

Name \_\_\_\_\_

# 6-6B Lesson Master

**Questions on SPUR Objectives**  
See Student Edition pages 446–449 for objectives.

In 1 and 2, use a system of equations or quadratic regression to find a quadratic function containing the three points.

1.  $(-2, -22), (0, 12), (2, 10)$

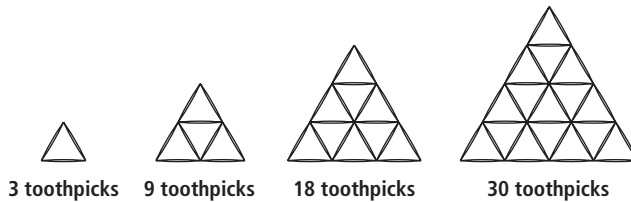
2.  $(2, 0), (4, 4), (6, 4)$

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## REPRESENTATIONS Objective J

3. Lola is studying geodesic domes, domes constructed of nearly equilateral connected triangles. She made some models of connected triangles with toothpicks, as pictured below. The side of the first figure is 1 toothpick long, the side of the second figure is 2 toothpicks long, and so on.



a. At the right, draw the next figure with a side 5 toothpicks long.

b. How many toothpicks are required?

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c. Use a quadratic model to find a formula for  $t(s)$ , the number of toothpicks in a figure whose side is  $s$  toothpicks long.

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d. Use your formula to find the number of toothpicks in a figure with a side 6 toothpicks long. Then, at the right, draw the figure with a side 6 toothpicks long to verify that your formula is correct.

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e. How many toothpicks would be required for a figure with a side 50 toothpicks long?

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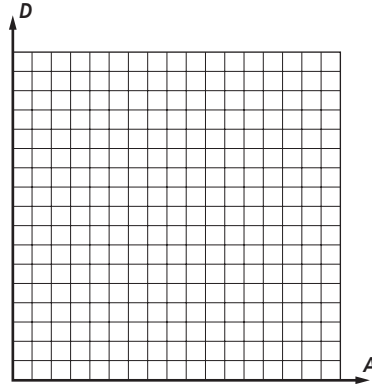
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4. The table below gives the average amount donated to a university alumni fund last year.

<b>Age of Alumnus <math>A</math></b>	24	30	40	50	60	70
<b>Donation <math>D</math></b>	\$28	\$32	\$47	\$71	\$88	\$115

a. Draw a scatterplot of the data at the right.



b. Fit a quadratic model to these data using data of your choice.

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c. Plot your quadratic model on your scatterplot at the right.

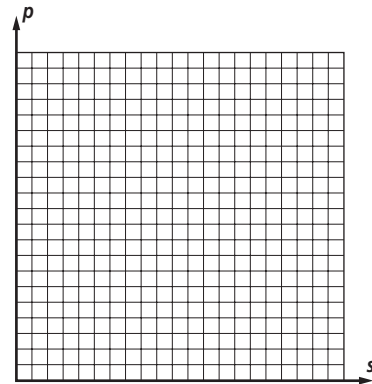
d. Use your model to predict the average amount donated by 80-year-old alumni.

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5. The table below gives the prices of a company's HDTVs.

<b>Size <math>s</math> (in.)</b>	5	9	13	19	25	31	35
<b>Price <math>p</math> (\$)</b>	240	158	125	275	610	1145	1690

a. Draw a scatterplot of the data at the right.



b. Fit a quadratic model to these data using the data for the 5-, 19-, and 31-in. televisions.

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c. Plot your quadratic model on your scatterplot at the right.

d. Use your model to predict the cost of a 39-inch television.

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6. In which of Questions 3, 4, and 5 does your quadratic model fit the data exactly?

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