Student Notes

Explore Activity - Understanding Inequalities

Work with a partner!
(Problems 1 – 5)

1) **Consider the statement "Your friend is more than 3 minutes late."**

Circle each number that makes the statement true.

−3 −2 −1 0 1 2 3 **4** **5** **6**

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2) **Consider the statement "The temperature is at most 2 degrees."**

- Can the temperature be exactly 2 degrees? Explain.
- Circle each number that makes the statement true.

−5 **−4** **−3** **−2** **−1** **0** **1** **2** 3 4

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3) **Consider the statement "You need at least 4 pieces of paper for your math homework."**

- Can you have exactly 4 pieces of paper? Explain.
- Circle each number that makes the statement true.

−3 −2 −1 0 1 2 3 **4** **5** **6**

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4) **Consider the statement "x is a number such that $x < 2$."**

- Can the number be exactly 2? Explain.
- Circle each number that makes the statement true.

−5 **−4** **−3** **−2** **−1** **0** **1** 2 3 4

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5) **Consider the statement "x is a number such that $x \geq 1$."**

- Can the number be exactly 1? Explain.
- Circle each number that makes the statement true.

−5 −4 −3 −2 −1 0 **1** **2** **3** **4**

6.EE.8 (ALT 1) – Writing and Graphing Inequalities

Section 1 Things you need to know about Inequalities

- An ***inequality*** is a mathematical sentence that compares expressions.
- Symbols used to represent inequalities:

$<$	Less than
$>$	Greater than
$\leq$	Less than or Equal to
$\geq$	Greater than or Equal to

- Notice that the "=" symbol is not an inequality symbol. That is because with an inequality, you will have many, many possible solutions.

Section 2 Writing Inequalities

To ***write an inequality***, the following phrases may help you determine which inequality symbol to use.

Inequality Symbols				
Symbol	$<$	$>$	$\leq$	$\geq$
Key Phrases	• is less than • is fewer than	• is greater than • is more than	• is less than or equal to • is at most • is no more than	• is greater than or equal to • is at least • is no less than

Teacher Guided Practice

Directions: Write an inequality to represent each situation. Then circle the possible solutions to the inequality you wrote.

1) Caleb has at least \$5. Write: $x \geq 5$ Circle: 0 3 4 **(5 7 10 21)**

2) Tarek has more than \$5. Write: $x > 5$ Circle: 0 3 4 5 **(7 10 21)**

3) Vanessa has at most \$5. Write: $x \leq 5$ Circle: **(0 3 4 5)** 7 10 21

4) Li Chen has less than \$5. Write: $x < 5$ Circle: **(0 3 4)** 5 7 10 21

5) The speed of sound is approximately 768 miles per hour. When an object travels faster than the speed of sound, it creates a sonic boom. Write an inequality to represent, ***s***, the speeds at which a moving object creates a sonic boom.

Write: $s > 768$ Circle: 700 767 **(768 775 790 800 868)**

You Try!

6) Miguel's scooter can travel at a maximum speed of 45 miles per hour. Write an inequality that models all the speeds, ***s***, at which Miguel's scooter can travel?

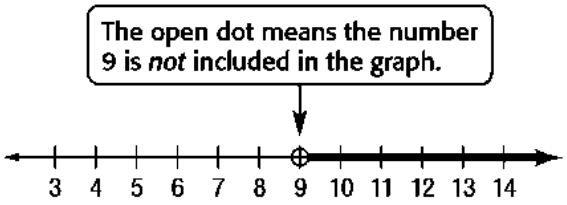
Write: $s \leq 45$ Circle: **(4 11 20 44 45)** 46 50

Section 4 Graphing Inequalities

Graph each inequality on a number line.

1) $n > 9$

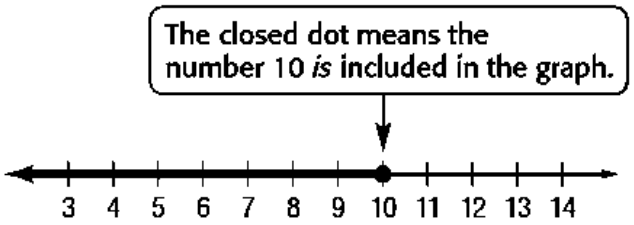
Place an open dot at 9. Then draw a line and an arrow to the right.



The values that lie on the line make the sentence true. All numbers greater than 9 make the sentence true.

2) $n \leq 10$

Place a closed dot at 10. Then draw a line and an arrow to the left.



All numbers 10 and less make the sentence true.

Teacher Guided Practice

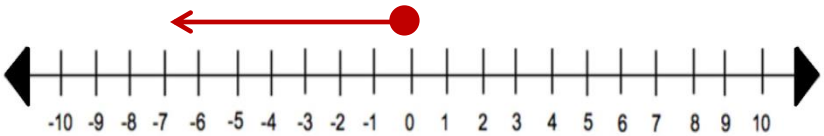
When graphing an inequality use: ● ≤ or ≥ ○ < or >

1) $p > 2$

2) $x \geq 6$

3) $x < -5$

4) $w \leq 0$



You Try!

5) $n \geq -9$

6) $a < 1$