Lesson 16: Solving and Graphing Inequalities Joined by “And” or “Or”

Classwork

Exercise 1

1. Solve $w^{2}=121$, for $w$. Graph the solution on a number line.
2. Solve $w^{2}<121, $for $w$. Graph the solution on a number line

and write the solution set as a compound inequality.

1. Solve $w^{2}\geq 121$ for $w$. Graph the solution on a number line

and write the solution set as a compound inequality.

1. Quickly solve $\left(x+7\right)^{2}=121$, for $x$. Graph the solution on a number line.
2. Use your work on (4) to quickly graph the solution on a number line to each inequality below.
	* 1. $\left(x+7\right)^{2}<121$ ii. $\left(x+7\right)^{2}\geq 121$

Exercise 2

Consider the compound inequality $-5<x<4$

* 1. Rewrite the inequality as a compound statement of inequality.
	2. Write a sentence describing the possible values of$ x$.



* 1. Graph the solution set on the number line.

Exercise 3

Consider the compound inequality $-5<2x+ 1<4$.

* 1. Rewrite the inequality as a compound statement of inequality.
	2. Solve each inequality for $x$. Then, write the solution to the compound inequality.
	3. Write a sentence describing the possible values of $x$.



* 1. Graph the solution set on the number line.

Exercise 4

Given $x<-3 or x>-1$

* 1. What must be true in order for the compound inequality to be a true statement?
	2. Write a sentence describing the possible values of $x$.



* 1. Graph the solution set on the number line.

Exercise 5

Given $x+4<6 or x – 1>3$

* 1. Solve each inequality for $x$.

Then, write the solution to the compound inequality.

* 1. Write a sentence describing the possible values of $x$.



* 1. Graph the solution set on the number line.

Problem Set

Solve each compound inequality for $x$ and graph the solution on a number line.

* 1. $x + 6 < 8 and x – 1 > -1$
	2. $-1 \leq 3 – 2x \leq 10$



* 1. $5x + 1 < 0 or 8 \leq x – 5$



* 1. $10>3x-2 or x=4$



* 1. $x-2 < 4 or x-2 > 4$



* 1. $x –2\leq 4 and x – 2\geq 4$

g. $-6 <$ $\frac{x+1}{3} $ $< 3$



h. $– 2x < 6 or $ $\frac{x}{3}$ $>4$

$i. 5x\leq 21+2x or 3\left(x+1\right)\geq 24$



$$j. 0 \leq 4x-3 \leq 11$$

$k. 4x+8>2x –10 or$ $\frac{1}{3}$ $x –3<2$



$$l. 7-3x<16 and x+12<-8$$