DIGITAL

NAME

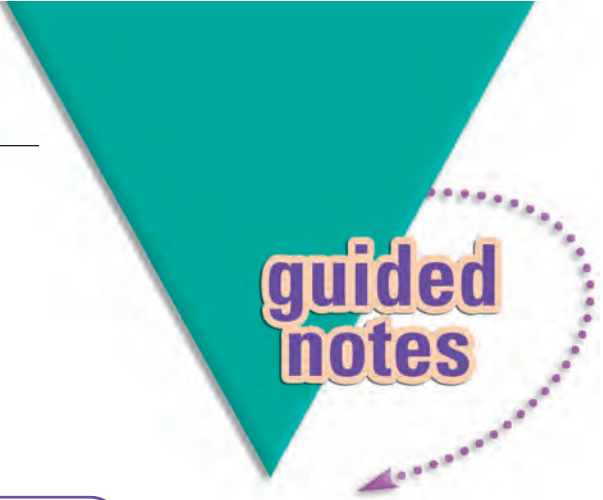**Module 5**   Solving Linear Inequalities of
              One Variable
Lesson 5   Solving Conjunction Inequalities

guided
notes

Lesson Objectives

- Solve and graph the solution sets to conjunctions.
- Use the notation $a < x < b$ to show that x lies between a and b, $a < b$.

A compound inequality is two inequalities joined by the words

and_____ or **or**_____.

A **conjunction**_____ consists of two statements joined by the word "**and**."

A conjunction is only true when **both statements are true**_____.

To solve a **conjunction inequality**_____, find the solutions that

make both inequalities true.

To solve a conjunction inequality, find the **intersection**_____ of the

solution sets of the individual inequalities.

A conjunction has no solution if the graphs of the two inequalities have no

points in common_____ or do not intersect.

The notation $0 < x \leq 4$ shows that x lies **between**_____ zero and four,

including **four**_____, but not including **zero**_____.

1 ▶ Solve and graph. $x \geq 6$ and $x \leq 2$. **The conjunction has no solution.**_____

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2 Solve and graph. $x < 4$ and $x > 1$ **1 < x < 4**

$$-8 \ -7 \ -6 \ -5 \ -4 \ -3 \ -2 \ -1 \ \ 0 \ \ 1 \ \ 2 \ \ 3 \ \ 4 \ \ 5 \ \ 6 \ \ 7 \ \ 8$$

$$-8 \ -7 \ -6 \ -5 \ -4 \ -3 \ -2 \ -1 \ \ 0 \ \ 1 \ \ 2 \ \ 3 \ \ 4 \ \ 5 \ \ 6 \ \ 7 \ \ 8$$

$$-8 \ -7 \ -6 \ -5 \ -4 \ -3 \ -2 \ -1 \ \ 0 \ \ 1 \ \ 2 \ \ 3 \ \ 4 \ \ 5 \ \ 6 \ \ 7 \ \ 8$$

3 Solve and graph. $x \leq -2$ and $x < 7$ **x ≤ –2**

$$-8 \ -7 \ -6 \ -5 \ -4 \ -3 \ -2 \ -1 \ \ 0 \ \ 1 \ \ 2 \ \ 3 \ \ 4 \ \ 5 \ \ 6 \ \ 7 \ \ 8$$

$$-8 \ -7 \ -6 \ -5 \ -4 \ -3 \ -2 \ -1 \ \ 0 \ \ 1 \ \ 2 \ \ 3 \ \ 4 \ \ 5 \ \ 6 \ \ 7 \ \ 8$$

$$-8 \ -7 \ -6 \ -5 \ -4 \ -3 \ -2 \ -1 \ \ 0 \ \ 1 \ \ 2 \ \ 3 \ \ 4 \ \ 5 \ \ 6 \ \ 7 \ \ 8$$

To solve the conjunction inequality $-2 < x + 6 < 10$, isolate the variable **between the inequality signs** .

The conjunction $10 > 5 > 1$ can be written as **1 < 5 < 10** by reading from right to left.

4 Solve and graph. $2x - 4 \geq 4$ and $-3x > 18$ **Solution set is the empty set.**

$$-8 \ -7 \ -6 \ -5 \ -4 \ -3 \ -2 \ -1 \ \ 0 \ \ 1 \ \ 2 \ \ 3 \ \ 4 \ \ 5 \ \ 6 \ \ 7 \ \ 8$$

$$-8 \ -7 \ -6 \ -5 \ -4 \ -3 \ -2 \ -1 \ \ 0 \ \ 1 \ \ 2 \ \ 3 \ \ 4 \ \ 5 \ \ 6 \ \ 7 \ \ 8$$

$$-8 \ -7 \ -6 \ -5 \ -4 \ -3 \ -2 \ -1 \ \ 0 \ \ 1 \ \ 2 \ \ 3 \ \ 4 \ \ 5 \ \ 6 \ \ 7 \ \ 8$$
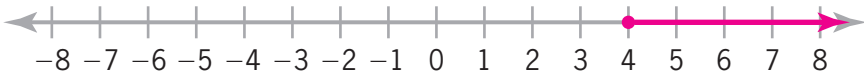
5 ▶ Solve and graph. $0 \leq x + 2 \leq 8$ **−2 ≤ x ≤ 6**

−8 −7 −6 −5 −4 −3 −2 −1 0 1 2 3 4 5 6 7 8

−8 −7 −6 −5 −4 −3 −2 −1 0 1 2 3 4 5 6 7 8

−8 −7 −6 −5 −4 −3 −2 −1 0 1 2 3 4 5 6 7 8