

Graphing the Solutions of Combined Inequalities on the Number Line

A *combined inequality* is an inequality composed of two inequalities. Combined inequalities may be *conjunctions* (inequalities joined by “and”) or *disjunctions* (inequalities joined by “or”).

A conjunction is true if both of its sentences are true. The graph of a conjunction is the intersection of the graph of the inequalities.

A disjunction is true if either sentence is true, or if both sentences are true. The graph of a disjunction is the union of the graphs of the inequalities.

Combined inequalities can be solved by writing a conjunction or disjunction and following the steps for solving inequalities.

Directions: Match the solution of each combined inequality with its graph on the next page. Write the letter of the graph in the blank before the inequality. Then write the letters above each problem number to complete the statement at the end of the activity.

1. _____ $x > 3$ or $x < -1$

2. _____ $x < 3$ and $x > -1$

3. _____ $x \geq 2$ or $x \leq -1$

4. _____ $x \leq -2$ or $x \geq -1$

5. _____ $x > 3$ and $x \leq 1$

6. _____ $x > 3$ or $x \leq 1$

7. _____ $x \leq 4$ or $x > -3$

8. _____ $x \leq 4$ and $x > -3$

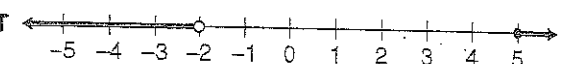
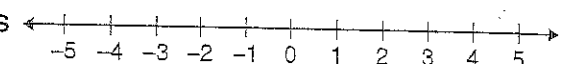
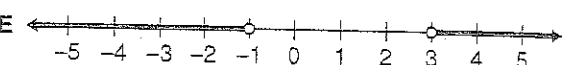
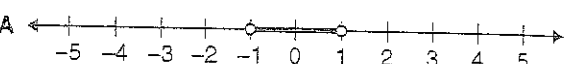
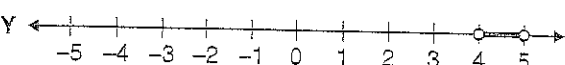
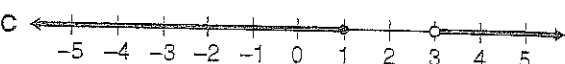
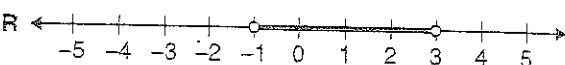
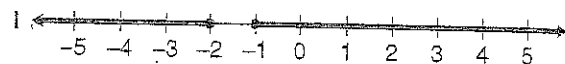
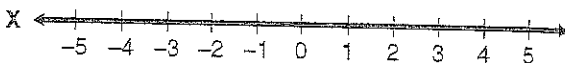
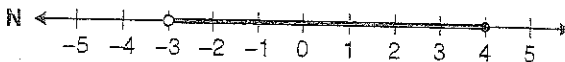
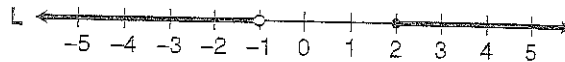
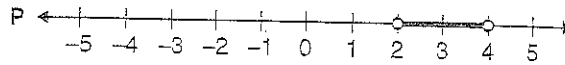
9. _____ $4 < x < 5$

10. _____ $3 < x + 1 < 5$

11. _____ $x - 1 < -3$ or $x - 1 \geq 4$

12. _____ $3 < 5 - 2x < 7$

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Thomas Harriot (1560–1621) first used the “>” and “<” symbols in _____
 12 2 11 4 5

_____ published in 1631.
 12 8 12 3 9 11 4 6 12 1 10 2 12 7 4 5