Section 4.2 Compound Inequalities

Two inequalities joined by the words **and** or **or** are called **compound inequalities**.

# Objective 1: Solving Compound Inequalities Containing “and”

A value is a solution of a compound inequality containing **and** if it is a solution of both inequalities. For example, the solution set of the compound inequality and contains all values of that make both statements true. The first graph shown below is the graph of . The second graph is the graph of . The third graph shows the intersection of the two graphs. This graph shows the solution set of the compound inequality and .

number line showing x less than or equal to 5 with closed circle on 5 and shaded to the left. 

number line showing x greater than or equal to 3 with closed circle on 3 and shaded to right.

third number line showing the intersection with closed circles on 3 and 5 and shaded between. 

This compound inequality can also be written as .

Solve the compound inequality. Graph the solution set on the number line.

a.



b.



c.



# Objective 2: Solving Compound Inequalities Containing “or”

A value is a solution of a compound inequality containing **or** if it is a solution of either inequality. For example, the solution set of the compound inequality or contains all values of that make the inequality a true statement or the inequality a true statement. The first graph shown below is the graph of . The second graph is the graph of . The third shows the union of the two graphs. This graphs shows the solution set of the compound inequality or .

number line showing x less than or equal to 1 with closed circle on 1 and shaded to the left. 

number line showing x greater than or equal to 3 with closed circle on 3 and shaded to right.

third number line showing the union with closed circles on 1 and 3 and shaded to the left of 1 and right of 3. 

Solve the compound inequality. Graph the solution set on the number line.

a. or



b. or

