

5.3 Lines of Best Fit

Line of Fit: A line that is used to describe the data.

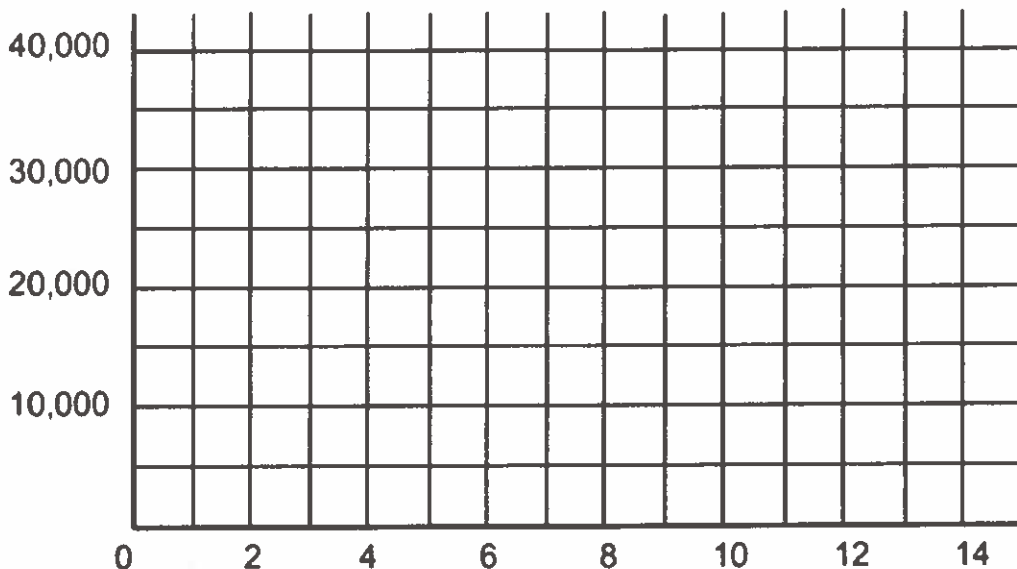
Ex.: The table shows the average cost of a jet boat in the years after 2000. Write an equation to represent the data. Then, use the equation to predict the cost of a jet boat in 2005 and 2025.

Years since 2000	Cost (\$)
0	17,663
1	19,144
2	21,176
3	20,584
4	23,280
6	24,443
7	27,784
8	28,088
9	29,774
10	32,752
11	34,082
12	35,589
13	37,618

$$2005 \rightarrow x = 5$$

$$2025 \rightarrow x = 25$$

1. Draw a line of best fit.



2. Draw a line of best fit. (Try to draw a straight line that cuts through the middle of the data.)
 3. Write an equation. (Using two points that the line either passes through or is the closest to)

$$y = 1511.68x + 17074.79$$

4. Use the equation to make the two predictions.

$$\begin{aligned} x &= 5 \\ 1511.68(5) + 17074.79 \\ &= \$24633.19 \end{aligned}$$

$$\begin{aligned} x &= 25 \\ 1511.68(25) + 17074.79 \\ &= \$54866.79 \end{aligned}$$

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Ex.: The data show the median price of an existing home from 2010 to 2015.

	0	1	2	3	4	5
Year	2010	2011	2012	2013	2014	2015
Price	222,900	226,900	238,400	258,400	275,200	296,500

- a. Use the points (1, 226.9) and (4, 275.2) to write your equation for the line of fit in slope-intercept form where x is the number of years since 2010 and y is the median price in thousands of dollars.

$$\frac{\Delta y}{\Delta x} = \frac{48.3}{3} = 16.1$$

↑
m

$$y = mx + b$$

$$226.9 = 16.1(1) + b$$

$$226.9 = 16.1 + b$$

$$\underline{-16.1 \quad -16.1}$$

$$y = 16.1x + 210.8$$

$$b = 210.8$$

- b. If the trend continues, what will be the approximate median price of an existing home in 2025?

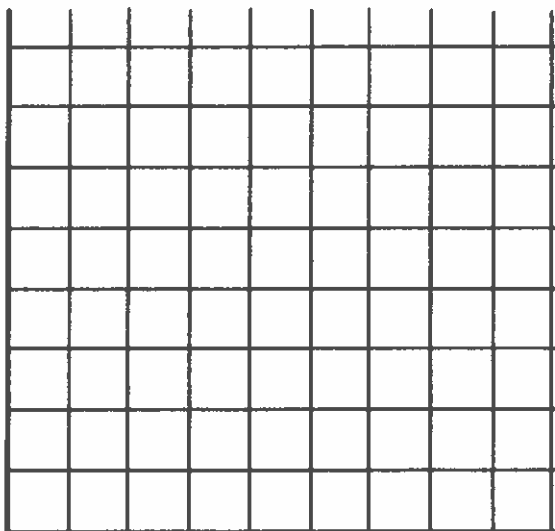
↓
x = 15

$$y = 16.1(15) + 210.8$$

$$y = 452.8 \rightarrow \$452,300$$

Ex.: The table shows the average length in minutes of professional baseball games in selected years.

	0	1	2	3	4	5	6
Year	2005	2006	2007	2008	2009	2010	2011
Time (min)	169	175	175	176	184	180	189



- a. Make a scatter plot and draw a line of fit

$$y = 2.82x + 169.82$$

- b. Use the data to predict the average length of a baseball game in 2023. Round to the nearest tenth.

↓
x = 18

$$2.82(18) + 169.82$$

$$= 220.58$$

2005 → 2023
18 years