

**LESSON 5.2** Assignment

Name \_\_\_\_\_ Date \_\_\_\_\_

**America's Next Top Polynomial Model**  
**Modeling with Polynomials**

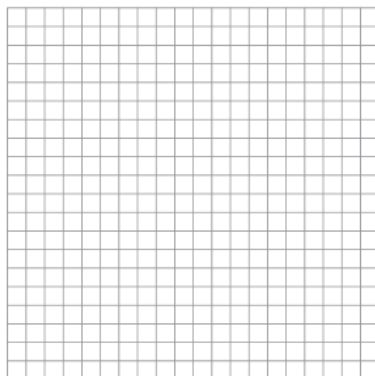
1. John Earvin's free throw percentage has fluctuated each year since he became a professional basketball player. The table displays his free throw percentage for each year of his career. John did not play during his 7th and 12th years due to injury.

Time Since Becoming a Professional Player (years)	Free Throw Percentage
1	47.1
2	47.9
3	50.2
4	51.5
5	53.0
6	51.4
7	Did Not Play
8	54.7
9	58.3
10	61.4
11	63.3
12	Did Not Play
13	66.0
14	65.2

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- a. Create a scatter plot of the data on the given coordinate plane. Predict the type of polynomial that best fits the data. Explain your reasoning.

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- b. Use a graphing calculator to determine the regression equation for the data. Round decimals to the nearest thousandth. Sketch the regression equation on the coordinate plane with the scatter plot. How well does the regression equation model the given data? Explain your reasoning.

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c. Consider the data and your regression equation. Predict John's free throw percentage if he had played in his 7th year. How accurate is this prediction? Explain your reasoning.

d. Consider the data and your regression equation. Predict John's free throw percentage in his 15th year. How accurate is this prediction? Explain your reasoning.

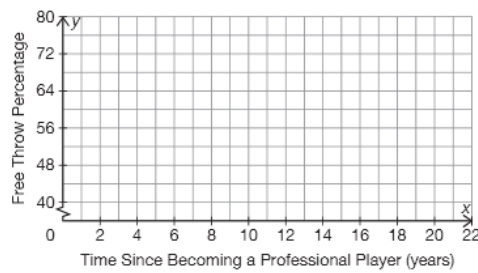
e. Consider the data and your regression equation. Predict John's free throw percentage in his 18th year. How accurate is this prediction? Explain your reasoning.

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- f. Consider the data and your regression equation. Predict the year(s) when John's free throw percentage is at least 70%. Explain your reasoning.
- g. For what interval(s) is the model appropriate for the problem situation? Explain your reasoning.
- h. Sketch a polynomial curve that you believe accurately predicts John's free throw percentage over a 20-year career. Explain your reasoning.



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- i. Predict the type of polynomial that you sketched in part (h). Explain your reasoning.

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