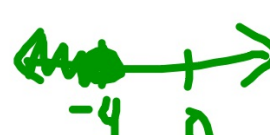


Warm-Up: Solve and Graph

- 1. $-4x \geq -12$ □ 2. $3x - 3 \leq -15$ □ 3. $-\frac{4}{7}x + 1 < 5$
1. $\overline{-4} \quad \overline{-12}$
 $x \leq 3$

2. $+3 \quad +3$
 $\frac{3}{3}x \leq \frac{-12}{3}$
 $x \leq -4$

3. $-1 \quad -1$
 $-\frac{4}{7}x < 4$
 $-4x < 28$
 $x > -7$


$$-x < 7$$

$$\quad -15$$

$$\frac{1}{1}x < \frac{-8}{-1}$$

$$x > 8$$

$$\frac{-4}{+4} > \frac{3x-2}{+4}$$

$$x > 3x+2$$

$$3x \quad -3x$$

$$\frac{4x}{-4} > \frac{2}{-4} \Rightarrow x < -\frac{1}{2}$$

$$\textcircled{18} \quad \frac{-6}{+6} + 5x < \frac{19}{+6}$$

$$\frac{5x}{5} < \frac{25}{5}$$

$$x < 5$$

$$\textcircled{25} \quad 12 > -2x$$

$$\quad +6$$

$$\frac{18}{-2} > \frac{-2x}{-2}$$

$$-9 < x \Rightarrow$$

$$\begin{array}{r} +3 \geq 11 \\ -3 \quad -3 \end{array}$$

$$\geq 8 \cdot 3$$

$$\geq \frac{24}{2}$$

$$\geq 12$$

$$\textcircled{28} \quad \begin{array}{r} 6 \geq \frac{7}{3}x - 1 \\ +1 \quad +1 \end{array}$$

$$3 \cdot 7 \geq \frac{7}{3}x \cdot 3$$

$$\frac{21}{7} \geq \frac{7x}{7}$$

$$3 \geq x$$

$$x \leq 3$$

$$\textcircled{29} \quad \begin{array}{r} -\frac{1}{2}x + 3 < 7 \\ -3 \quad -3 \end{array}$$

$$\cancel{2} \cdot -\frac{1}{2}x < 4$$

$$\frac{-1x}{-1} < \frac{8}{-1}$$

$$x > -8$$

CHAPTER 6 SECTION 3

Solving Compound Inequalities

Compound Inequalities

- Consists of 2 inequalities connected by an “and” or “or”

- Example:

“And” $0 < x \leq 4$

“Or” $-2 < x \text{ or } x > 6$

“And” Problems

- Both Inequalities must be true
- The graph overlaps (in the middle)
- The Inequality signs point in the same direction

$$-2 \leq x < 6$$

Examples:

□ 1. $6 \leq 5 + x < 12$

$-5 \quad -5 \quad -5$

$\leftarrow 1 \leq x < 7$

$\leftarrow \text{Number line diagram for } 1 \leq x < 7$

Number line with closed circle at 1 and open circle at 7, connected by a thick line.

□ 2. $-2 < x - 7 \leq 6$

$+7 \quad +7 \quad +7$

$5 < x \leq 13$

$\leftarrow \text{Number line diagram for } 5 < x \leq 13$

Number line with open circle at 5 and closed circle at 13, connected by a thick line.

Examples:

□ 3. $-6 \leq 2x - 4 \leq 8$

$+4$ $+4$ $+4$

$-\frac{2}{2} \leq \frac{2x}{2} \leq \frac{12}{2}$

$-1 \leq x \leq 6$



□ 4. $-3 \leq 3x + 3 < 12$

-3 -3 -3

$-\frac{6}{3} \leq \frac{3x}{3} < \frac{9}{3}$

$-2 \leq x < 3$



“Or” Problems

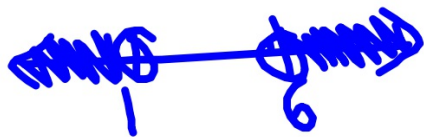
- One of the Inequalities must be true
- Graph can be wherever

$$-5 \leq x \text{ or } x < 3$$

Examples:

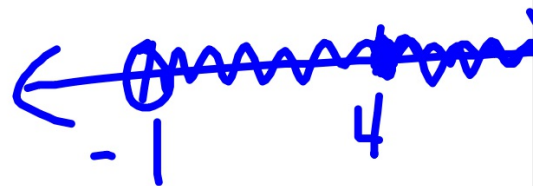
□ 1.

$$\begin{array}{lcl} 3x+1 < 4 & \text{or} & 2x-5 > 7 \\ \begin{array}{cc} +1 & -1 \end{array} & & \begin{array}{cc} +5 & +5 \end{array} \\ \hline 3x < 3 & & 2x > 12 \\ \begin{array}{cc} \frac{3}{3} & \frac{3}{3} \end{array} & & \begin{array}{cc} \frac{2}{2} & \frac{12}{2} \end{array} \\ \hline x < 1 & & x > 6 \end{array}$$



□ 2.

$$\begin{array}{lcl} -3x+5 < 8 & \text{or} & -x \leq -4 \\ \begin{array}{cc} -5 & -5 \end{array} & & \begin{array}{cc} -1 & -1 \end{array} \\ \hline -3x < 3 & & x \geq 4 \\ \begin{array}{cc} \frac{-3}{-3} & \frac{3}{-3} \end{array} & & \\ \hline x > -1 \end{array}$$



Examples:

□ 3.

$$x - 7 \leq -2 \text{ or } x - 7 > 7$$

+7 +7 +7 +7

$$x \leq 5$$

$$x > 14$$



□ 4.

$$\frac{1}{2}x - 7 \leq -2 \text{ or } \frac{3}{2}x - 7 > 6$$

+7 +7 +7 +7

$$\frac{1}{2}x \leq 5 \cdot 2$$

$$x \leq 10$$

$$\frac{3}{2}x > 13$$

$$\frac{3}{3}x > \frac{13 \cdot 2}{3}$$

$$x > \frac{26}{3}$$



Class Work

□ Page 349 # 5-10

Homework

□ Page 349 #26-31