best fit because it is close to all the data points.

B. Maria's line is the best fit because the line passes through the first and last data points.

C. Maria's line is not the best fit because it does not pass through the majority of the data points.

D. Maria's line is not the best fit because it does not represent the majority of points that are below it.

69. A play director collected data for each performance of a play. Then she created a scatter plot and a line of best fit to show how the number of tickets sold and total admission fees per performance related graphically.

Play Performance Data
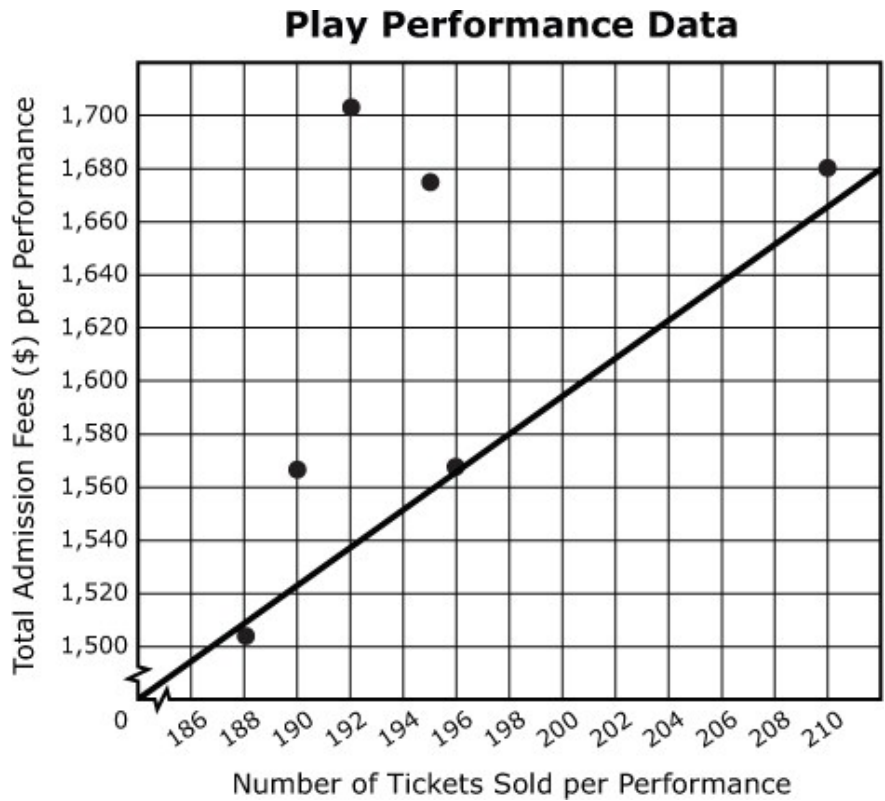
Which statement **best** explains why the line of best fit is or is **not** appropriate for this data?

A. It is, since the *y*-intercept of the line goes through 0.

B. It is, since it passes through some of the data points.

C. It is not, since the line does not pass through all of the data points.

D. It is not, since the data points are not balanced on both sides of the line.

70. **Which equation is closest to the line of best fit in the graph below?**
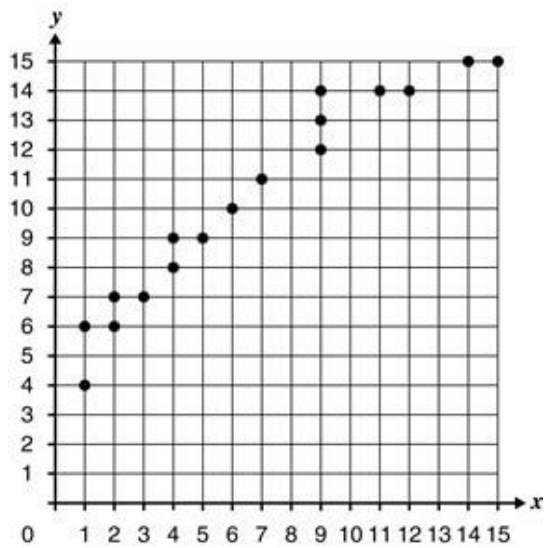
A. $y = 0.9x + 3$

B. $y = 0.7x + 6$

C. $y = 0.8x + 5$

D. $y = 13$

71. Each point on the scatter plot below represents the number of hours a student studied for a test and the student's test scores.

STUDENTS' TEST SCORES AND HOURS OF STUDY
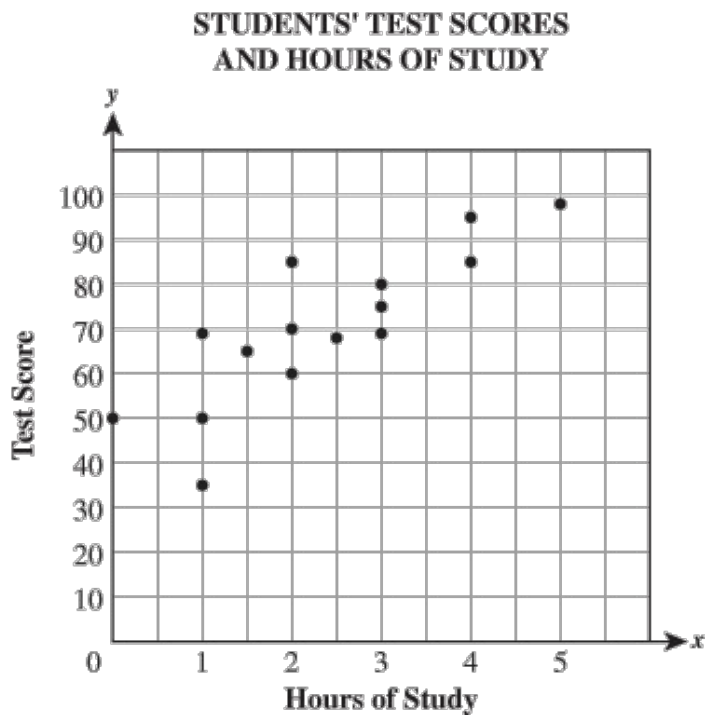
Which equation is the closest approximation to the line of best fit?

A. $y = -10x + 92$

B. $y = 6x + 59$

C. $y = 10x + 45$

D. $y = 15x + 30$