

NAME: \_\_\_\_\_

## UNIT 4 • DESCRIBING DATA

### Lesson 2: Working with Two Categorical and Quantitative Variables

#### Practice 4.2.2: Solving Problems Given Functions Fitted to Data

Racecar tracks vary in length. A racecar driver records the time it takes him to circle various tracks once at top speed. The distance of the track and his time to circle each track once are listed in the table below. Use the data to answer the questions that follow.

Time in minutes	Track length in miles
0.42	1.5
0.15	0.53
0.42	1.5
0.43	1.4
0.82	2.5
0.31	1
0.56	2
0.26	0.9
0.15	0.5
0.75	2.7

1. Create a scatter plot of the data set.
2. Would a linear or exponential function be a better estimate for the data? Explain.
3. Which equation is a better fit for the data:  $y = 2.3x$  or  $y = 3.3x$ ? Use a graph to support your answer.
4. Approximately how long would it take the driver to circle a track that is 1.8 miles long?
5. It takes the driver 0.6 minutes to circle a track. Approximately how long is the track?

*continued*

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The value of a car decreases over time. Bethan buys a car for \$20,000. Each year, she determines how much her car is worth. She records the value of her car each year in the table below. Use the data to answer the questions that follow.

Year	Value in dollars (\$)
1	20,000
2	16,000
3	14,500
4	13,200
5	12,000
6	11,000
7	10,000

6. Create a scatter plot showing the value of her car over time.
7. Would a linear or exponential function be a better estimate for the data? Explain.
8. Is  $y = 20,000(1.10)^x$  or  $y = 20,000(0.90)^x$  a good estimate for the data? Use your graph to explain why or why not.
9. Bethan wants to sell her car when it's worth approximately \$9,000. After how many years should Bethan sell it? Use your graph to explain your answer.
10. How much will her car be worth in 12 years?