

**1ST 5**  
Graph and solve the inequalities.

1)  $\frac{-2x}{-2} > \frac{10}{-2}$   $x < -5$

2)  $\left(\frac{1}{2}x \leq -1\right) \cdot 2$   $x \leq -2$

3)  $x + 7 > -2x - 2$   
 $+2x \quad +2x$   
 $3x + 7 > -2$   
 $-7 \quad -7$   
 $3x > -9$   $x > -3$

Inequalities Day 9

**COMPOUND INEQUALITIES**

Two inequalities that are joined by the word *and* or the word *or* form a compound inequality.

- A solution of a compound inequality formed by *and* is any number that makes both inequalities true.
- A solution of a compound inequality joined by *or* is any number that makes either inequality true.

Inequalities Day 9

**COMPOUND INEQUALITIES**

You can write the compound inequality  $x \geq -5$  and  $x \leq 7$  as  $-5 \leq x \leq 7$

$x \geq -5$

$x \leq 7$

$-5 \leq x \leq 7$

Smallest largest graph just the intersection

overlap - intersection

Inequalities Day 9

**COMPOUND INEQUALITIES**

Interval Notation

$-5 \leq x < 7$  can be written as  $[-5, 7)$

$3 < x \leq 5$   $(3, 5]$

$-2 < x < 6$   $(-2, 6)$

Inequalities Day 9

**COMPOUND INEQUALITIES**

Intersections

A:  $x < 2$  B:  $x > -5$  C:  $x \leq -1$

Find  $A \cap B$

$x > -5$   $-5 < x$

$-5 < x < 2$   $(-5, 2)$

intersects overlap and intersection union

Inequalities Day 9

**COMPOUND INEQUALITIES**

A:  $x < 2$  B:  $x > -5$  C:  $x \leq -1$

Find  $B \cap C$

$x > -5$  flip smallest

and  $x \leq -1$

$-5 < x \leq -1$  answer  $(-5, -1]$

$x \leq -1$

Inequalities Day 9

### COMPOUND INEQUALITIES

o Writing a Compound Inequality

- All real numbers that are at least -2 and at most 4

$x \geq -2$   
 and  
 $x \leq 4$

-2                      4

-2 ≤ x ≤ 4

[-2, 4]

*answer*

Inequalities Day 9

### COMPOUND INEQUALITIES

o Today's temperatures will be above 32°F, <sup>and</sup> but not as high as 40°F.

$x > 32$   
 and  
 $x < 40$

32                      40

$32 < x < 40$

(32, 40)

Inequalities Day 9

### COMPOUND INEQUALITIES

o Writing a Compound Inequality

- All real numbers greater than -2 but less than 9

$x > -2$   
 and  
 $x < 9$

-2                      9

$-2 < x < 9$

(-2, 9)

Inequalities Day 9

### COMPOUND INEQUALITIES

Solving a Compound Inequality Containing AND

o Solve  $-4 < r - 5 \leq -1$ . Graph your solution.

$-4 < r - 5$     and     $r - 5 \leq -1$   
 $\frac{+5}{+5}$      $\frac{+5}{+5}$                        $\frac{+5}{+5}$      $\frac{+5}{+5}$

$1 < r$     and     $r \leq 4$

$1 < r \leq 4$   
 (1, 4]

1                      4

Inequalities Day 9

### COMPOUND INEQUALITIES

o Solve, graph, and write in interval notation.

- $-6 \leq 3x < 15$

$-6 \leq 3x$  and  $3x < 15$   
 $\frac{-6}{3} \leq \frac{3x}{3}$  and  $\frac{3x}{3} < \frac{15}{3}$   
 $-2 \leq x$  and  $x < 5$

$-2 \leq x < 5$   
 [-2, 5)

-2                      5

Inequalities Day 9

### COMPOUND INEQUALITIES

o Solve, graph, and write in interval notation.

- $-3 < 2x - 1 < 7$

$-3 < 2x - 1$  and  $2x - 1 < 7$   
 $\frac{+1}{+1}$      $\frac{+1}{+1}$                        $\frac{+1}{+1}$      $\frac{+1}{+1}$

$-\frac{2}{2} < \frac{2x}{2}$                        $\frac{2x}{2} < \frac{8}{2}$   
 $-1 < x$     and     $x < 4$

$-1 < x < 4$   
 (-1, 4)

-1                      4

Inequalities Day 9

**PW 35**

Workbook pg. 42 # 1, 2,5-7,  
9, 11, 14, 25 – 27, 29, 30,  
32, 34, 36

Inequalities Day 9