7.6 Key Concepts 2 Equation of a Line of Best Fit Worked Example

Example: Sabrina constructs a digital fuel gauge as a science project. She installs it in her father's car, and monitors the fuel remaining in the tank during a drive to Ottawa. The data are shown in the table. Determine the line of best fit for these data. Use the line to predict the fuel remaining after 4.0 h of driving.

Time(h)	Fuel Remaining (L)
0.00	50.0
0.25	47.8
0.50	46.1
0.75	43.7
1.00	41.5
1.25	40.1
1.50	38.3
1.75	35.9
2.00	34.1
2.25	31.8

Solution: Enter the data into your graphing calculator. Then, use the linear regression function to find the line of best fit:

$$F = -8h + 50$$

To find the fuel remaining after 4.0 h, substitute 4.0 for h:

$$\begin{aligned} F &= -8(4.0) + 50 \\ &= 18.0 \text{ L} \end{aligned}$$

The fuel remaining after 4.0 h is 18.0 L.

Practice:

1. Antonio kept track of his salary during his career as an engineer. The data are shown in the table. Determine the line of best fit for these data. Use the line to predict his salary after 33 years.

Experience(years)	Salary($1000)
0.00	45.0
3.00	50.5
6.00	55.2
9.00	58.9
12.00	64.0
15.00	69.8
18.00	75.2
21.00	80.3
24.00	84.6
27.00	90.4

2. Tanya tracked the price of each share of Fly-By-Night Airlines for 10 weeks. The data are shown in the table. Determine the line of best fit for these data. Use the line to predict the value of the shares after 15 weeks.

Week	Price per Share($)
1	18.2
2	20.8
3	24.1
4	27.5
5	29.9
6	32.8
7	36.1
8	39.5
9	42.8
10	45.0

Answers:
1. $S = 1.7y + 45$, $100 000
2. $P = 3w + 15$, $60