

Lesson 73 and 82 Solving Compound Inequalities

A **compound inequality** is two inequalities with the word AND or OR.

conjunction - a compound inequality that uses the word AND

disjunction - a compound inequality that uses the word OR

$x > -3$ and $x < 5$ is a conjunction $-3 < x < 5$

$x > 6$ or $x < 1$ is a disjunction

AND - Keep the intersection of the two graphs (solutions they have in common)

OR - Keep all solutions that make either inequality true.

Write and graph a compound inequality to represent the statement.

(Ex 1)

a. all real numbers that are greater than 5 and less than 10 $x > 5$ and $x < 10$ $5 < x < 10$

b. a recommended cooking time for lasagna from 16 minutes to 20 minutes $16 \leq x \leq 20$

(Ex 2)

c. A cellular phone company has a policy that charges a monthly fee of \$20 plus \$0.05 per minute of usage or text message. The monthly cell phone bill must be between \$40 and \$50. Write a compound inequality that describes the situation. Solve the inequality to find the number of minutes that can be used to keep the monthly bill within the desired amounts.

$$40 \leq 20 + 0.05m < 50$$

Write and graph a compound inequality to represent the statement.

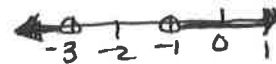
(Ex 3)

d. all real numbers greater than 6 or less than 1 $x > 6$ or $x < 1$

e. all real numbers greater than or equal to 5 or less than or equal to 0 $x \geq 5$ or $x \leq 0$

(Ex 4)

f. Solve the disjunction $\frac{5x}{5} > \frac{-5}{5}$ OR $\frac{6x}{6} < \frac{-18}{6}$ $x > -1$ or $x < -3$



Write a compound inequality that describes each graph.

(Ex 5)

g. $x < 1$ or $x > 2$

h. $8 \leq x \leq 12$