6.1 Representing Patterns

Explore Patterns

The following notes provide guidelines to help you adapt the Explore Patterns section from *MathLinks 9*.

- Have students complete the Warm Up to review patterns in a table of values.
- Remind students that a linear equation can be written two different ways (e.g., $y = 10x$ or $10x = y$).
- Help students organize their observations by creating a chart for them to use. For example,

Course Number				
Length of Course				

- For #6b), encourage students to use their equation to find the length of Course 23. Show them how to continue the sequence in the table to find the length.

Examples

Working Example 1:

- Encourage students to label the patterns they see in the table of values. For example, if the second column is increasing by three each time, have them draw arrows from one value to the next with +3 written beside it (see the Get Ready on page 291 of *MathLinks 9 Adapted* for an example).
- Discuss the solution for part c). Ask students to explain why the first step is multiplying by 3. The second step, subtracting 2, may not be obvious to students. Show them how to use guess and check to determine this value.
- For parts d) and e), show how to find the solutions by extending the table of values. Encourage students to see the patterns in the table of values.
- For the Show You Know, encourage students to label the pattern as in the Get Ready section. Ask them, "What number do you increase by each time?" Remind them that this pattern determines the number they will multiply by in part b).

Working Example 2:

- Practise solving equations when the variable is on the left side of the equation, and when the variable is on the right side of the equation.
- Demonstrate how to check solutions algebraically by substitution.

Communicate the Ideas, Practise, and Apply

- For #5, remind students that the perimeter refers to the outer edges of the entire shape (not the sum of the lines).
- For #8, students may struggle to determine the two unknowns. Tell them that the independent variable is the number of tables, and the dependent variable is the number of people.
- Provide students who need additional practice with **BLM 6–2 Section 6.1 Extra Practice**.

Math Link

- Discuss how race courses are designed.
- Review how to find the perimeter of equilateral triangles, plot points, choose appropriate intervals, label axes, and so on.
- Reinforce the meaning of *linear relation*.

Common Errors

- If students are using the algebraic method for solving problems, they may substitute the value for the incorrect variable.

R$_x$ Encourage students to use letters that clearly indicate what each variable represents (discourage them from always using x and y). If necessary, have them write down what the letter represents beside the equation before performing the substitution.