



MATH WITH MR DJ

GRADE 6 · EXPRESSIONS & EQUATIONS

WRITING & GRAPHING INEQUALITIES

Today's goal: I can write inequalities in the form $x > c$ or $x < c$ to represent a constraint or condition in a real-world problem, write inequalities in the form $x > c$ or $x < c$ to represent a constraint or condition in a mathematical problem, identify that inequalities in the form $x > c$ or $x < c$ have infinitely many solutions and represent solutions of inequalities in the form $x > c$ or $x < c$ on number line diagrams.



Tan



Digit



Blaze



Pi



'You must be more than 12 to ride'

- 1 Write that as an inequality.

TURN & TALK

can a 12-year-old ride?



Four phrases, four symbols

1 more than $\rightarrow >$ · less than $\rightarrow <$

2 at least $\rightarrow \geq$ · at most $\rightarrow \leq$

REMEMBER

The line under the symbol includes the boundary.



BIG IDEA 2

$$x > 12$$

1 12 itself does NOT qualify ($12 > 12$ is false).

2 Open circle at 12, arrow pointing right.

REMEMBER

Open circle = the boundary is excluded.



BIG IDEA 3

Closed circle for $\geq$ and $\leq$

1 Speed limit 65 $\rightarrow x \leq 65 \rightarrow$ driving exactly 65 is legal.

2 Closed circle at 65, arrow pointing left.

REMEMBER

Real limits usually include the boundary.



BIG IDEA 4

Infinitely many solutions

- 1 $x > 0$ is true for 1, 2, 100, 0.5, 0.0001...
- 2 You cannot list them all — that is why we draw the range.

REMEMBER

An inequality answers with a region, not a number.



SPOT THE SLIP!

Turn & talk

Something went wrong here...

THE PROBLEM

Write an inequality for at least 10 and say which circle you would draw.

WHAT A STUDENT DID

Wrote $x > 10$ with an open circle.

YOUR MISSION

What went wrong? What's the right answer?



Write an inequality for at least 10
and say which circle you would draw.

1 'At least' includes 10, so the circle is filled in.

2 Arrow points right.

Answer: $x \geq 10$; closed circle



Pick your pepper!



MILD

Write an inequality for **more than 7**. Is 7 a solution?

#1 on your practice sheet



MEDIUM

Write an inequality for **at most 25** and describe its graph.

#3 on your practice sheet



SPICY

A website requires users to be at least 13. Write an inequality, describe the graph, and give three different values that satisfy it.

#6 on your practice sheet

How's it going?



3 • Got it!

I could teach it



2 • Almost

One more example, please



1 • Not yet

I need some help

NOW YOU!

Practice sheet: everyone does Mild & Medium, then climb the peppers.

Stuck? Look back at Mr DJ's example at the top of the sheet.

Need it again? Step-by-step videos on YouTube @MathWithMrDJ

Brain break: 3 new daily puzzles at puzzles.mathwithmrdj.com

