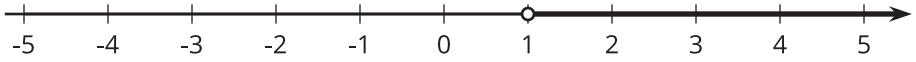
Reintroducing Inequalities

Let's work with inequalities.

13.1 Greater Than One

The number line shows values of x that make the inequality $x > 1$ true.



Select **all** the values of x from this list that make the inequality $x > 1$ true.

A. 3

B. -3

C. 700

D. 1.05

E. 1

13.2 The Roller Coaster

A sign next to a roller coaster says, "You must be at least 60 inches tall to ride." Noah is happy to know that he is tall enough to ride.

1. Noah is x inches tall. Which of the following can be true? Explain how you know.

   A. $x > 60$

   B. $x = 60$

   C. $x < 60$

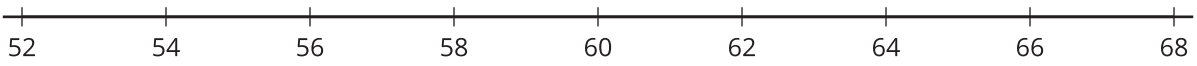
2. Noah's friend is 2 inches shorter than Noah. Can you tell if Noah's friend is tall enough to go on the ride? Explain or show your reasoning.

3. List a possible height for Noah that would mean:

   a. That his friend is tall enough to go on the ride.

   b. That his friend is not tall enough for the ride.

4. On the number line, show all the possible heights that Noah's friend could be.



5. Noah's friend is y inches tall. Use y and any of the symbols $<$, $=$, $>$ to express this height.

13.3 Is the Inequality True or False?

The table shows four inequalities and four values for x. Take turns with your partner to decide whether each value makes each inequality true, and complete the table with "true" or "false".

- For each decision you make, explain to your partner how you know it's true or false.
- For each decision that your partner makes, listen carefully to their explanation. If you disagree, discuss your thinking and work to reach an agreement.

x	0	100	-100	25
$x \leq 25$				
$100 < 4x$				
$-3x > -75$				
$10 \geq 35 - x$				

Are you ready for more?

Find an example of an inequality used in the real world and describe it using a number line.

Lesson 13 Summary

Inequalities can be used to describe a range of numbers. For example, in many places, people are eligible to get a driver's license when they are at least 16 years old. If h is the age of a person, then we can check if they are eligible to get a driver's license by checking if their age makes the inequality $h > 16$ (they are older than 16) or the equation $h = 16$ (they are 16) true. The symbol $\geq$, pronounced "greater than or equal to," combines these two cases and we can just check if $h \geq 16$ (their age is greater than or equal to 16).

The inequality $h \geq 16$ can be represented on a number line. The closed, or filled in, circle at 16 shows that 16 is a solution. The shading and arrow pointing right from 16 shows that all numbers greater than 16 are also solutions.