

Algebra: Solving & Graphing Compound Inequalities



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DIRECTIONS

Solve the compound inequality. Write your solution in interval notation.

1 Solve. Write in interval notation (AND):

$$5 < 2x + 1 \leq 11$$

Answer: _____

2 Solve. Write in interval notation (OR):

$$3x + 1 < -5 \text{ or } 3x - 1 > 11$$

Answer: _____

3 Solve. Write in interval notation (OR):

$$1x + 1 < -1 \text{ or } 1x - 1 > 3$$

Answer: _____

4 Solve. Write in interval notation (OR):

$$1x + 1 < -2 \text{ or } 1x - 1 > 6$$

Answer: _____

5 Solve. Write in interval notation (AND):

$$3 < 1x + 1 \leq 13$$

Answer: _____

6 Solve. Write in interval notation (OR):

$$1x + 1 < 0 \text{ or } 1x - 1 > 2$$

Answer: _____

7 Solve. Write in interval notation (AND):

$$1 < 1x + 1 \leq 12$$

Answer: _____

8 Solve. Write in interval notation (AND):

$$3 < 3x + 1 \leq 12$$

Answer: _____

9 Solve. Write in interval notation (AND):

$$3 < 3x + 1 \leq 9$$

Answer: _____

10 Solve. Write in interval notation (OR):

$$3x + 1 < -5 \text{ or } 3x - 1 > 11$$

Answer: _____

Answer Key & Solutions

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TEACHER NOTES AND → intersection (both true). OR → union (at least one true). Watch strict vs. non-strict.

1 Solve. Write in interval notation (AND):

$$= \left(\frac{4}{2}, \frac{10}{2} \right]$$

$$5 < 2x + 1 \leq 11$$

2 Solve. Write in interval notation (OR):

$$= (-\infty, -2) \cup (4, \infty)$$

$$3x + 1 < -5 \text{ or } 3x - 1 > 11$$

3 Solve. Write in interval notation (OR):

$$= (-\infty, -2) \cup (4, \infty)$$

$$1x + 1 < -1 \text{ or } 1x - 1 > 3$$

4 Solve. Write in interval notation (OR):

$$= (-\infty, -3) \cup (7, \infty)$$

$$1x + 1 < -2 \text{ or } 1x - 1 > 6$$

5 Solve. Write in interval notation (AND):

$$= \left(\frac{2}{1}, \frac{12}{1} \right]$$

$$3 < 1x + 1 \leq 13$$

6 Solve. Write in interval notation (OR):

$$= (-\infty, -1) \cup (3, \infty)$$

$$1x + 1 < 0 \text{ or } 1x - 1 > 2$$

7 Solve. Write in interval notation (AND):

$$= \left(\frac{0}{1}, \frac{11}{1} \right]$$

$$1 < 1x + 1 \leq 12$$

8 Solve. Write in interval notation (AND):

$$= \left(\frac{2}{3}, \frac{11}{3} \right]$$

$$3 < 3x + 1 \leq 12$$

9 Solve. Write in interval notation (AND):

$$= \left(\frac{2}{3}, \frac{8}{3} \right]$$

$$3 < 3x + 1 \leq 9$$

10 Solve. Write in interval notation (OR):

$$= (-\infty, -2) \cup (4, \infty)$$

$$3x + 1 < -5 \text{ or } 3x - 1 > 11$$