Algebra 1 (CCSP)

Section 2.6: Solving Compound Inequalities

Date: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

**Objectives**: Students will be able to solve compound inequalities in one variable.

Students will be able to graph solution sets of compound inequalities in one variable.

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| **Main Idea** | **Notes** |
| **Algebra Lab:** | 2.6 Algebra Lab: Truth Tables and Compound Statements |
| **Exploration:** | 2.6 Exploration: Solving Compound Inequalities |
| **Vocabulary: Compound Inequalities**  **Vocabulary: Compound Inequalities (Continued)** | When two inequalities are combined into one statement by the words AND or OR, the result is a  \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_.  With AND inequalities, you can \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ them.  ***Examples: Write and graph the following compound inequalities***   1. All real numbers greater than 1 AND less than 4.   http://img.sparknotes.com/figures/5/50ca5e784bb7e4242910d5b8a571d103/number_line.gif   1. All real numbers greater than or equal to 1 AND less than or equal to 4.   http://img.sparknotes.com/figures/5/50ca5e784bb7e4242910d5b8a571d103/number_line.gif   1. All real numbers less than 1 OR greater than 4.   http://img.sparknotes.com/figures/5/50ca5e784bb7e4242910d5b8a571d103/number_line.gif   1. All real numbers less than or equal to 1 OR greater than or equal to 4.   http://img.sparknotes.com/figures/5/50ca5e784bb7e4242910d5b8a571d103/number_line.gif |
| **Example 1: Writing and Graphing Compound Inequalities** | The pH level of swimming pool water must be between 7.2 and 7.6 inclusive.  Write a compound inequality to show the pH levels that are within the range.  Graph the solutions. |
| **Compound Inequalities Involving AND:**  **Example 2: Solving and Graphing Compound Inequalities** | When graphing the solutions of a compound inequality involving AND, use the idea of  \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ sections.  The overlapping region is called the \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_.  Solve each compound inequality and graph the solutions.   1. -5 < x + 1 < 2      1. 8 < 3x – 1 ≤ 11 |
| **Compound Inequalities Involving OR:** | When graphing the solutions of a compound inequality involving OR, use the idea of  \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ sections.  The combined regions are called the \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_. |
| **Example 3: Solving and Graphing Compound Inequalities**  **Example 3 (Continued): Solving and Graphing Compound Inequalities** | Solve each compound inequality and graph the solutions.     1. -4 + a > 1 OR -4 + a < -3   **http://www.theschools.com/theschools/curriculum/Sample9/graphics/number-line.gif**   1. 4x ≤ 20 OR 3x > 21     **http://www.theschools.com/theschools/curriculum/Sample9/graphics/number-line.gif** |
| **Special Cases:** | Every solution of an inequality involving AND must be a solution of \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ parts of the compound inequality.  If no numbers are solutions of BOTH, then it has \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_.  The solutions of an inequality involving OR are not always two \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ sets of numbers.  There may be numbers that are solutions to \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ parts of the compound inequality. |
| **Example 4: Write the Compound Inequality from the Graph** | Write the compound inequality shown by each graph. |
| **Exit Ticket:** | Describe how to write the compound inequality  y > 4 AND y ≤ 12  without using the joining word AND.  ( Do this on a separate piece of paper. I will collect this for a grade) |
| **Classwork:** | Connecting Algebra to Geometry: Triangle Inequality |
| **Homework:** | 2.6 Additional Practice Problems Worksheet |