NAME _____   DATE _____

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

_____ or _____.

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

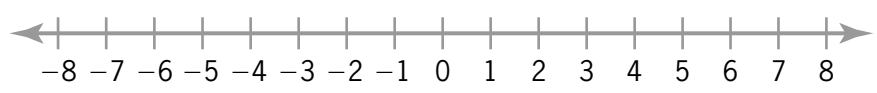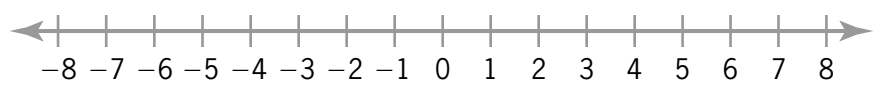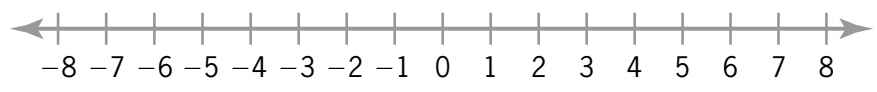A conjunction is only true when _____.

To solve a _____, find the solutions that

make both inequalities true.

To solve a conjunction inequality, find the _____ of the

solution sets of the individual inequalities.

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

_____ or do not intersect.

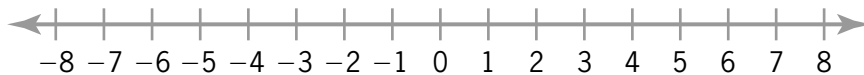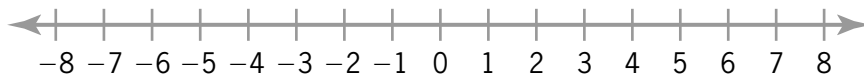The notation $0 < x \leq 4$ shows that x lies _____ zero and four,

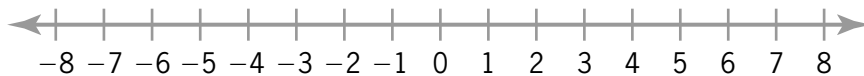including _____, but not including _____.
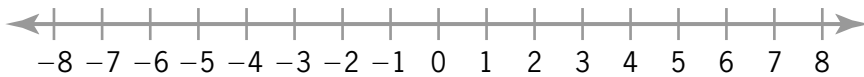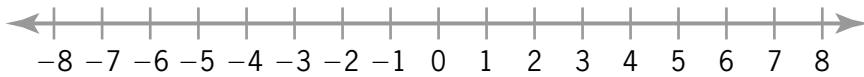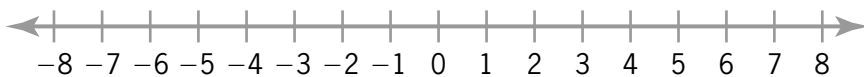
1▶ Solve and graph. $x \geq 6$ and $x \leq 2$. _____

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

$$\begin{array}{c}\underset{-8\ -7\ -6\ -5\ -4\ -3\ -2\ -1\ \ 0\ \ 1\ \ 2\ \ 3\ \ 4\ \ 5\ \ 6\ \ 7\ \ 8}{\longleftarrow\!\!\mid\!\mid\!\mid\!\mid\!\mid\!\mid\!\mid\!\mid\!\mid\!\mid\!\mid\!\mid\!\mid\!\mid\!\mid\!\mid\!\mid\!\longrightarrow}\end{array}$$

$$\begin{array}{c}\underset{-8\ -7\ -6\ -5\ -4\ -3\ -2\ -1\ \ 0\ \ 1\ \ 2\ \ 3\ \ 4\ \ 5\ \ 6\ \ 7\ \ 8}{\longleftarrow\!\!\mid\!\mid\!\mid\!\mid\!\mid\!\mid\!\mid\!\mid\!\mid\!\mid\!\mid\!\mid\!\mid\!\mid\!\mid\!\mid\!\mid\!\longrightarrow}\end{array}$$

$$\begin{array}{c}\underset{-8\ -7\ -6\ -5\ -4\ -3\ -2\ -1\ \ 0\ \ 1\ \ 2\ \ 3\ \ 4\ \ 5\ \ 6\ \ 7\ \ 8}{\longleftarrow\!\!\mid\!\mid\!\mid\!\mid\!\mid\!\mid\!\mid\!\mid\!\mid\!\mid\!\mid\!\mid\!\mid\!\mid\!\mid\!\mid\!\mid\!\longrightarrow}\end{array}$$

3 Solve and graph. $x \leq -2$ and $x < 7$ _____

$$\begin{array}{c}\underset{-8\ -7\ -6\ -5\ -4\ -3\ -2\ -1\ \ 0\ \ 1\ \ 2\ \ 3\ \ 4\ \ 5\ \ 6\ \ 7\ \ 8}{\longleftarrow\!\!\mid\!\mid\!\mid\!\mid\!\mid\!\mid\!\mid\!\mid\!\mid\!\mid\!\mid\!\mid\!\mid\!\mid\!\mid\!\mid\!\mid\!\longrightarrow}\end{array}$$

$$\begin{array}{c}\underset{-8\ -7\ -6\ -5\ -4\ -3\ -2\ -1\ \ 0\ \ 1\ \ 2\ \ 3\ \ 4\ \ 5\ \ 6\ \ 7\ \ 8}{\longleftarrow\!\!\mid\!\mid\!\mid\!\mid\!\mid\!\mid\!\mid\!\mid\!\mid\!\mid\!\mid\!\mid\!\mid\!\mid\!\mid\!\mid\!\mid\!\longrightarrow}\end{array}$$

$$\begin{array}{c}\underset{-8\ -7\ -6\ -5\ -4\ -3\ -2\ -1\ \ 0\ \ 1\ \ 2\ \ 3\ \ 4\ \ 5\ \ 6\ \ 7\ \ 8}{\longleftarrow\!\!\mid\!\mid\!\mid\!\mid\!\mid\!\mid\!\mid\!\mid\!\mid\!\mid\!\mid\!\mid\!\mid\!\mid\!\mid\!\mid\!\mid\!\longrightarrow}\end{array}$$
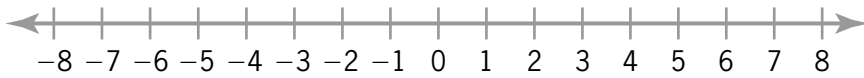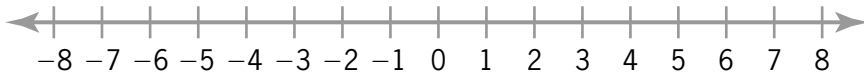
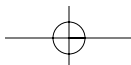To solve the conjunction inequality $-2 < x + 6 < 10$, isolate the variable

_____ .

The conjunction $10 > 5 > 1$ can be written as _____ by

reading from right to left.

4 Solve and graph. $2x - 4 \geq 4$ and $-3x > 18$ _____

$$\begin{array}{c}\underset{-8\ -7\ -6\ -5\ -4\ -3\ -2\ -1\ \ 0\ \ 1\ \ 2\ \ 3\ \ 4\ \ 5\ \ 6\ \ 7\ \ 8}{\longleftarrow\!\!\mid\!\mid\!\mid\!\mid\!\mid\!\mid\!\mid\!\mid\!\mid\!\mid\!\mid\!\mid\!\mid\!\mid\!\mid\!\mid\!\mid\!\longrightarrow}\end{array}$$

$$\begin{array}{c}\underset{-8\ -7\ -6\ -5\ -4\ -3\ -2\ -1\ \ 0\ \ 1\ \ 2\ \ 3\ \ 4\ \ 5\ \ 6\ \ 7\ \ 8}{\longleftarrow\!\!\mid\!\mid\!\mid\!\mid\!\mid\!\mid\!\mid\!\mid\!\mid\!\mid\!\mid\!\mid\!\mid\!\mid\!\mid\!\mid\!\mid\!\longrightarrow}\end{array}$$

$$\begin{array}{c}\underset{-8\ -7\ -6\ -5\ -4\ -3\ -2\ -1\ \ 0\ \ 1\ \ 2\ \ 3\ \ 4\ \ 5\ \ 6\ \ 7\ \ 8}{\longleftarrow\!\!\mid\!\mid\!\mid\!\mid\!\mid\!\mid\!\mid\!\mid\!\mid\!\mid\!\mid\!\mid\!\mid\!\mid\!\mid\!\mid\!\mid\!\longrightarrow}\end{array}$$

5 ▶ Solve and graph. $0 \leq x + 2 \leq 8$ _____

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

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

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