9.3 Solving Multi-Step Inequalities

Explore Multi-Step Inequalities

The following notes provide guidelines to help you adapt the Explore Multi-Step Inequalities section from *MathLinks 9*.

- Read and discuss the introduction.
- Review how to find a strategy for solving a problem. Discuss strategies such as solving an inequality for several possible values and solving an equation for a single solution.
- Have students work in small groups to complete #1 to #4.
- Use #5 to lead a class discussion about the results of each group.

Examples

- Use the Warm Up to review how to solve two-step equations and the distributive property.
- Emphasize that a solution to an inequality is only correct if the check for the boundary point *and* a value greater than or less than are true.
- Some students may find it easier to solve the inequalities vertically. For example,

$$\begin{array}{r} \cancel{3} - 3x > 9x + 29 \\ \underline{-\cancel{3} \qquad\quad -5} \\ -3x > 9x + 24 \end{array} \qquad \begin{array}{r} -3x > 9x + 24 \\ \underline{-9x - 9x} \\ -12x > 24 \end{array} \qquad \begin{array}{r} \frac{-\cancel{12}x}{\cancel{12}} < \frac{24}{-12} \\ x < -2 \end{array}$$

Working Example 2:

- Review and discuss the meaning of *sales* and *commission*.
- Review how to change a percent to a decimal number.

Communicate the Ideas, Practise, and Apply

- Stress the importance of checking both the boundary point and the inequality of each question to see if the solution is correct.
- Students who struggle with reading and comprehension may benefit from doing the Apply questions with a stronger partner.
- Remind students to complete their solutions with a sentence that explains the situation and uses terminology that relates to an inequality.
- Provide students who need additional practice with **BLM 9–5 Section 9.3 Extra Practice**.

Math Link

- Review the vocabulary linked to revenues and expenses. Discuss examples of *variable expenses*, *variable revenues*, *fixed expenses*, and *fixed revenues*.

Common Errors

- Students may not know which number to use to verify the inequality.

R_x Remind students that the number to substitute does not matter, but a small number such as 0 is the easiest number for calculations.

- Some students may have difficulty solving an inequality when a variable appears on each side of the inequality sign.

R_x Encourage students to keep the inequality signs aligned. Suggest that they isolate the constants on the right side first, and then isolate the variables on the left side.