

Understanding Inequalities

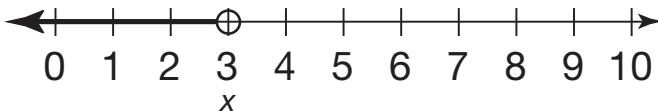
An equation shows when expressions are equal. Equations use equal signs ($=$). An inequality is a statement that uses the greater-than symbol ($>$), the less-than symbol ($<$), the greater-than-or-equal-to symbol (\geq), or the less-than-or-equal-to symbol (\leq).

Variables can be used with inequalities. A variable in an inequality stands for all numbers that make the inequality true.

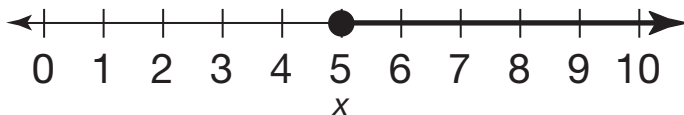
For example, in the inequality $x < 3$, the x stands for all numbers less than 3. So x can be 0, 1, or 2.

The inequality $13 \leq y + 5$ can have solutions $y = 8, 9,$ and 10 , since $8 + 5 = 13, 9 + 5 = 14,$ and $10 + 5 = 15$.

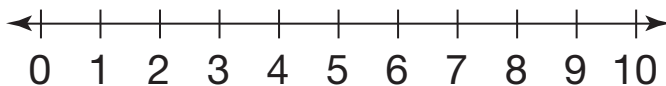
To graph $x < 3$, first draw an open circle on the number line above 3. Shade a line from the open circle to the left through the arrow. This represents all numbers that are less than 3.



To graph x is greater than or equal to 5, first draw a closed circle on the number line at 5. Then shade a line from the closed circle to the right through the arrow.



1. Is 0 a solution of $x > 2$? _____
2. Is 5 a solution of $y \leq 10$? _____
3. Name 3 solutions for $z > 5$. _____
4. Name 3 solutions for $x \geq 4$. _____
5. Graph the inequality $x < 7$ on the number line below.



6. Graph the inequality $x \geq 4$ on the number line below.

