Today's Plan:

Learning Target (standard): I will solve multi-step inequalities. I will write their solutions as sets and intervals. I will graph the solutions on a number line.

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.

NAME _____ 0:00:00 #78

BELL RINGER

1.) Determine whether 2(x-1) = 2x - 2 has one solution, no solution, or infinitely many solutions.

$\cancel{2x} - 2 = \cancel{2x} - 2$ $\quad -2 = -2$ true
$-\cancel{2x} \quad -\cancel{2x}$

2.) Find the slope and y-intercept of the linear equation y = 2x - 1.

$m = 2$ $\quad I_y: (0, -1)$

3.) Solve x - 2 = 8x + 12.

$+2 \quad +2$

$x = 8x + 14$ $\quad \frac{-7x}{-7} = \frac{14}{-7}$ $\quad x = -2$
$-8x \quad -8x$

1 Solve and graph. 3 Write the solution as a set. 2

8) $-4-7(2n-5)<115$

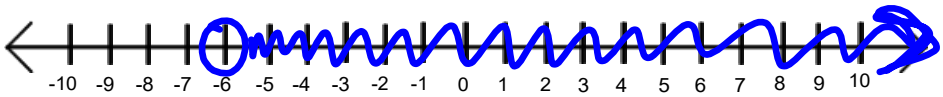
$-4-14n+35<115$

$-14n+31<115$

$-14n<84$

$n>-6$

2 $\{n \mid n>-6\}$



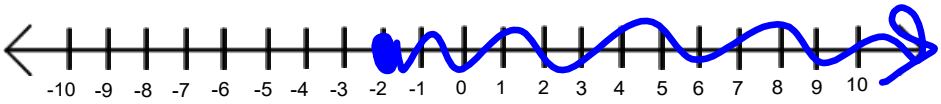
1 Solve and graph. 3 Write the solution as a set. 2

1 $-5x+7\le 17$

$-5x\le 10$

$x\ge -2$

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



$[-2,\infty)$

① Solve and graph. Write the solution as a set.

① $-1+3(2+4n)>65$

$\{n \mid n>5\}$

$-1+6+12n>65$

$5+12n>65$

$12n>60$

$n>5$

$(5,\infty)$

Solve and graph. Write the solution as a set.

$2+4(5n+5)\le 102$

$\{n \mid n\le 4\}$

$2+20n+20\le 102$

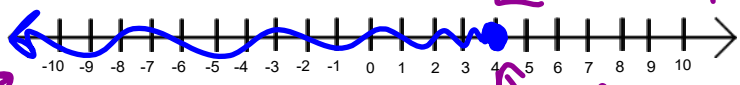
$20n+22\le 102$

$20n\le 80$

$n\le 4$

(- open

[- closed



beginning shading end

$(-\infty, 4]$ ← interval

beginning end

Inequality Solutions:

- if an inequality results in a false statement without variables, the inequality does not have a solution and it is written as the empty set $\varnothing$ "no solution - inconsistent"

- if an inequality results in a true statement without variables, the inequality has ALL solutions and it is written as the set of real numbers $\mathbb{R}$ "identity - infinite solutions - dependent"

Interval Notation:

- Parenthesis (,) - the equivalent of an open circle created by < or > "dotted"

- Brackets [,] - the equivalent of a closed circle created by $\leq$ or $\geq$ "solid"

- The first parenthesis or bracket tells where the interval starts and the second one tells where the interval ends

- ∞ and $-\infty$ will never have brackets because they can never be reached

Interval Notation:

- Writes the solution of an inequality using parentheses or brackets

x

shading = "x"

beginning ending

$\{x \mid -4 \le x \le 2\}$ $[-4, 2]$

beginning ending beginning ending

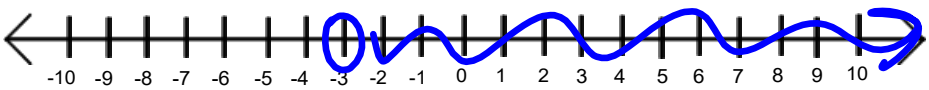
* arrows ALWAYS point left when "x" is between 2 numbers *

Solve and graph.

$-4x + 3 < 15$ $\{x \mid x > -3\}$

$-4x < 12$

$x > -3$



$(-3, \infty)$

Solve and graph.

① $2(x+2)-3x \geq -1$

② $\{x \mid x \leq 5\}$

$2x+4-3x \geq -1$

$-x+4 \geq -1$

$-x \geq -5$

$x \leq 5$

③ 

$(-\infty, 5]$

left, right

Solve and graph the inequality.

① $4x-4(x+2) > -2+2x$

$4x-4x-8 > -2+2x$

$-8 > -2+2x$

$-2x-8 > -2$

$-2x > 6$

$x < -3$

② $\{x \mid x < -3\}$

③ 

④ $(-\infty, -3)$

Solve and graph the inequality.

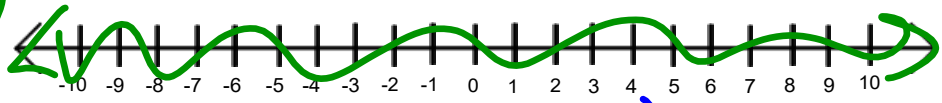
① $-2(x-3) > 1-2x$

② $\mathbb{R}$

$-2x+6>1-2x$

$6>1$

③



④ $(-\infty, \infty)$

① $6<1$

②

③

④

Solve the inequality. Write the solution as a set and in interval notation.

① $5(5-k)-7(7+k)<0$

$25-5k-49-7k<0$

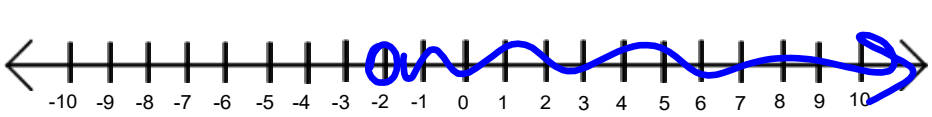
$-24-12k<0$

$-12k<24$

$k>-2$

② $\{k \mid k>-2\}$

③



④ $(-2,\infty)$

Assignment:

Multi-Step Inequalities

#1-14

- Solve
- Set notation
- Graph
- Interval notation