### Lesson 6 Practice Problems

1. Han creates a scatter plot that displays the relationship between the number of items sold, $x$, and the total revenue, $y$, in dollars. Han creates a line of best fit and finds that the residual for the point $\left(12,1,​000\right)$ is 75. The point $\left(13,930\right)$ has a residual of -40. Interpret the meaning of -40 in the context of the problem.
2. The line of best fit for a data set is $y=1.1x+3.4$. Find the residual for each of the coordinate pairs, $\left(x,y\right)$.
	1. $\left(5,8.8\right)$
	2. $\left(2.5,5.95\right)$
	3. $\left(0,3.72\right)$
	4. $\left(1.5,5.05\right)$
	5. $\left(-3,0\right)$
	6. $\left(-5,-4.86\right)$
3. Plots of the residuals for four different models of the same data set are displayed. Which of the following represents the plot of the residuals from a model that fits its data best?
	1. 
	2. 
	3. 
	4. 
4. A local car salesperson created a scatter plot to display the relationship between a car's sale price in dollars, $y$, and the age of the car in years, $x$.
* The scatter plot and the line of best fit are displayed in the graph.
* 
* The car salesperson looks at the residuals for the car sales.
	1. For a car that is 4 years old, does the salesperson sell above or below her average selling price? Explain your reasoning.
	2. For a car that is 12 years old, does the salesperson sell above or below her average selling price? Explain your reasoning.
1. *Technology required.*
* Data about the outside temperature and gas used for heating a building are given in the table.
* Use a graphing calculator to create the line of best fit for the data.

| * temperature(deg F) $x$
 | * gas usage(therms) $y$
 |
| --- | --- |
| * 58
 | * 5,686
 |
| * 62
 | * 7,373
 |
| * 64
 | * 5,805
 |
| * 67
 | * 5,636
 |
| * 70
 | * 3,782
 |
| * 73
 | * 3,976
 |
| * 74
 | * 3,351
 |
| * 74
 | * 3,396
 |
| * 75
 | * 2,936
 |
| * 73
 | * 3,078
 |
| * 65
 | * 4,549
 |
| * 59
 | * 7,022
 |
| * 58
 | * 6,106
 |
| * 62
 | * 4,566
 |
| * 64
 | * 4,608
 |
| * 67
 | * 5,790
 |
| * 70
 | * 6,501
 |
| * 73
 | * 3,843
 |

* 1. What is the equation of the line of best fit for this data? Round numbers to the nearest whole number.
	2. What is the slope of the line of best fit? What does it mean in this situation?
	3. What does the line of best fit estimate for gas usage when the outside temperature is 59 degrees Fahrenheit?
	4. How does the actual gas usage compare to the estimated gas usage when the outside temperature is 59 degrees Fahrenheit?
* (From Unit 3, Lesson 5.)



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