

PART I GET STARTED**Today's Mathematics**

Write, check, and graph inequalities that describe solution sets.

Essential Question

How does an inequality represent more than one possible value?

Name _____

Date _____

DO NOW

1. Solve $3x - 4 = 11$.

2. Place -2 , $\frac{1}{2}$, and 3 on a number line.

3. Insert $<$, $>$, or $=$: $-4 \square -1$ and $2 \square 2$.

SEE IT

A ride requires a height of at least 48 inches. Compare a rider who is 47 inches tall, one who is 48 inches tall, and one who is 52 inches tall. Which heights qualify?

Quick Write | 2 Minutes

How is the solution of an inequality different from the solution of an equation?

PART II INVESTIGATE

BUILD THE IDEA

Height h	$h > 48$	$h \geq 48$	Eligible for the ride?
47			
48			
52			

1. Use the table to explain what the words *at least* tell you about the endpoint.

2. Graph $x > 2$ and $x \geq 2$. What is the only difference between the graphs?

3. Check $x = -1$ and $x = 3$ in $2x + 1 < 5$. Explain why checking a value is different from solving the inequality.

COMPARE AND EXPLAIN

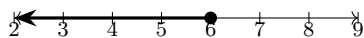
Discuss your rule with a partner. Use a specific value or a number-line model to support it.

PART III MAKE SENSE AND PRACTICE**WHAT WE CAN CONCLUDE**

An inequality compares expressions using $<$, $>$, $\leq$, or $\geq$. A solution makes the statement true. Use an open circle for $<$ or $>$ and a closed circle for $\leq$ or $\geq$. Shade left for smaller values and right for larger values.

WORKED MODEL

At most 6 tickets: $t \leq 6$. A closed circle at 6 includes 6; shade left. If tickets are counted, the context restricts t to nonnegative integers.

**FOCUSED PRACTICE**

Show your steps. Draw requested graphs in the workspace.

1. Write an inequality: a number n is at least -3 .
2. Write an inequality: three times y is less than 12.
3. Is $x = 4$ a solution of $2x - 3 \leq 5$? Show a substitution.
4. Graph $x < -2$ and $x \geq 1$ on separate number lines.
5. Write an inequality for an open circle at 5 shaded to the left.
6. A van holds at most 8 passengers. Define a variable and state the possible whole-number values.

Math Write | 5 Minutes

Explain how the circle and shading together communicate every solution. Use one example.

PART IV PUZZLE PRACTICE

Homework

What do you call a bull that's sleeping?

Complete each exercise. Match its answer to an answer-bank letter. Write that letter in every decoder box bearing the exercise number.

1. Write: a number x is greater than 25.8.
2. Write: twice x is at most $-\frac{3}{5}$.
3. Write: x minus 9.3 is more than 4.6.
4. Write: x added to 11.7 is less than 14.
5. Is $x = 6.7$ a solution of $x - 3.6 \leq 2.8$?
6. Is $x = -6$ a solution of $\frac{5}{6}x > -10$?
7. Match the graph of $x \leq -7$.
8. Match the graph of $x > 3.2$.
9. Match the graph of $x < 3\frac{1}{4}$.
10. Match the graph of $x \geq -\sqrt{121}$.

ANSWER BANK

U: $11.7 + x < 14$

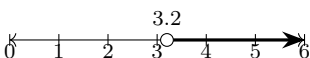
L: $x > 25.8$

D: yes

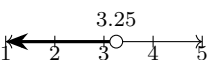
E: $2x \leq -\frac{3}{5}$

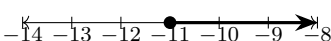
L: $x - 9.3 > 4.6$

B: no

A: 

R: 

Z: 

O: 

8	5	4	1	3	6	10	9	2	7
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