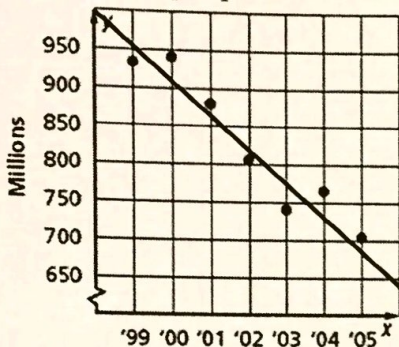# HW 5-4: Lines of Best Fit

1. The scatter plot shows the number of CDs (in millions) that were sold from 1999 to 2005. Using the graph, predict about how many CDs were sold in 2006?

Approximately 640 millions

The table and scatter plot show the predicted annual cost for a middle income family to raise a child from birth until adulthood.

Cost of Raising a Child Born in 2003					
Child's Age	3	6	9	12	15
Annual Cost ($)	10,700	11,700	12,600	15,000	16,700
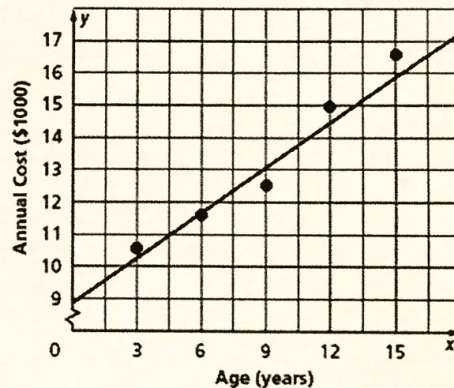
2. What type of correlation is shown by the scatter plot?

3. Which equation matches the line of best fit for the scatter plot?

    a. $y = \dfrac{3}{5}x + 9$ b. $y = x + 8$

    c. $y = 3x + 9$ (d.) $y = \dfrac{2}{3}x + 9$

The table shows the average and maximum life spans of several types of animals in a zoo.

Longevity (years)								
Avg.	12	25	15	8	35	40	41	20
Max.	47	50	40	20	70	77	61	54

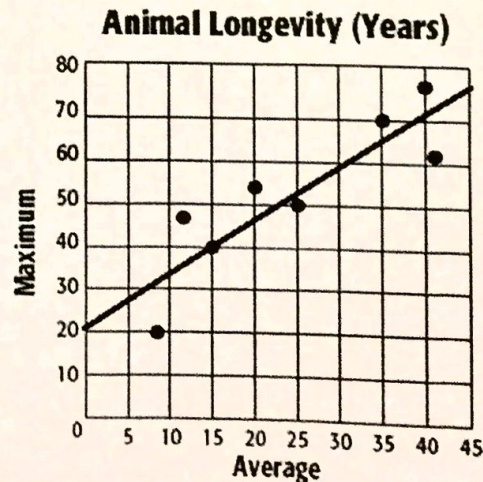4. What type of correlation exists in the scatter plot?

5. Write the equation for the line of best fit.

$$y = \frac{4}{3}x + 20$$

6. Use the equation to predict the maximum longevity for an animal with an average longevity of 33 years.
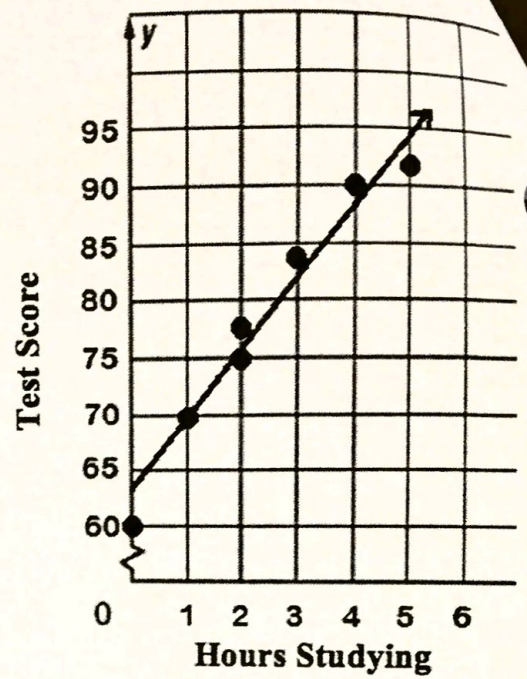
7. Use the equation to predict the maximum longevity for an animal with an average longevity of 50 years.

87 years max.

Animal Longevity (Years)

The table and scatter plot gives the number of hours spent studying for a science exam and the final exam grade.

| Study Hours	3	2	5	1	0	4	3
Grade	84	77	92	70	60	90	75

8. What is the equation for the line of best fit?

9. Use your equation to predict the grade for a student who studied for 6 hours.

100

10. Could the line of best fit go on forever? Why or why not?

The percent of adults who smoke, recorded every few years since 1967, suggests a negative linear correlation with no outliers. A line was fit to the data to model the relationship.
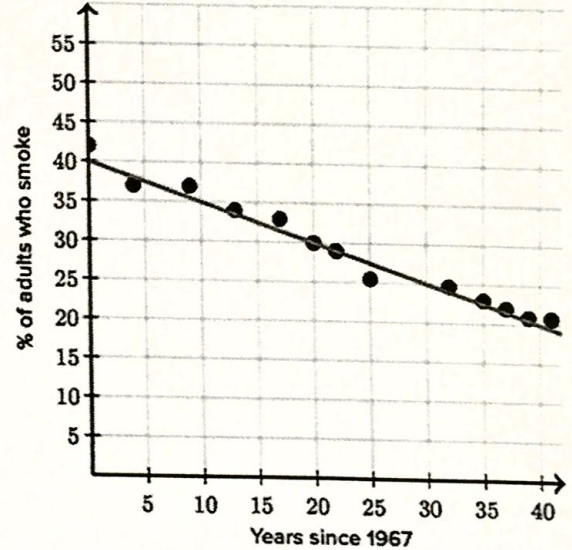
11. Which of the following best matches the equation of the line?

(a.) $y = -.5x + 40$
b. $y = -x + 40$
c. $y = -2x + 40$
d. $y = -3x + 40$

12. Using the equation you selected predict the percent of adults who smoke in 2016. (Note: 2016 is 49 years since 1967)


Daniel wanted to predict how far he could hike based on the time he spends on the hike. He collected some data on the time (in hours) and distance (in kilometers) of some of his previous hikes. A line was fit to the data to model the relationship.
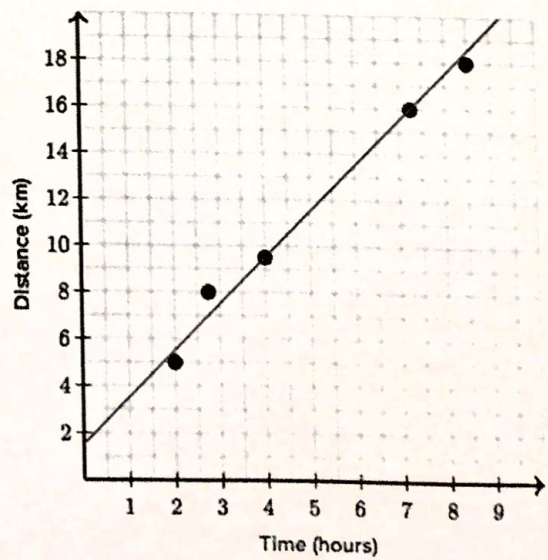
13. Which of the following is the equation for the line of best fit?

(a.) $y = x + 1.5$

b. $y = 1.5x + 1$

c. $y = 2x + 2$

d. $y = 4x - 1.5$

A baseball coach places baseballs in a cart. He uses the baseballs to pitch to the players during practice. The number of baseballs remaining in the cart after different practice lengths, in minutes, is displayed in the scatter plot below.

Baseballs Remaining in Cart
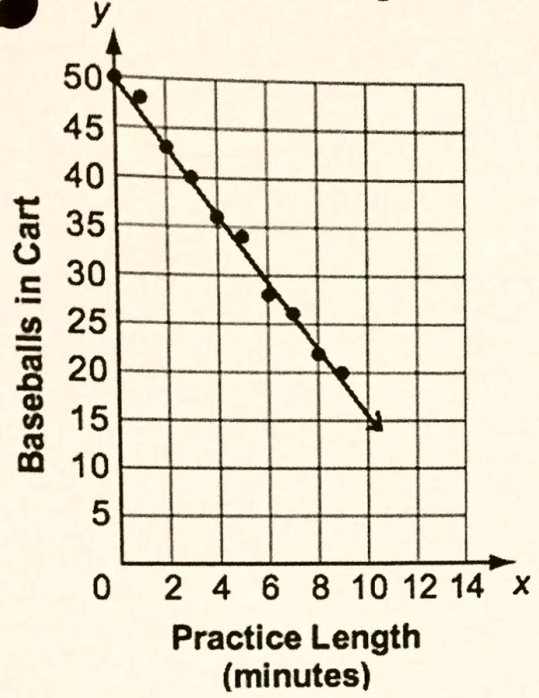
14. Write the equation for the line of best fit.

15. How many baseballs would you expect to remain after a thirteen minute practice?
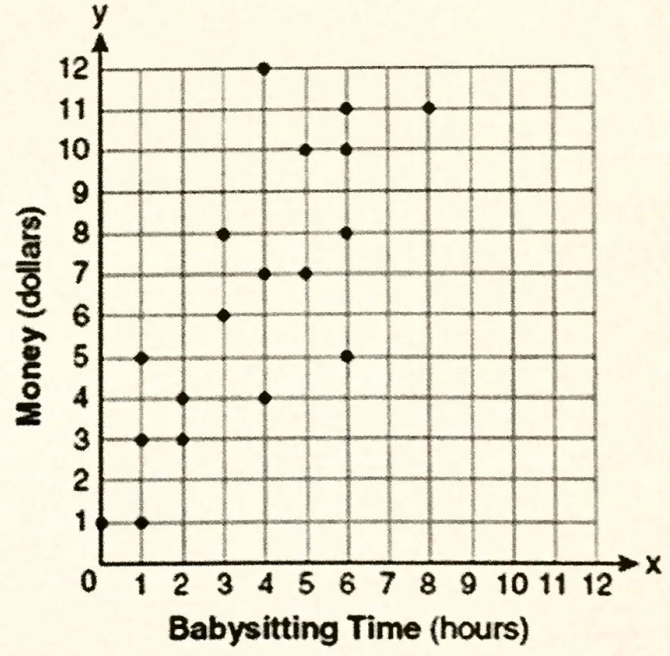
6 - 7 baseballs

16. Does it make sense to have the line of best fit go on forever? Why or why not?

17. Which equation matches the situation in the scatter plot about babysitting?

a. $y = x$

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

c. $y = \frac{3}{2}x + 4$

(d.) $y = \frac{3}{2}x + 1$

**Money Earned from Babysitting**

Ferris Wheel Data

18. Which statement is true about the scatterplot?

A. All Ferris wheels built before 1980 must have been less than 60 meters high.

B. Based on the line of best fit, Ferris wheel heights increase about 25 meters every 10 years.

C. Each Ferris wheel is taller than all Ferris wheels that were built earlier.

D. Each year, more Ferris wheels were built than the year before.
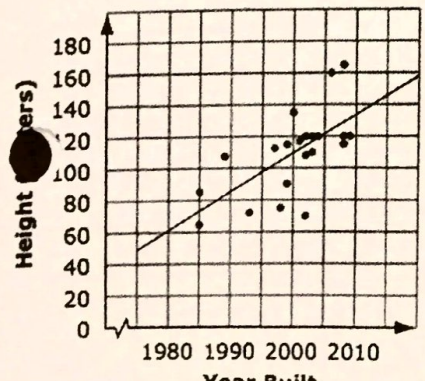
The scatter plot shows the average price of a major-league baseball ticket from 1997 to 2006.

Baseball Ticket Prices
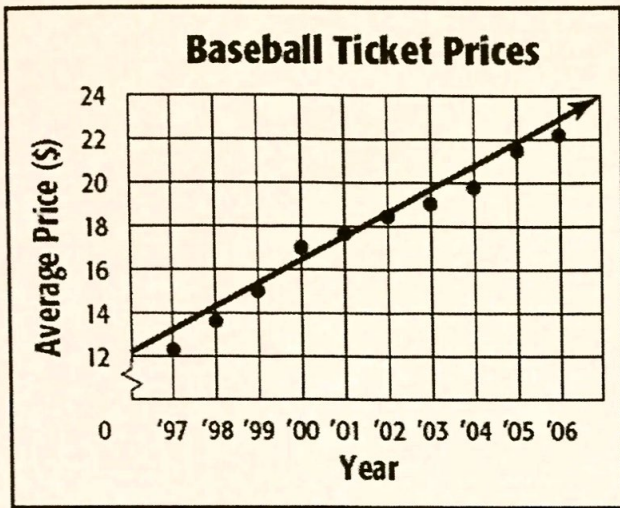
19. Use the points (2001, 17.60) and (2002, 18.75) to write the slope- intercept form of the equation for the line of best fit shown in the scatter plot.

$$y = 1.15x + 12.2$$

20. What would be the expected ticket price in 2009?