Unit 4, Lesson 2

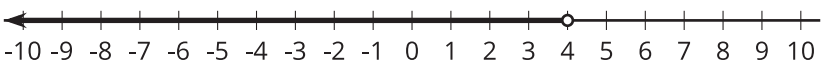
Queuing on the Number Line

Let's use a number line to reason about inequalities.

2.1 Notice and Wonder: Shaded Number Line

What do you notice? What do you wonder?

$$4 > x$$



2.2 Pick a Number

For each expression, pick a number you would like to evaluate, and tell whether it makes the inequality true. Be prepared to explain what made you choose your number.

1. $\frac{4}{3}y + 10 > 19$

   a. Pick a number you would like to test in place of y: -1, 0, 1, 3, 4, or 5. Explain why you chose your number.

   b. Does your number make the inequality true?

   c. What is a different number that is definitely a solution? How do you know?

   d. What is a different number that is definitely not a solution? How do you know?

2. $2.954x - 14.287 < 13.89$

   a. Pick a number you would like to test in place of x: -1, -0.5, 0, 0.5, 1, 3, 10, or 1,000. Explain why you chose your number.

   b. Does your number make the inequality true?

   c. What is a different number that is definitely a solution? How do you know?

   d. What is a different number that is definitely not a solution? How do you know?

3. $10 - 3y < 5$

   a. Pick a number you would like to test in place of y: -100, -3, -1, 0, $\frac{1}{3}$, $\frac{5}{3}$, 33, or 100. Explain why you chose your number.

   b. Does your number make the inequality true?

   c. What is a different number that is definitely a solution? How do you know?

   d. What is a different number that is definitely not a solution? How do you know?

4. $\frac{10x}{4} > \frac{3x}{5}$

   a. Pick a number you would like to test in place of x: -10, -5, -4, 0, 4, 5, 10, or 20. Explain why you chose your number.

   b. Does your number make the inequality true?

   c. What is a different number that is definitely a solution? How do you know?

   d. What is a different number that is definitely not a solution? How do you know?

2.3 Matching Words and Symbols

For each inequality, write 2 values that make the inequality true, write 2 values that make it false, and choose a verbal description that matches the inequality.

1. $x > 13.5$

   a. Two values that make it true:

   b. Two values that make it false:

   c. Which verbal description best matches the inequality?

      i. x is less than 13.5.

      ii. x is greater than 13.5.

      iii. 13.5 is greater than x.

2. $-27 < x$

   a. Two values that make it true:

   b. Two values that make it false:

   c. Which verbal description best matches the inequality?

      i. x is less than -27.

      ii. x is greater than -27.

      iii. -27 is greater than x.

3. $x \geq \frac{1}{2}$ and $x \leq 2.75$

   a. Two values that make it true:

   b. Two values that make it false:

   c. Which verbal description best matches the inequality?

      i. x is between $\frac{1}{2}$ and 2.75.

      ii. 2.75 is less than x is less than $\frac{1}{2}$.

      iii. x is greater than $\frac{1}{2}$.

4. $x \geq -\frac{19}{4}$ and $x \leq \frac{1}{2}$

   a. Two values that make it true:

   b. Two values that make it false:

   c. Which verbal description best matches the inequality?

      i. x is between $\frac{1}{2}$ and $-\frac{19}{4}$.

      ii. x is less than $-\frac{19}{4}$.

      iii. x is between $-\frac{19}{4}$ and $\frac{1}{2}$.