Today's Plan:

Learning Target (standard): I will solve absolute value inequalities and write their solutions using set builder notation and interval notation.

Students will: Complete practice problems over previous concepts at the boards, put up homework problems on the board and make necessary corrections to their own work, take notes over new material and complete practice problems over new concepts.

Teacher will: Provide practice problems over previous concepts, check homework problems for accuracy and provide students feedback, describe and provide examples of new concepts and assign students assessment problems over new concepts.

Assessment: Board work, homework check and homework assignment

Differentiation: Students will work at the board, go over and correct homework at their seats, actively engage in lecture over new concepts, practice new concepts with the aid of other students and the teacher and complete homework assignment.

Inequality Practice:

1) $\{v \mid 1 < v < 2\}; (1,2)$

2) $\{a \mid 1 \le a \le 5\}; [1,5]$

3) $\{r \mid 1 < v \le 12\}; (1,12]$

4) $\{r \mid r < -2, r \ge 1\}; (-\infty,-2) \cup [1,\infty)$

5) $\{b \mid 0 < v < 2\}; (0,2)$

6) $\{r \mid r < -14, r > -5\}; (-\infty,-14) \cup (-5,\infty)$

7) $\{x \mid x \le -7, x \ge -2\}; (-\infty,-7] \cup [-2,\infty)$

8) $\{k \mid 1 < v < 7\}; (1,7)$

9) $\{n \mid -12 \le n < -4\}; [-12,-4)$

10) $\{a \mid a \le -1, a > 0\}; (-\infty,-1] \cup (0,\infty)$

Solve. Write the solution as a set and an interval.

$4-5x \le -2x-2$ or $7+7x \le 1+4x$

$-3x \le -6$ "union" "together" $3x \le -6$

$x \ge 2$ $x \le -2$

$\{x \mid x \le -2, x \ge 2\}$

$(-\infty, -2] \cup [2, \infty)$

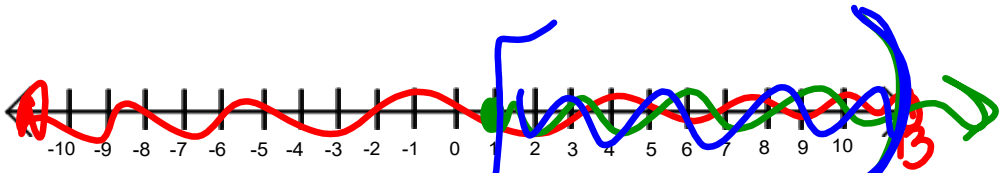
Solve. Write the solution as a set and an interval.

$-5-3k < -4k+8$ and $4k-5 \ge 5-6k$

$-5+k < 8$ "overlap" $10k-5 \ge 5$

$k < 13$ $10k \ge 10$

$k \ge 1$



$\{k \mid 1 \le k < 13\}$ $[1, 13)$

Solve. Write the solution as a set and an interval.

$$3k-4 \le 8+4k < -1-5k$$

$3k-4 \le 8+4k$

$-12 \le k$

$8+4k < -1-5k$

$9k < -9$

$k < -1$

$\{k \mid -12 \le k < -1\}$

$[-12, -1)$

Solve. Write the solution as a set and an interval.

$$5m+1 > 6m+1 \quad \text{or} \quad 8m-4 > 8-4m$$

$-m > 0$

$m < 0$

"together"

$12m > 12$

$m > 1$

$\{m \mid m < 0, m > 1\}$

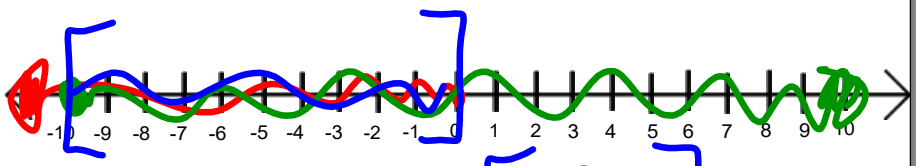
$(-\infty, 0) \cup (1, \infty)$

Solve. Write the solution as a set and an interval.

$2+8v \le 3v+2$ and $7+5v \ge 4v-3$

$5v \le 0$ "overlap" $v \ge -10$

$v \le 0$



$[-10, 0]$

$\{v \mid -10 \le v \le 0\}$

Absolute Value Equations:

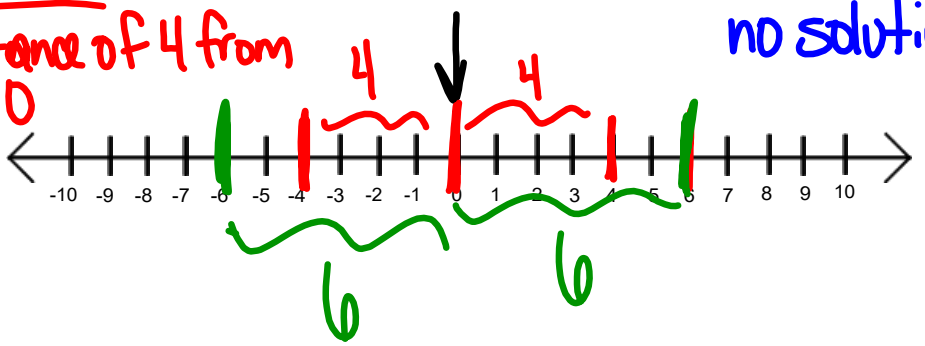
• distance from 0 on the number line

$|x| = 4$ $x = -4, 4$

- distance of 4 from 0

$|x| = 6$ $x = -6, 6$

$|x| = -3$ no solution



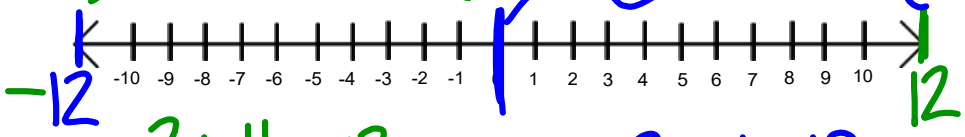
Absolute Value Equations: $|ax+b|=c$

$|2x-4|=12$

distance

"distance"

2x-4 2x-4



$2x-4=-12$ $\quad 2x-4=12$

$2x=-8$ $\quad 2x=16$

$x=-4$ $\quad x=8$

$x=-4,8$

Rule:

$$|ax+b|=c$$

$$ax+b=-c \quad \text{and} \quad ax+b=c$$

Solve:

$|2-5x|=2$

distance → -2, 2

$2-5x=-2$

$-5x=-4$

$x=\frac{4}{5}$

$2-5x=2$

$-5x=0$

$x=0$

$x=0, \frac{4}{5}$

Solve:

$|4x-3|+6=-4$

$|4x-3|=-10$

* cannot have a negative distance

no solution

Solve:

$$3-|5x+3|=3$$

$-|5x+3|=0$

$|5x+3|=0$ ← distance

$5x+3=0$

$5x=-3$

$x=-\frac{3}{5}$

Solve:

$$|4b+3|-2=7$$

$|4b+3|=9$ ← $-9, 9$

$4b+3=9$

$4b=6$

$b=\frac{3}{2}$

$4b+3=-9$

$4b=-12$

$b=-3$

$b=-3, \frac{3}{2}$

Assignment:

p.88 #4-52 (by 4)