

take note

## Concept Summary Representing Inequalities

Words	Symbols	Graph
$x$ is less than 3.	$x < 3$	
$x$ is greater than -2.	$x > -2$	
$x$ is less than or equal to 0.	$x \leq 0$	
$x$ is greater than or equal to 1.	$x \geq 1$	

### Interval notation

**parentheses:** Use ( or ) when a  $<$  or  $>$  symbol indicates that the interval's endpoints are *not* included.

**brackets:** Use [ or ] when a  $\leq$  or  $\geq$  symbol indicates that the interval's endpoints are included.

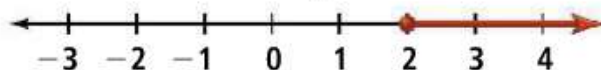
**infinity:** Use  $\infty$  when the interval continues forever in a *positive* direction.  
Use  $-\infty$  when the interval continues forever in a *negative* direction.

### Inequality

### Graph

### Interval Notation

$x \geq 2$



$[2, \infty)$

$x < 2$



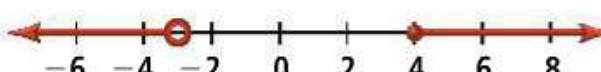
$(-\infty, 2)$

$1 < x \leq 5$



$(1, 5]$

$x < -3$  or  $x \geq 4$



$(-\infty, -3) \text{ or } [4, \infty)$

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## Key Concept Solving Absolute Value Inequalities

To solve an inequality in the form  $|A| < b$ , where  $A$  is a variable expression and  $b > 0$ , solve the compound inequality  $-b < A < b$ .



To solve an inequality in the form  $|A| > b$ , where  $A$  is a variable expression and  $b > 0$ , solve the compound inequality  $A < -b$  or  $A > b$ .



Similar rules are true for  $|A| \leq b$  or  $|A| \geq b$ .