6.4 Solve Compound Inequalities

TEKS A.7.A, A.7.B

Before You solved one-step and multi-step inequalities.

Now You will solve compound inequalities.

Why? So you can describe possible heights, as in Example 2.

Key Vocabulary
- **compound inequality**

A **compound inequality** consists of two separate inequalities joined by *and* or *or*.

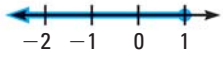
The graph of a compound inequality with *and* is the *intersection* of the graphs of the inequalities.

The graph of a compound inequality with *or* is the *union* of the graphs of the inequalities.

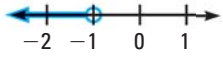
$x > -2$

$x \geq 0$

$x \leq 1$



$x < -1$



$-2 < x$ *and* $x \leq 1$
$-2 < x \leq 1$

$x < -1$ *or* $x \geq 0$

EXAMPLE 1 Write and graph compound inequalities

Translate the verbal phrase into an inequality. Then graph the inequality.

a. All real numbers that are greater than -2 *and* less than 3

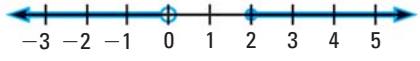
Inequality: $-2 < x < 3$

Graph:

b. All real numbers that are less than 0 *or* greater than or equal to 2

Inequality: $x < 0$ *or* $x \geq 2$

Graph:



GUIDED PRACTICE for Example 1

Translate the verbal phrase into an inequality. Then graph the inequality.

1. All real numbers that are less than -1 *or* greater than or equal to 4
2. All real numbers that are greater than or equal to -3 *and* less than 5