

## Algebra 1 Unit 3: Inequalities Study Guide

Things to know:	Practice:
<p><b>Graphing Inequalities</b></p> <ul style="list-style-type: none"> <li>Which way to graph for <math>&lt;</math> and <math>&gt;</math></li> <li>How to graph an inequality with the variable on the left</li> </ul>	<p><i>Graph each inequality</i></p> <div style="display: flex; justify-content: space-between;"> <div style="width: 30%;">1) <math>a &lt; 3</math></div> <div style="width: 30%;">2) <math>p \geq -2</math></div> <div style="width: 30%;">3) <math>-4 \leq y</math></div> </div>
<p><b>Solving Inequalities</b></p> <ul style="list-style-type: none"> <li>When to change the inequality sign</li> <li>What to do in order to express an inequality with the variable on left side</li> <li>The two special solutions ("no solution" and "all real numbers") and when they apply</li> </ul>	<p><i>Solve each inequality</i></p> <div style="display: flex; justify-content: space-between;"> <div style="width: 30%;">4) <math>-x &lt; 2</math></div> <div style="width: 30%;">5) <math>4w &gt; 12</math></div> <div style="width: 30%;">6) <math>8(t + 2) + 2t &lt; 36</math></div> </div> <div style="display: flex; justify-content: space-between;"> <div style="width: 30%;">7) <math>9 \leq 4 - 5m</math></div> <div style="width: 30%;">8) <math>5k \geq -6k + 11</math></div> <div style="width: 30%;">9) <math>10 - 8a \geq 2(5 - 4a)</math></div> </div>  <div style="display: flex; justify-content: space-between;"> <div style="width: 30%;">10) <math>6 - 3k &gt; 45</math></div> <div style="width: 30%;">11) <math>8 + 5 - 2z \leq 3(2z + 1) + 2</math></div> </div>
<p><b>Interval Notation</b></p> <ul style="list-style-type: none"> <li>How to write an inequality in interval notation</li> <li>Graph a solution written in interval notation</li> <li>When to use a curved parenthesis or a square bracket</li> <li>Compound inequalities written in interval notation</li> </ul>	<p><i>Put each inequality in interval notation AND draw a graph</i></p> <div style="display: flex; justify-content: space-between;"> <div style="width: 45%;">12) <math>x \geq 4</math></div> <div style="width: 45%;">13) <math>x &lt; -10</math></div> </div> <div style="display: flex; justify-content: space-between;"> <div style="width: 45%;">14) <math>x \leq -3</math> OR <math>x \geq 8</math></div> <div style="width: 45%;">15) <math>-14 &lt; x &lt; -5</math></div> </div>

Write each interval notation as an inequality, and draw a graph for each.

16)  $(-\infty, -8]$

17)  $[5, \infty)$

18)  $[-10, -2]$

19)  $(-\infty, 6) \cup [12, \infty)$

### Solving Compound Inequalities

- How to graph compound inequalities

Solve each compound inequality. Graph the solutions.

20)  $3 < 4p - 5 \leq 15$

21)  $\frac{1}{4} < \frac{2x-7}{2} < 5$

22)  $6b - 1 < -7$  or  $2b + 1 > 5$

23)  $5z - 3 > 7$  or  $4z - 6 < -10$

### Absolute Value Inequalities

- How to solve for absolute value in equations and inequalities (solving for two answers)

Solve and graph each inequality.

24)  $|h - 3| < 4$

25)  $|y| + 3 < 3$

26)  $2 < |g + 3|$

27)  $4|2y - 3| - 1 \geq 11$

28)  $|3d - 7| > 28$