9.1 Representing Inequalities

Explore Inequalities

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

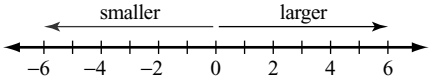
- Use the Warm Up to review plotting and reading points on a number line.
- Review the meaning of *limits*, *convenient*, *range of values*, *scale*, *maximum*, *allowable*, *whole numbers*, *minimum*, and *illegal*.
- Provide two or three hockey sticks of different lengths to use as visuals, particularly for students who do not play hockey.
- Distribute **BLM 9–2 Number Lines** for students to use when working on number lines.
- Work through the exercise as a teacher-led activity. Encourage small group discussions for #2 and #3.
- When the lesson is finished, post the definition of *inequality* and an example, such as $p \geq 12$.

Examples

- You may wish to use **Master 21 Mathematical Symbols** to review inequality signs.

Working Example 1:

- Discuss the meaning of *overtime pay*.
- Post a number line showing open and closed boundary points.
- Post a number line to remind students that the larger the number with a negative sign, the smaller it is. For example,



- For the Show You Know, discuss the meaning of *at least 16*. Ask students, "Does *at least* include 16?"
- Throughout this chapter, encourage students to always state what the variable represents.

Working Example 2:

- Discuss how to divide spaces between numbers into equal intervals. Ask students, "How do you write a whole number as a fraction?" $\frac{3}{3}$, $\frac{7}{7}$, $\frac{10}{10}$, and so on.
- For part c), encourage students to label all of the intervals between –1 and 0.
- Review how to rewrite inequalities, such as $3 < 5$ or $5 > 3$.

Working Example 3:

- Use and explain the vocabulary *with words*, *graphically*, and *algebraically* when discussing how to represent inequalities.

Communicate the Ideas, Practise, and Apply

- Provide students with **BLM 9–2 Number Lines** for help with #2 and #4.
- Discuss the meaning of the inequality symbols that represent *minimum*, *at least*, *fewer than*, *maximum*, *exceed*, and *possible values*.
- Provide students who need additional practice with **BLM 9–3 Section 9.1 Extra Practice**.

Math Link

- Discuss age and height restrictions for rides in amusement parks.
- Review how to change words to algebraic form (see Working Example 2).
- For #3, discuss ways of using words and graphics to make the rules clear.

Common Errors

- Some students may struggle with remembering which sign represents *greater than* and which sign represents *less than*.

R$_x$ Tell students that $>$ has two points at the end of each line segment on the left and only one point on the right: $\gtrdot$. Therefore, $2 > 1$, or 2 is greater than 1. The reverse is true for $<$. There is one point on the left and two points on the right: $\lessdot$. So, $1 < 2$.