

Ch. 5.1 Solving Inequalities by + & -

○ < less than

○ > greater than

● ≤ less than or equal to

● ≥ greater than or equal to

$$x + 4 = 8$$

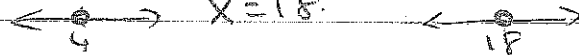
$$x - 6 = 12$$

$$\begin{array}{r} -4 \quad -4 \\ \hline \end{array}$$

$$\begin{array}{r} +6 \quad +6 \\ \hline \end{array}$$

$$x = 4$$

$$x = 18$$



$$x + 4 < 8$$

$$x - 6 \geq 12$$

$$\begin{array}{r} -4 \quad -4 \\ \hline \end{array}$$

$$\begin{array}{r} +6 \quad +6 \\ \hline \end{array}$$

$$x < 4$$

$$x \geq 18$$



Set builder notation

$$\{x \mid x < 4\}$$

$$\{x \mid x \geq 18\}$$

Ex $x - 4 \leq 3$

$x + 2 > 7$

$$\begin{array}{r} 4 \quad 4 \\ \hline \end{array}$$

$$\begin{array}{r} -2 \quad -2 \\ \hline \end{array}$$

$$x \leq 7$$

$$x > 5$$

Check
answer!

$$\{x \mid x \leq 7\}$$

$$\{x \mid x > 5\}$$



CDP. 288 1-10

CW P. 288 1-33

HW 515P9P

★ If you!

5.2 Solving Inequalities by x =:

\circ $<$ less than

\circ $>$ greater than

\bullet \leq less than or equals

\bullet \geq greater than

Or equals

$$2x + 4 = 8$$

$$\underline{-4 \quad -4}$$

$$\frac{2x}{2} = \frac{4}{2}$$

$$x = 2$$



$$2x - 4 = 12$$

$$\underline{+4 \quad +4}$$

$$\frac{2x}{2} = \frac{16}{2}$$

$$x = 8$$



$$2x + 4 < 8$$

$$\underline{-4 \quad -4}$$

$$\frac{2x}{2} < \frac{4}{2}$$

$$x < 2$$

Solution

$$2x - 4 \geq 12$$

$$\underline{+4 \quad +4}$$

$$\frac{2x}{2} \geq \frac{16}{2}$$

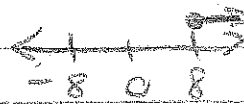
$$x \geq 8$$

Set Builder
Notation

$$\{x \mid x < 2\}$$

$$\{x \mid x \geq 8\}$$

Graph



If you...

Multiply or divide by a negative #

$$\frac{-2x}{-2} < \frac{4}{-2}$$

$$x > -2$$

If you...
-ax or
★ $\frac{x}{-a}$

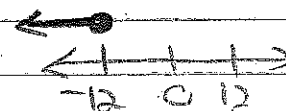
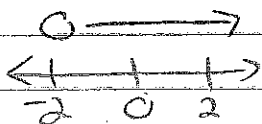
$$\frac{(-2)x}{-2} \geq \frac{6}{(-2)}$$

$$x \leq -12$$

Switch
the
inequality
sign

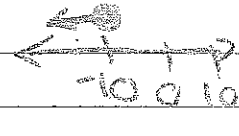
$$\{x \mid x > -2\}$$

$$\{x \mid x \leq -12\}$$



* If you multiply or divide by a negative you must switch the inequality sign!

$$\text{Ex) } -\frac{3}{5}d \geq 6$$

$$\frac{-3d \geq 30}{\frac{-3}{-3} \quad \frac{30}{-3}} \quad d \leq -10$$


CD p 295, 2-9

CW p 295 12-29. Finish for HW

Day 2

↓ CD WB old book. CW, 5.2 SP HW 5.2P

5.3 Solving Multistep Inequalities

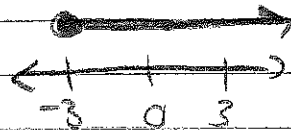
$$\begin{array}{r} \text{Ex) } 13 - 11d \geq 79 \\ -13 \quad -13 \\ \hline \end{array}$$

$$\begin{array}{r} -11d \geq 66 \\ \hline -11 \quad -11 \end{array} \quad d \leq -6 \quad \{d \mid d \leq -6\}$$



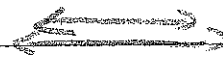
$$\begin{array}{r} \text{Ex) } 6(5z - 3) \leq 36z \\ 30z - 18 \leq 36z \\ -30z \quad -30z \\ \hline -18 \leq 6z \\ -6 \quad -6 \end{array}$$

$$\begin{array}{r} -3 \leq z \\ z \geq -3 \end{array} \quad \{z \mid z \geq -3\}$$



$$\text{Ex) } 18 - 3(8c + 4) \geq -6(4c - 1)$$

$$\begin{array}{r} 18 - 24c - 12 \geq -24c + 6 \\ -24c + 6 \geq -24c + 6 \\ \text{R!} \end{array}$$



CD p. 300 6-11

Day 2

CWP. 301 19-21 odd

CD p. 301 12-20 even

HW p. 301 22-34 odd

CW 5.3 SP

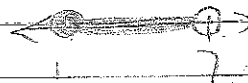
HW 5.3 P

5.4 Solving Compound Inequalities

A compound inequality is true only if

both inequalities are true

Ex) $1 \leq x < 7$



Ex) $7 < (z+2) \leq 11$

$$7 < z+2 + z+2 \leq 11$$

$$\frac{-2 \quad -2}{5 < z} \qquad \frac{-2 \quad -2}{z \leq 9}$$

$$5 < z \qquad z \leq 9$$

$$-5 < z \leq 9$$



Ex) $a+1 < 4$ or $a-1 \geq 3$

$$\frac{-1 \quad -1}{a < 3} \qquad \frac{+1 \quad +1}{a \geq 4}$$



CD p. 308 1-4, 18-23

and

Cwp. 308 6-15 all

HW 5.4a

Day 2 CW 5.4b

or

HW 5.4 SPAP

5.5 Inequalities Using Absolute Value

$$|7| = 7 \quad |-7| = 7 \quad -|7| = -7 \quad -|-7| = -7$$

Absolute Value is the distance on a # line. always +!

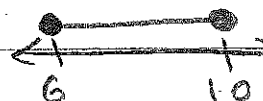
Ex) $|x+2| = 4$

$$\begin{array}{r} x+2=4 \\ -2 \quad -2 \\ \hline x=2 \end{array} \quad \begin{array}{r} x+2=-4 \\ -2 \quad -2 \\ \hline x=-6 \end{array}$$

Ex) $|x-8| \leq 2$

$$\begin{array}{r} x-8 \leq 2 \\ \\ \hline x \leq 10 \end{array} \quad \begin{array}{r} x-8 \geq -2 \\ \\ \hline x \geq 6 \end{array} \quad \begin{array}{l} \leq \text{ and} \\ \vee \text{ or} \end{array}$$

$$6 \leq x \leq 10$$



Ex) $|2k+1| > 7$

$$\begin{array}{r} 2k+1 > 7 \\ -1 \quad -1 \\ \hline 2k > 6 \\ \frac{2k}{2} > \frac{6}{2} \\ k > 3 \end{array} \quad \begin{array}{r} 2k+1 < -7 \\ -1 \quad -1 \\ \hline 2k < -8 \\ \frac{2k}{2} < \frac{-8}{2} \\ k < -4 \end{array}$$



CD p. 314, 1-6

CW p. 314, 7-29 odd




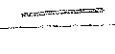
HW p. 314, 8-28 even

Day 2 Review

CW 5.5 SP

HW 5.5 P

5.6 Graphing Inequalities in Two Variables

 $<$ less than	 $>$ greater than
 \leq less than or equal to	 \geq greater than or equal to
\uparrow <u>Boundary</u>	\uparrow <u>Boundary</u>

- 1) Graph as Equality
- 2) Dotted or Solid
- 3) Shade

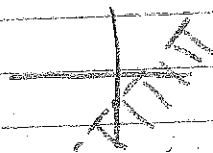
a) Pick pt usually (0,0)

yes solution shade to include
no shade away

Ex) $y > \frac{1}{2}x + 3$
dotted
0,3



Ex) $x = 1$ & $y < x - 1$
0, -1



WB CD P. 320 1-10
CW P. 320 12-19
HW 5.6 SPaP