

Today's Plan:

Learning Target (standard): I will solve combined 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 _____

radical = $\sqrt[n]{x^m}$ ← power
exponents = $x^{\frac{m}{n}}$ ← root

BELL RINGER



#80

1.) Rewrite the expression $5^{3/5}$ in radical form

$$5^{3/5} = \sqrt[5]{5^3}$$

2.) Find the slope between (3, -1) and (-5, 4).

$$m = \frac{y_2 - y_1}{x_2 - x_1} = \frac{4 - (-1)}{-5 - 3} = \frac{5}{-8} = -\frac{5}{8}$$

$$m = -\frac{5}{8}$$

3.) Find the area of a patio that is 3 feet wide and 11 feet long.

$$\text{"rectangle"} = lw \\ = (11 \text{ ft})(3 \text{ ft})$$

$$\text{Area} = 33 \text{ ft}^2$$

Solve each compound inequality and graph its solution.

1) $x + 8 < 13$ or $3x \leq -27$ *"union" "together"*
 $x < 5$ or $x \geq 9$
 $\{x | x < 5, x \geq 9\}$
 $(-\infty, 5) \cup [9, \infty)$

2) $\frac{n}{3} \geq 3$ or $n - 6 \leq -10$
 $n \geq 9$ or $n \leq -4$
 $\{n | n \leq -4, n \geq 9\}$
 $(-\infty, -4] \cup [9, \infty)$

3) $\frac{x}{5} > 0$ or $-5x > 10$
 $x > 0$ or $x < -2$
 $\{x | x < -2, x > 0\}$
 $(-\infty, -2) \cup (0, \infty)$

4) $x + 5 \leq 12$ or $9x \geq 81$
 $x \leq 7$ or $x \geq 9$
 $\{x | x \leq 7, x \geq 9\}$
 $(-\infty, 7] \cup [9, \infty)$

5) $5 + n \geq 11$ or $-6n > 54$
 $n \geq 6$ or $n < -9$
 $\{n | n < -9, n \geq 6\}$
 $(-\infty, -9) \cup [6, \infty)$

6) $x + 5 \leq -5$ or $x + 1 \geq 10$
 $x \leq -10$ or $x \geq 9$
 $\{x | x \leq -10, x \geq 9\}$
 $(-\infty, -10] \cup [9, \infty)$

7) $42 \geq 5n + 7 \geq -33$ *$35 \geq 5n = -40$*
 $-8 \leq n \leq 7$ *$7 \geq n \geq -8$*
 $\{n | -8 \leq n \leq 7\}$ *$-8 \leq n \leq 7$*
 $[-8, 7]$

8) $8 \geq -6 - 2n > -8$
 $-7 \leq n < 1$
 $\{n | -7 \leq n < 1\}$
 $[-7, 1)$

9) $8 < 6x + 8 < 32$
 $0 < x < 4$
 $\{x | 0 < x < 4\}$
 $(0, 4)$

10) $-15 < 2x + 5 < -7$
 $-10 < x < -6$
 $\{x | -10 < x < -6\}$
 $(-10, -6)$

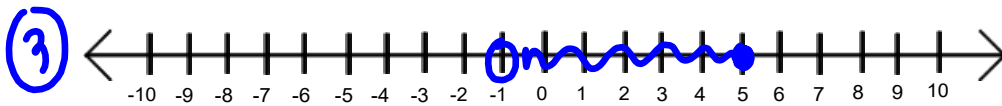
11) $-15 < 5 + 2k \leq -1$
 $-10 < k \leq -3$
 $\{k | -10 < k \leq -3\}$
 $(-10, -3]$

12) $-7 < -k - 1 < -5$
 $4 < k < 6$
 $\{k | 4 < k < 6\}$
 $(4, 6)$

Solve. Write the solution as a set and interval.

① $-4 < -3 + d \leq 2$
 $+3 \quad +3 \quad +3$
 $-1 < d \leq 5$

② $\{d | -1 < d \leq 5\}$

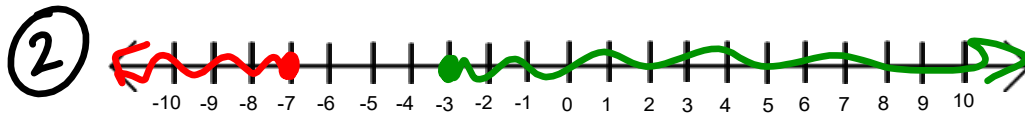


④ $(-1, 5]$

Solve. Write the solution as a set and interval.

$$\textcircled{1} \quad h+5 \leq -2 \quad \text{or} \quad h+5 \geq 2$$

$$h \leq -7 \qquad h \geq -3$$



$$\textcircled{3} \quad \{h \mid h \leq -7, h \geq -3\}$$

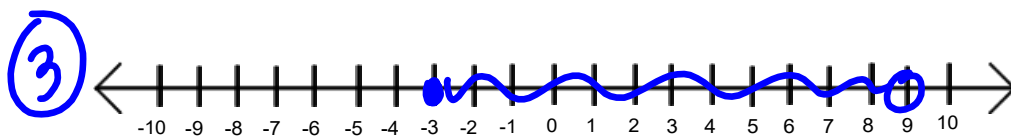
$$\textcircled{4} \quad (-\infty, -7] \cup [-3, \infty)$$

Solve. Write the solution as a set and interval.

$$\textcircled{1} \quad -11 \leq -8 + x < 1$$

$$-3 \leq x < 9$$

$$\textcircled{2} \quad \{x \mid -3 \leq x < 9\}$$



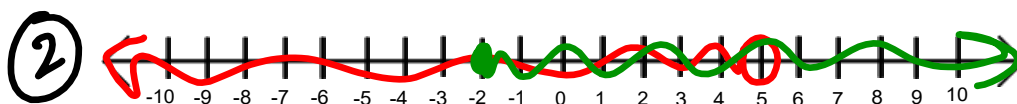
$$\textcircled{4} \quad [-3, 9)$$

Solve. Write the solution as a set interval.

$$3x - 11 < 4 \quad \text{or} \quad 4x + 9 \geq 1$$

$$\textcircled{1} \quad 3x < 15 \qquad 4x \geq -8$$

$$\qquad \qquad x < 5 \qquad \qquad x \geq -2$$



$\textcircled{3} \mathbb{R}$

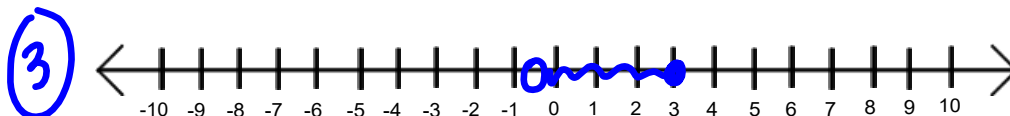
$\textcircled{4} (-\infty, \infty)$

Solve. Write the solution as a set and interval.

$$\textcircled{1} \quad -2 < 2b - 1 \leq 5 \qquad \textcircled{2} \quad \{ b \mid -\frac{1}{2} < b \leq 3 \}$$

$$-\frac{1}{2} < \frac{2b}{2} \leq \frac{6}{2}$$

$$-\frac{1}{2} < b \leq 3$$



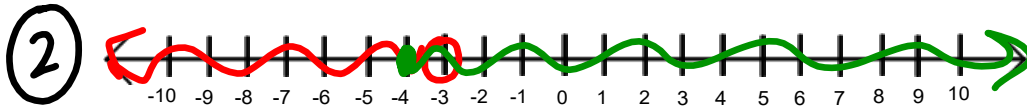
$\textcircled{4} \left(-\frac{1}{2}, 3\right]$

Solve. Write the solution as a set and interval.

$$-6r > 18 \quad \text{or} \quad 12 + 3r \geq 0$$

$$\textcircled{1} \quad r < -3 \qquad 3r \geq -12$$

$$\qquad \qquad \qquad r \geq -4$$



$$\textcircled{3} \quad \mathbb{R}$$

$$\textcircled{4} \quad (-\infty, \infty)$$

Solve. Write the solution as a set and interval.

$$\textcircled{1} \quad x - 1 > 2(x + 4) - 4$$

$$x - 1 > 2x + 8 - 4$$

$$x - 1 > 2x + 4$$

$$-x - 1 > 4$$

$$-x > 5$$

$$x < -5$$

$$\textcircled{2} \quad \{x \mid x < -5\}$$



$$\textcircled{4} \quad (-\infty, -5)$$

Combined Inequalities:

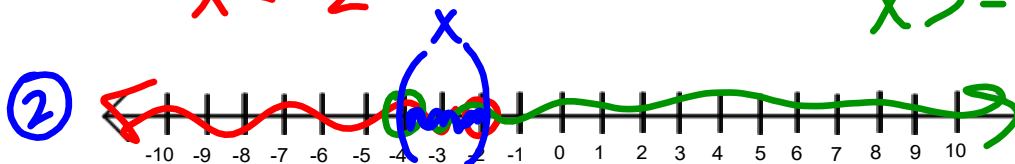
- The Conjunction
 - the **intersection** of two or more sets of numbers using the word **and** to mean that the numbers are in both sets
 - solve each piece and determine the numbers in the intersection by graphing and seeing where the shading of each overlaps or is the same

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

$$3 - 2x > 7 \quad \text{and} \quad 5x + 2 > -18$$

① $-2x > 4$ "Overlap" $5x > -20$

$x < -2$ $x > -4$

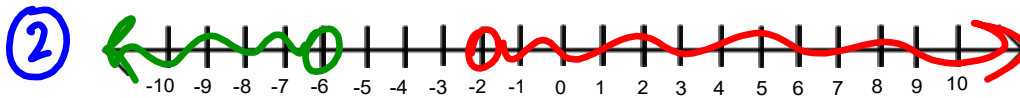


③ $\{x \mid -4 < x < -2\}$

④ $(-4, -2)$

Solve. Write the solution as a set and interval.

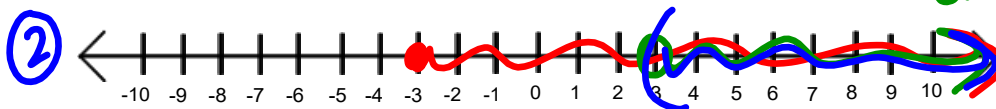
$$\begin{array}{l}
 -2m < 4 \quad \text{and} \quad 12 + 2m < 0 \\
 \textcircled{1} \quad m > -2 \qquad \qquad \qquad 2m < -12 \\
 \qquad \qquad \qquad \qquad \qquad \qquad m < -6
 \end{array}$$



- ③ \emptyset
- ④ ---

Solve. Write the solution as a set and interval.

$$\begin{array}{l}
 2d - 5 \geq -11 \quad \text{and} \quad -2d - 5 < d - 14 \\
 \textcircled{1} \quad 2d \geq -6 \qquad \qquad \qquad -3d - 5 < -14 \\
 \qquad \qquad \qquad d \geq -3 \qquad \qquad \qquad -3d < -9 \\
 \qquad \qquad \qquad \qquad \qquad \qquad \qquad \qquad d > 3
 \end{array}$$



- ③ $\{d \mid d > 3\}$
- ④ $(3, \infty)$

Assignment:

Conjunctions

#1-12

- Solve
- Set notation
- Graph
- Interval notation