Reteaching

1.5 Representing Linear Patterns

◆ **Skill A** Finding the first differences and writing an equation to represent data patterns

Recall If the top row of a data table starts at 0 and increases by 1 in each column, you can find the first difference by subtracting the numbers in the second row.

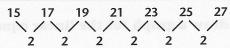
♦ Example

Find the first differences, and write the equation that represents the pattern.

	0	1	2	3	4	5	6
Ī	15	17	19	21	23	25	27

♦ Solution

First differences:



To write the equation, use the numbers in the top row for the independent variable and the numbers in the bottom row for the dependent variable. Notice that when x = 0, y = 15.

Write $y = 15 + (first difference) \times x$.

The first difference is 2.

The equation is y = 15 + 2x.

Check another point, such as x = 4, in the table:

 $y = 15 + 2 \cdot 4 = 15 + 8 = 23$

This y-value, 23, matches the one in the table.

Find the first differences for each data set, and write an equation to represent the data pattern.

- 1. 0 1 2 3 4 5 6 8 10 12 0 2 4 6
- 2. 0 2 3 4 5 6 1 13 9 5 1 25 21 17
- 3 4 5 6 3. 0 1 2 -7 -1-4 -10-13-16-19
- 1 2 4. 0 3 4 6 -15-10-50 5 -25-20