HOW MANY SOLUTIONS?

LEARNING GOAL

1. I can tell when a compound inequality has no solution, one solution, or many solutions.

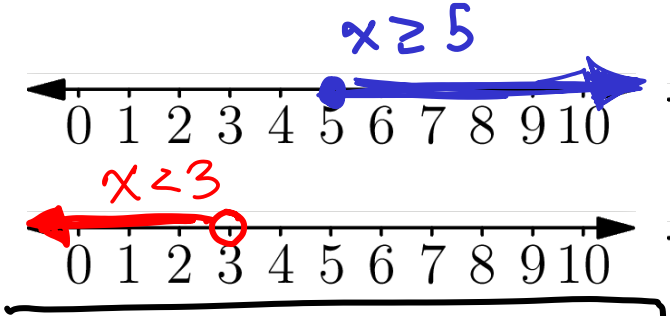
POSSIBILITIES

No solution

$x \geq 5$

and

$x < 3$

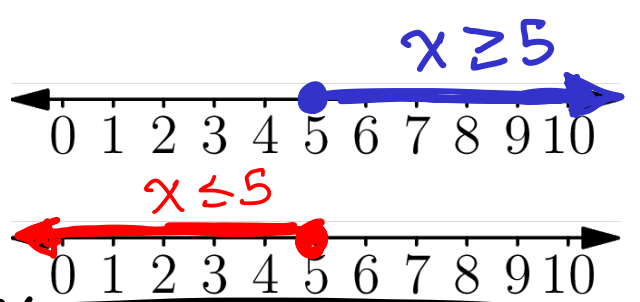


One solution

$x \geq 5$

and

$x \leq 5$

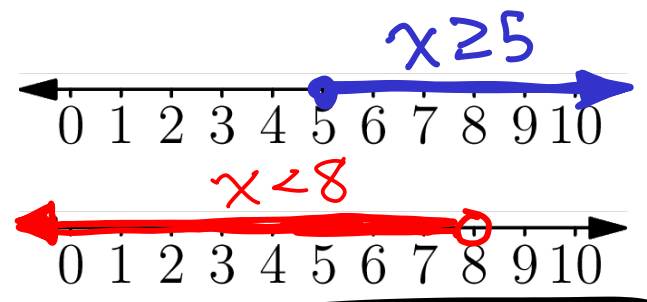


Many solutions

$x \geq 5$

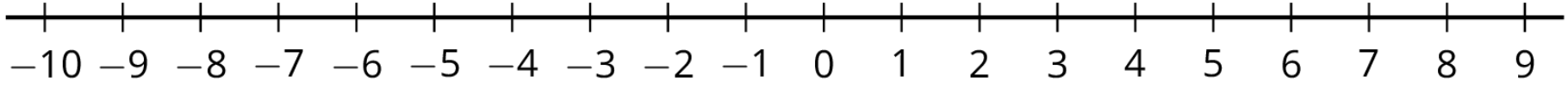
and

$x < 8$



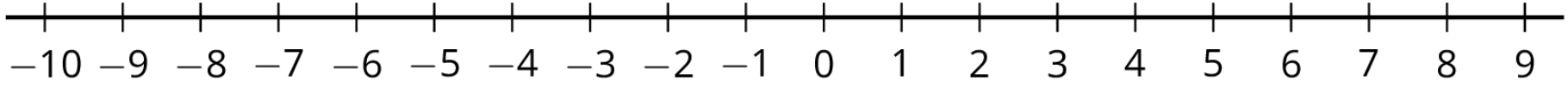
EXAMPLE 1

Solve: $x - 3 \leq -2$ and $2x - 1 > 3$. Graph the solution set on the number line.



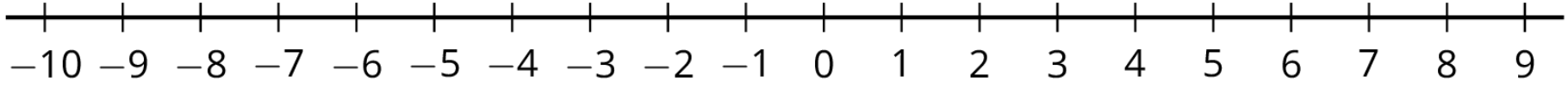
EXAMPLE 2

Solve: $3 - x \geq -5$ and $x - 3 \geq 5$. Graph the solution set on the number line.



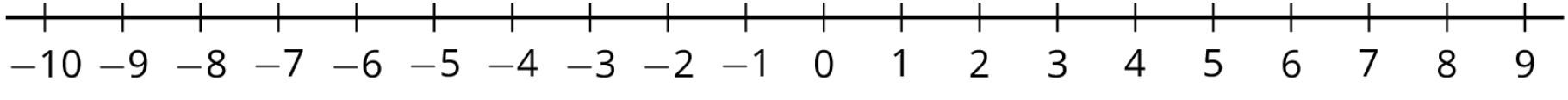
EXAMPLE 3

Solve: $x - 3 \leq -2$ or $2x - 1 > 3$. Graph the solution set on the number line.



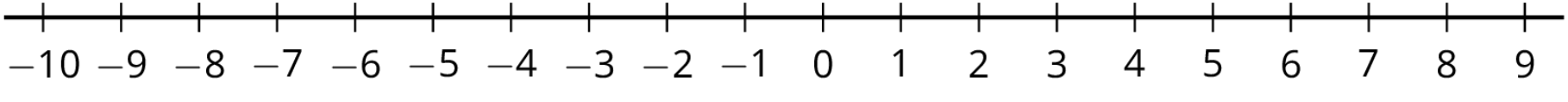
EXERCISE 1

Solve: $2x - 5 < 15$ and $2x > 10$. Graph the solution set on the number line.



EXERCISE 2

Solve: $10 - 3x \geq 25$ and $3x + 10 \geq 10$. Graph the solution set on the number line.



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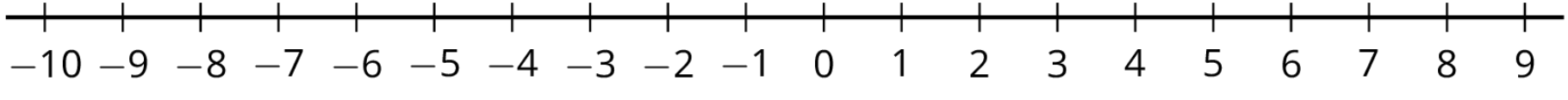

EXERCISE 4

Solve: $8 - 6x \geq 20$ and $6x - 8 \geq -20$. Graph the solution set on the number line.