

Name \_\_\_\_\_

Date \_\_\_\_\_ Pd. \_\_\_\_\_

**NOTES**

**Graphic Solutions of Compound Inequalities**

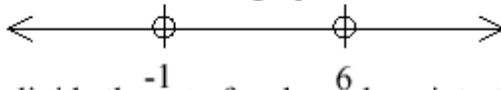
The number line can be used to solve compound inequalities. For example, a graphic solution to Example 2 on page 340 is shown below.

Solve  $-5 < x - 4 < 2$ .

Write the two related equations:  $x - 4 = -5$       $x - 4 = 2$

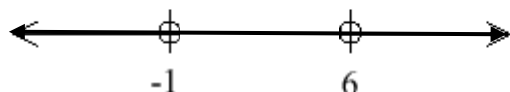
Solve each equation:

Locate the solutions on a number line. Refer to the original inequality to determine whether to graph these solutions using open or closed points.



These two points divide the set of real numbers into three intervals. If the solution to the inequality is not the empty set, then the solution must be one or more of these intervals. Choose a value in each of the intervals and test whether it is a solution to the inequality. If the value is a solution, then all values in the interval are solutions.

$x = -10$                        $x = 0$                        $x = 10$



From the graph, write the solution to the inequality.

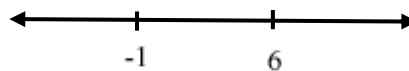
Solution:

The compound inequality,  $x - 4 < -5$  or  $x - 4 \geq 2$ , can be solved using the number line as shown below.

Write the two related equations:

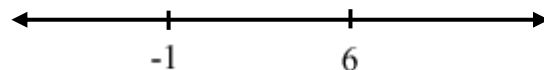
Solve each equation:

Locate the solutions on a number line



Test a value in each of the intervals.

$x = -10$                        $x = 0$                        $x = 10$



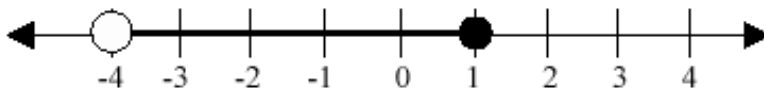
Solution:

Name \_\_\_\_\_

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### Exit Card: Solving Compound Inequalities

1. Look at the graph below:



Which of these inequalities has the solution set that is shown in the graph?

- A.  $-4 \leq x \leq 1$     B.  $-4 < x < 1$     C.  $-4 \leq x < 1$     D.  $-4 < x \leq 1$

2. How many integers are in the solution to the combined inequality  $x > 1$  and  $x < 10$ ?