

Guided Practice



Determine which number is a solution of the inequality. (Example 1)

1. $9 + a < 17$; 7, 8, 9

Show your work.

$9 + 7 < 17$
 $16 < 17$ ✓

$9 + 8 < 17$
 $17 < 17$ ✗

2. $b - 10 > 5$; 14, 15, 16

$4 > 5$ ✗
 16

$5 > 5$ ✗
 $6 > 5$ ✓

Is the given value a solution of the inequality? (Examples 2-4)

3. $x - 5 < 5$, $x = 15$

no

$15 - 5 < 5$
 $10 < 5$ ✗

4. $32 \geq 8n$, $n = 3$

yes!

$32 \geq 24$

5. If the bakery sells more than 45 bagels in a day, they make a profit. Use the inequality $b > 45$ to determine which days the bakery makes a profit.

Is the given value a solution of the inequality? (Examples 2–4)

3. $x - 5 < 5, x = 15$

no

4. $32 \geq 8n, n = 3$

yes

5. If the bakery sells more than 45 bagels in a day, they make a profit. Use the inequality $b > 45$ to determine which days the bakery makes a profit.

(Example 5)

Day	Number of Bagels Sold
Monday	18
Tuesday	25
Wednesday	21
Thursday	36
Friday	50
Saturday	48
Sunday	40



Friday and Saturday

6.  **Building on the Essential Question** How can mental math help you find solutions to inequalities?

Mental math can help determine if a certain number makes the inequality true.

Rate Y

Is
so?



Great

Is
a?



No P
access



Independent Practice

Go online for Step-by

Determine which number is a solution of the inequality. (Example 1)

1 $1 + f < 7$; 5, 6, 7 5



2. $g - 3 > 4$; 6, 7, 8 8

Is the given value a solution of the inequality? (Examples 2–4)

3. $q - 2 > 16$, $q = 20$ yes

4. $t - 7 < 10$, $t = 28$ no

5. The table shows the number of different types of roller coasters in the United States. An amusement park wants to build a new roller coaster. They will only build a roller coaster if there are less than 10 of that type in the United States. Use the inequality $r < 10$, where r is the number of a certain type of roller coaster, to determine which type(s) can be built. (Example 5)

stand up or suspended

6. The table shows the number of different types of movies in Lavar's collection. He wants to buy a new movie to add to his collection. He only wants to buy a movie if he already has more than 15 movies of that type. Use the inequality $m > 15$, where m is the number of the type of movie, to determine which type(s) he can buy. (Example 5)

action or comedy

- 7 The number of text messages Lelah sent each month is shown in the table. She can send no more than 55 messages each month without being charged. Use the inequality $t \leq 55$, where t is the number of text messages in a month, to determine in which months she exceeded her limit. If each additional text costs \$0.25, how much was Lelah charged from January to April?

Jan. and Feb.; \$0.75

Type	Number
Sit down (steel)	530
Sit down (wood)	112
Inverted	43
Flying	10
Stand up	8
Suspended	5

Movie Type	Number
Action	18
Comedy	24
Drama	12
Thriller	15

Month	Text Messages
January	56
February	57
March	55
April	51

8. **CCSS Identify Structure** Use one-variable equations and inequalities to fill in the graphic organizer. **Sample answers are given.**

	Equation	Inequality
Example	$x + 3 = 10$	$x + 8 > 20$
Number of Solutions	one	infinitely many



H.O.T. Problems Higher Order Thinking

9. **CCSS Reason Inductively** State three numbers that are solutions to the inequality $x + 1 \leq 5$. **Sample answer: 0, 1, and 2**

10. **CCSS Persevere with Problems** If $x = 2$, is the following inequality *true* or *false*? Explain.

$$\frac{112}{8} + x \geq 15 + 4x - 7$$

true; $\frac{112}{8} + 2 \geq 15 + 4(2) - 7$, so $16 \geq 16$

11. **CCSS Reason Abstractly** If $a > b$ and $b > c$, what is true about the relationship between a and c ? Explain your reasoning.

$a > c$; Sample answer: If $a > b$, then it is to the right of b on the number line. If $b > c$, then it is to the right of c on the number line. Therefore, a is to the right of c on the number line.

12. **CCSS Construct an Argument** Explain why inequalities of the form $x > c$ or $x < c$, where c is any rational number, have infinitely many solutions.

Sample answer: In $x > c$, any rational number greater than c would make the inequality true. In $x < c$, any rational number less than c would make the inequality true.

13. **CCSS Persevere with Problems** Analyze the relationship between the inequalities in each pair of inequalities below. Then write the integers that are solutions to each pair of inequalities.

- a. $y > 4$ and $y \leq 6$ 5 and 6
b. $x \geq -3$ and $x < 0$ -3, -2, and -1
c. $m < 5$ and $m > 3$ 4
d. $r < -1$ and $r > 0$ none

