

Inequalities

What is an inequality?

- An inequality is a statement that compares two expressions.
- A **solution** of an inequality is any value of the variable that makes the inequality true.
 - For example, in the inequality $y > -3$, 2 is a solution, because $2 > -3$.

Example

- Tell whether each number is a solution of the inequality $x \leq 3$

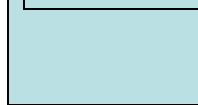
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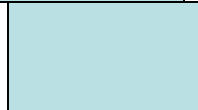
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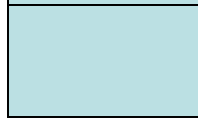
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0



$\frac{1}{2}$



4.5



Writing Inequalities

- Define a variable and write an inequality to describe this situation: **There are no more than 20 students in the class.**
 - First, define our variable
 - Let n = number of students in the class
 - Because of the phrase “no more than” we know that our inequality is \leq
 - So, our inequality is $n \leq 20$

Other Examples.

- Write an inequality for the following situations:
 - Fewer than 150 students saw the play.
 - No less than 100 tickets were sold.
 - There were at most 250 seats in the auditorium
 - You should order a minimum of 5 dozen cookies.

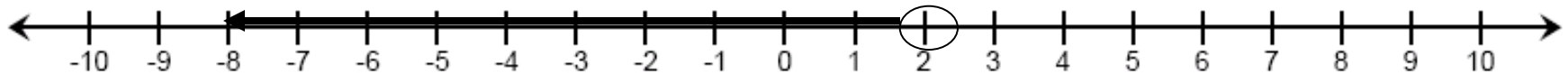
Graphing Inequalities

- How many solutions does the inequality $n > 5$ have?
- Because these inequalities have so many solutions, we use a number line to show the solutions, rather than listing them.

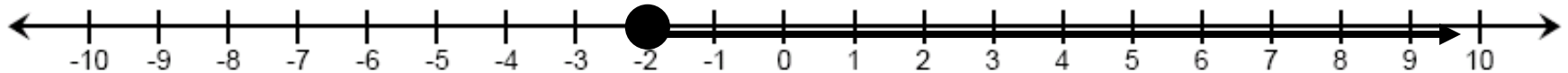
Graphing Inequalities

- Graph each inequality.

$$x < 2$$



$$x \geq -2$$



Graphing Inequalities

- Graph each inequality on a number line

$$X > 5$$

$$x \leq 3$$