Check Understanding **1** Graph each set of points. Which model is most appropriate for each set?

a. $(-1.5, -2), (0, 2), (1, 4), (2, 6)$
b. $(-1, 1), (0, 0), (1, 1), (2, 4)$
c. $(-1, 0.5), (0, 1), (1, 2), (2, 4)$

You can also analyze data numerically to find the best model.

In Lesson 5-6, you learned that the terms of an arithmetic sequence have a common difference. You can model an arithmetic sequence with a linear function.

x	y
−2	−2
−1	2
0	6
1	10
2	14

x-values: + 1, + 1, + 1, + 1
y-values: + 4, + 4, + 4, + 4

The *y*-coordinates have a common difference of 4. A linear model fits the data.

In Lesson 8-6, you learned that the terms of a geometric sequence have a common ratio. You can model a geometric sequence with an exponential function.

x	y
−2	$\frac{1}{9}$
−1	$\frac{1}{3}$
0	1
1	3
2	9

x-values: + 1, + 1, + 1, + 1
y-values: × 3, × 3, × 3, × 3

The *y*-coordinates have a common ratio of 3. An exponential model fits the data.

Data from quadratic functions show a different pattern. For linear data, the first differences are the same. For quadratic data, the second differences are the same. If data have a common second difference, then you can model them with a quadratic function.

x	y
−1	16
0	2
1	−2
2	4
3	20
4	46

x-values: + 1, + 1, + 1, + 1, + 1
first difference: − 14, − 4, + 6, + 16, + 26
second difference: + 10, + 10, + 10, + 10

The *y*-coordinates have a common second difference of 10. A quadratic model fits the data.