

Graph Inequalities

Lesson 7-5

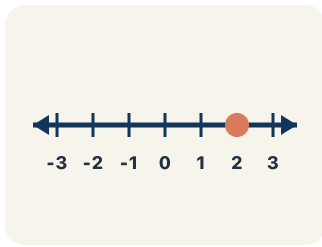
Name: _____

Date: _____

Class: _____

Key Vocabulary Level 2 Standard

Picture first, then the word, then a plain-language meaning. Say each word out loud.



*A horizontal line with marks at 0, 1, 2, 3, ...
showing where values fall*

Number line

Write the definition:

*$x > 5$: open circle at 5 means 5 itself is NOT a
solution, but 5.1, 6, 7, ... are*

Open circle

Write the definition:

*$x \geq 5$: closed circle at 5 means 5 IS a solution, and
so are 6, 7, 8, ...*

Closed circle

Write the definition:

*For $x > 3$, the solution set includes 3.1, 4, 5, 10, 100
— any number greater than 3*

Solution set

Write the definition:

$x \geq 3$ is an inequality; it is graphed as a closed circle on 3 with an arrow to the right.

Inequality

Write the definition:



For $x > 5$, the boundary point is 5, shown with an open circle.

Boundary point

Write the definition:

Guided Notes Level 2 Standard



WHAT WE'RE LEARNING TODAY

I can graph the solutions of an inequality on a number line.



Fill in each blank as we go. Use the Word Bank to help you.



WORD BANK – FILL EACH BLANK WITH THE BEST WORD

Number line

Open circle

Closed circle

Solution set

Inequality

Boundary point



Tap any word to see what it means and a picture.

1 A line with numbers in order used to show values and solutions is a

2 A hollow circle that shows a value is NOT included, used for $<$ or $>$, is an

3 A filled-in circle that shows a value IS included, used for \leq or \geq , is a

4 All the values that make an inequality true form the .


5 A math sentence comparing two amounts with $<$, $>$, \leq , or \geq is an

6 The number where the solution set begins on the number line is the



Watch & Try – Worked Examples

See the notes in action: watch one worked all the way through, then try the next with the same steps.

 **I do – watch**


Follow each step as your teacher solves it.

Problem: Which graph represents $x < 5$?

- A. Open circle at 5, shaded left
- B. Closed circle at 5, shaded left
- C. Open circle at 5, shaded right
- D. Closed circle at 5, shaded right

Step 1 $x < 5$ means 5 is NOT included (open circle) and values less than 5 are shaded (left).

Answer: A. Open circle at 5, shaded left

 **We do – together**

Solve this one with your class using the same steps.


Problem: Which graph represents $x \geq 3$?

- A. Closed circle at 3, shaded right
- B. Open circle at 3, shaded right
- C. Closed circle at 3, shaded left
- D. Open circle at 3, shaded left

Step 1 _____

Step 2 _____

Answer: _____

 **You do — your turn**

Now try one on your own. Show every step.

Problem: Which graph represents $x > 8$?

- A. Open circle at 8, shaded right
- B. Closed circle at 8, shaded right
- C. Open circle at 8, shaded left
- D. Closed circle at 8, shaded left

Show your work:

Try It

Solve on your own. Check the answer key when you are done.

1. Clue: the witness ran more than 15 feet, so $d > 15$. On the number line, what do you draw?

- A. Open circle at 15, shade right
- B. Closed circle at 15, shade right
- C. Open circle at 15, shade left
- D. Closed circle at 15, shade left

Show your work:

2. Clue: the getaway car held at most 4 suspects, so $s \leq 4$. How is this graphed?

- A. Closed circle at 4, shade left
- B. Open circle at 4, shade left
- C. Closed circle at 4, shade right
- D. Open circle at 4, shade right

Show your work:

Stretch Your Thinking

Level 2 enrichment

Challenge task — explain your reasoning in full sentences.

A theme park has two rides. Ride A requires height $h > 48$ inches. Ride B requires height $h \geq 48$ inches. A child is exactly 48 inches tall. Which ride can they go on?

Explain using number line graphs for both inequalities.

Sentence starter: For Ride A ($h > 48$), the graph has a ___ circle at 48. Since $48 > 48$ is ___, the child ___ ride A. For Ride B ($h \geq 48$), the graph has a ___ circle at 48. Since $48 \geq 48$ is ___, the child ___ ride B.

Show your work:

Reflect — Exit Ticket

How would you graph the inequality $x \geq 9$?

- A. Closed circle at 9, shaded right
- B. Open circle at 9, shaded right
- C. Closed circle at 9, shaded left
- D. Open circle at 9, shaded left

Your answer:
