

Algebra 1 Unit 3: Inequalities Study Guide

Things to know:	Practice:
<p>Graphing Inequalities</p> <ul style="list-style-type: none"> Which way to graph for $<$ and $>$ How to graph an inequality with the variable on the left 	<p>Graph each inequality</p> <div style="display: flex; justify-content: space-around;"> <div style="text-align: center;"> <p>1) $a < 3$</p> </div> <div style="text-align: center;"> <p>2) $p \geq -2$</p> </div> <div style="text-align: center;"> <p>3) $-4 \leq y$ $y \geq -4$</p> </div> </div>
<p>Solving Inequalities</p> <ul style="list-style-type: none"> When to change the inequality sign What to do in order to express an inequality with the variable on left side The two special solutions ("no solution" and "all real numbers") and when they apply 	<p>Solve each inequality</p> <div style="display: flex; justify-content: space-between;"> <div style="width: 30%;"> <p>4) $-x < 2$</p> $\frac{-x}{-1} < \frac{2}{-1}$ <div style="border: 1px solid black; padding: 5px; width: fit-content; margin: 5px auto;">$x > -2$</div> </div> <div style="width: 30%;"> <p>5) $\frac{4w}{4} > \frac{12}{4}$</p> <div style="border: 1px solid black; padding: 5px; width: fit-content; margin: 5px auto;">$w > 3$</div> </div> <div style="width: 30%;"> <p>6) $8(t+2) + 2t < 36$</p> $8t + 16 + 2t < 36$ $10t + 16 < 36$ $10t < 20$ $\frac{10t}{10} < \frac{20}{10}$ <div style="border: 1px solid black; padding: 5px; width: fit-content; margin: 5px auto;">$t < 2$</div> </div> </div> <div style="display: flex; justify-content: space-between; margin-top: 20px;"> <div style="width: 30%;"> <p>7) $9 \leq 4 - 5m$</p> $\frac{5}{-5} \leq \frac{-5m}{-5}$ $-1 \geq m$ <div style="border: 1px solid black; padding: 5px; width: fit-content; margin: 5px auto;">$m \leq -1$</div> </div> <div style="width: 30%;"> <p>8) $5k \geq -6k + 11$</p> $\frac{11k}{11} \geq \frac{11}{11}$ <div style="border: 1px solid black; padding: 5px; width: fit-content; margin: 5px auto;">$k \geq 1$</div> </div> <div style="width: 30%;"> <p>9) $10 - 8a \geq 2(5 - 4a)$</p> $10 - 8a \geq 10 - 8a$ $+8a \quad +8a$ $10 \geq 10$ <p style="text-align: center;">TRUE</p> <div style="border: 1px solid black; padding: 5px; width: fit-content; margin: 5px auto;">All Real #s or infinite solutions</div> </div> </div> <div style="display: flex; justify-content: space-between; margin-top: 20px;"> <div style="width: 30%;"> <p>10) $6 - 3k > 45$</p> $\frac{-3k}{-3} > \frac{39}{-3}$ <div style="border: 1px solid black; padding: 5px; width: fit-content; margin: 5px auto;">$k < -13$</div> </div> <div style="width: 30%;"> <p>11) $8 + 5 - 2z \leq 3(2z + 1) + 2$</p> $13 - 2z \leq 6z + 3 + 2$ $13 - 2z \leq 6z + 5$ $\frac{-8z}{-8} \leq \frac{-8}{-8}$ <div style="border: 1px solid black; padding: 5px; width: fit-content; margin: 5px auto;">$z \geq 1$</div> </div> </div>
<p>Interval Notation</p> <ul style="list-style-type: none"> How to write an inequality in interval notation Graph a solution written in interval notation When to use a curved parenthesis or a square bracket Compound inequalities written in interval notation 	<p>Put each inequality in interval notation AND draw a graph</p> <div style="display: flex; justify-content: space-around;"> <div style="width: 45%;"> <p>12) $x \geq 4$</p> </div> <div style="width: 45%;"> <p>13) $x < -10$</p> </div> </div> <div style="display: flex; justify-content: space-around; margin-top: 20px;"> <div style="width: 45%;"> <p>14) $x \leq -3$ OR $x \geq 8$</p> </div> <div style="width: 45%;"> <p>15) $-14 < x < -5$</p> </div> </div>

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

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



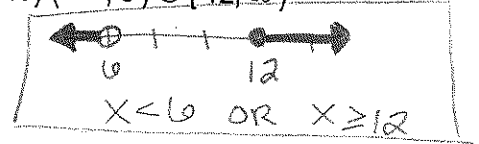
17) $[5, \infty)$



18) $[-10, -2]$



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

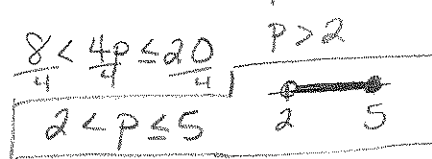


Solving Compound Inequalities

- How to graph compound inequalities

Solve each compound inequality. Graph the solutions.

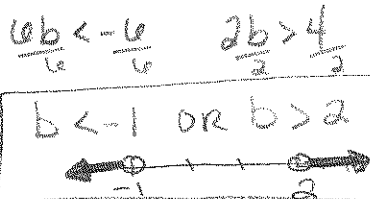
20) $3 < 4p - 5 \leq 15$



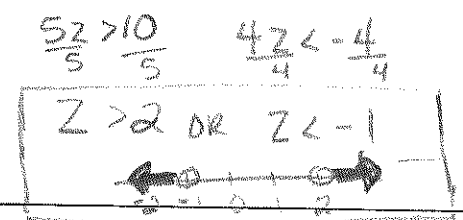
21) $\frac{1}{4} < \frac{2x-7}{2} < 5$



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.

