

NAME: _____

UNIT 4 • DESCRIBING DATA

Lesson 2: Working with Two Categorical and Quantitative Variables

Practice 4.2.3: Analyzing Residuals

To understand the density of a deer population, Lewis counts the deer in different areas of a forest. He records the deer in each portion of the forest below. Use the data for problems 1–4.

Acres of forest	Deer population
5	10
8	0
10	0
14	42
20	100
22	66
30	90
45	180
50	100
58	116

1. Create a scatter plot showing the deer population in each acreage.
2. Lewis states that the population can be estimated using the equation $y = 2x + 22$. Draw the line of the equation on the scatter plot.
3. Does it appear that this line is a good fit for the data? Explain.
4. Use a residual plot to determine if a linear function is a good fit for the data.

continued

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Skylar has a savings account. She records the balance in the account each year. Use the data for problems 5–8.

Years	Account balance in dollars (\$)
2	551
3	578
4	608
5	638
6	670
7	704
8	739
9	776

5. Create a scatter plot of the account balances.
6. Skylar estimates that the account balance can be represented by the equation $y = 32x + 483$. Draw the line of the equation on the scatter plot.
7. Does it appear that this line is a good fit for the data? Explain.
8. Use a residual plot to determine if a linear function is a good fit for the data.

Esmeralda is training for a marathon. She records the distance and time of her recent runs in the table below. Use the data for problems 9 and 10.

Distance in miles	Time in minutes
10	120
11	115.5
12.5	121.25
15	168
16.8	169.68
19	163.4
21	224.7
22	228.8
24	230.4

9. Create a scatter plot of the running times.
10. Esmeralda determines that her time can be approximated using the equation $y = 9x + 19$. Use a residual plot to determine if a linear function is a good fit for the data.