Introduction to Linear Inequalities

What is an inequality?

We use inequalities to model situations that can be described by a range of numbers instead of a single number.

When one quantity is....

less than $<$

greater than $>$

less than or equal to $\leq$

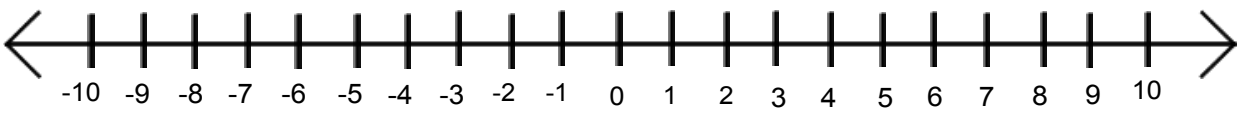
greater than or equal to $\geq$

Which of these inequalities describes the time, *t* minutes, for which a car could be legally parked?

$t > 30$ $t \geq 30$

$t < 30$ $t \leq 30$

The Number Line



Define a variable and write an inequality for each of the following situation:

Variable: *s,* speed

Inequality: $s \leq 55$

Variable: *t,* temperature

Inequality: $t < 4$

Variable: *h,* height

Inequality: $h \geq 102$

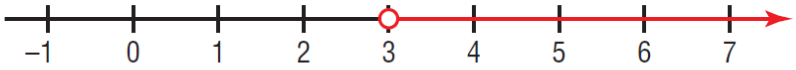
Variable: *a*, age

Inequality: $a \geq 14$

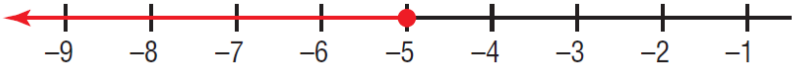
Pg 291 Graphing inequalities

We can illustrate the solutions of an inequality by graphing them on a number line.

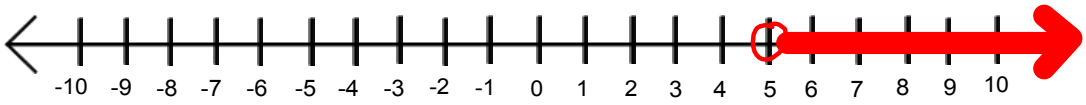
For $a > 3$, the solution is all numbers greater than 3. Since 3 is not part of the solution, we draw an open circle at 3 to indicate this.



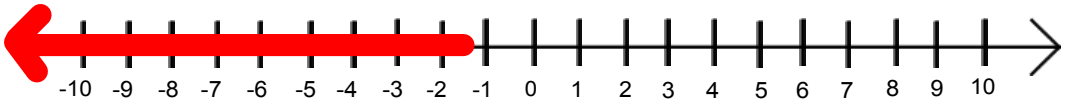
For $b \leq -5$, the solution is all numbers less than or equal to -5. Since -5 is part of the solution, we draw a shaded circle at -5 to indicate this.



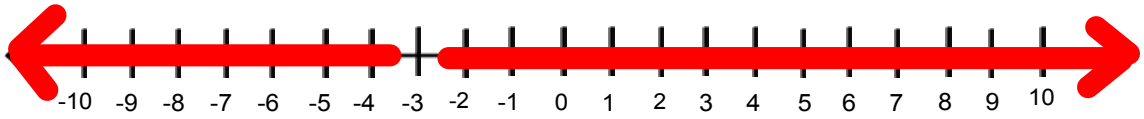
5 < p



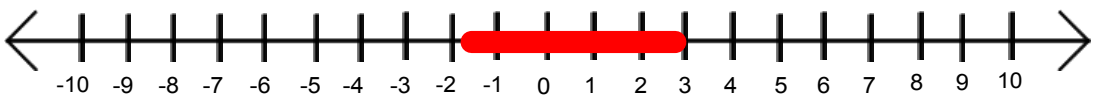
-1 ≥ t



r ≠ -3

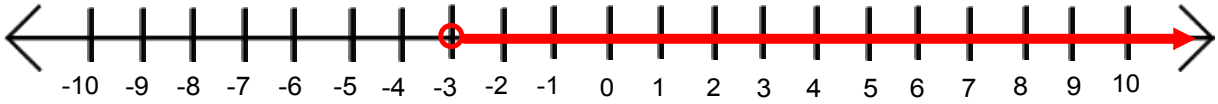


-2 < y < 3

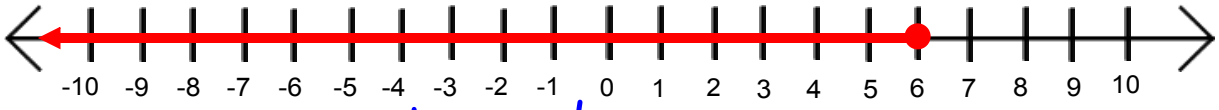


Obtain the inquality from the graph:

$x > -3$

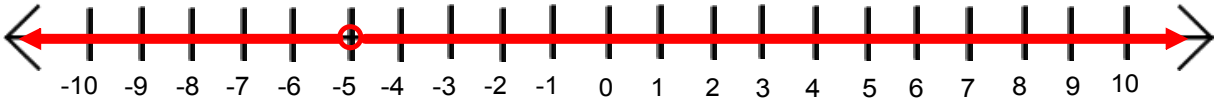


$x \leq 6$



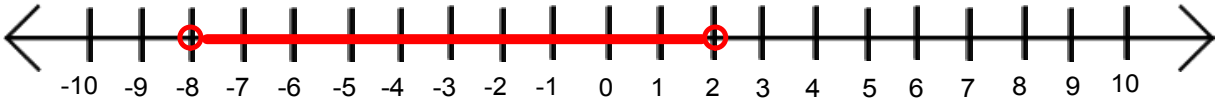
$x \neq -5$ (not equal to)

$x > -5$ and $x < -5$

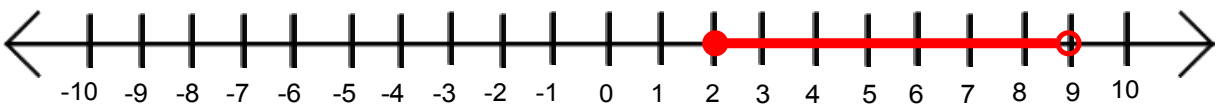


$x > -8$ and $x < 2$

$-8 < x < 2$



$2 \leq x < 9$



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