NAME   DATE   PERIOD
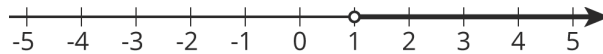
Unit 6, Lesson 13: Reintroducing Inequalities

Let's work with inequalities.

13.1: Greater Than One

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

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

   a. 3
   b. -3
   c. 1
   d. 700
   e. 1.05

2. Name two more values of x that are solutions to the inequality.

13.2: The Roller Coaster

A sign next to a roller coaster at an amusement park 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: $x > 60$, $x = 60$, or $x < 60$? Explain how you know.
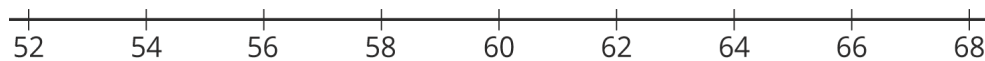
NAME _____ DATE _____ PERIOD _____

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 one possible height for Noah that means that his friend is tall enough to go on the ride, and another that means that his friend is too short for the ride.

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

52	54	56	58	60	62	64	66	68

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 possible values for x. Decide whether each value makes each inequality true, and complete the table with "true" or "false." Discuss your thinking with your partner. If you disagree, 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 in inequality used in the real world and describe it using a number line.

Lesson 13 Summary

We use inequalities to describe a range of numbers. In many places, you are allowed to get a driver's license when you are at least 16 years old. When checking if someone is old enough to get a license, we want to know if their age is at least 16. If h is the age of a person, then we can check if they are allowed 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:
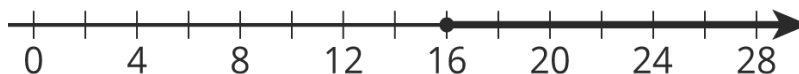
Unit 6, Lesson 13: Reintroducing Inequalities

1. For each inequality, find two values for x that make the inequality true and two values that make it false.

    a. $x + 3 > 70$

    b. $x + 3 < 70$

    c. $-5x < 2$

    d. $5x < 2$

2. Here is an inequality: $-3x > 18$.

    a. List some values for x that would make this inequality true.

    b. How are the solutions to the inequality $-3x \geq 18$ different from the solutions to $-3x > 18$? Explain your reasoning.

3. Match each sentence with the inequality that could represent the situation.

    A. Han got $2 from Clare, but still has less than $20.   1. $x - 2 < 20$

    B. Mai spent $2 and has less than $20.   2. $2x < 20$

    C. If Tyler had twice the amount of money he has, he would have   3. $x + 2 < 20$
       less than $20.

                                                        4. $\frac{1}{2}x < 20$
   D. If Priya had half the money she has, she would have less than
       $20.

4. Here are the prices for cheese pizza at a certain pizzeria:

pizza size	price in dollars
small	11.60
medium	
large	16.25

a. You had a coupon that made the price of a large pizza $13.00. For what percent off was the coupon?

b. Your friend purchased a medium pizza for $10.31 with a 30% off coupon. What is the price of a medium pizza without a coupon?

c. Your friend has a 15% off coupon and $10. What is the largest pizza that your friend can afford, and how much money will be left over after the purchase?

(from Unit 4, Lesson 12)

5. Select **all** the stories that can be represented by the diagram.
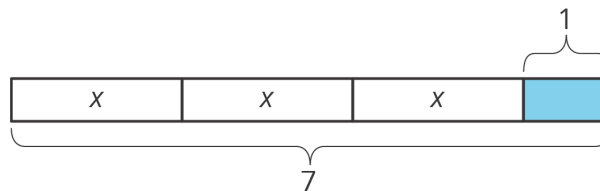
A. Andre studies 7 hours this week for end-of-year exams. He spends 1 hour on English and an equal number of hours each on math, science, and history.
B. Lin spends $3 on 7 markers and a $1 pen.
C. Diego spends $1 on 7 stickers and 3 marbles.
D. Noah shares 7 grapes with 3 friends. He eats 1 and gives each friend the same number of grapes.
E. Elena spends $7 on 3 notebooks and a $1 pen.

(from Unit 6, Lesson 4)