

# 2.6-2.7 Quiz This Friday

9/28

Name: \_\_\_\_\_

Unit 2: Equations & Inequalities

Date: \_\_\_\_\_ Bell: \_\_\_\_\_

Homework 13: Inequalities Review



\*\* This is a 2-page document! \*\*

**Multi-Step Inequalities:** Solve, graph, and write the solutions in interval notation.

1.  $-8(x-4) - 3 \leq 5$   
 $-8x + 32 - 3 \leq 5$   
 $-8x + 32 \leq 8$   
 $-8x \leq -24$   
 $x \geq 3$

set  
Interval Notation:  $\{x \mid x \geq 3\}$

2.  $5x + 8 < 3x - 2$   
 $2x + 8 < -2$   
 $2x < -10$   
 $x < -5$

set  
Interval Notation:  $\{x \mid x < -5\}$

3.  $-3(x+3) \leq -(2x+8)$   
 $-3x - 9 \leq -2x - 8$   
 $-3x \leq -2x + 1$   
 $-x \leq 1$   
 $x \geq -1$

set  
Interval Notation:  $\{x \mid x \geq -1\}$

4.  $9x - (2x - 1) > 5(x - 7)$   
 $9x - 2x + 1 > 5x - 35$   
 $7x + 1 > 5x - 35$   
 $2x + 1 > -35$   
 $2x > -36$   
 $x > -18$

set  
Interval Notation:  $\{x \mid x > -18\}$

5.  $8(x+9) - 5x > 7x + 24$   
 $8x + 72 - 5x > 7x + 24$   
 $3x + 72 > 7x + 24$   
 $-4x + 72 > 24$   
 $-4x > -48$   
 $x < 12$

set  
Interval Notation:  $\{x \mid x < 12\}$

6.  $10x - (7x + 2) \geq 8x - 32$   
 $10x - 7x - 2 \geq 8x - 32$   
 $3x - 2 \geq 8x - 32$   
 $-2 \geq 5x - 32$   
 $30 \geq 5x$   
 $6 \geq x$   
 $x \leq 6$

set  
Interval Notation:  $\{x \mid x \leq 6\}$

**Compound Inequalities:** Solve, graph, and write the solutions in interval notation.

7.  $x - 2 < -11$  or  $-3x \leq -18$   
 $x < -9$  or  $x \geq 6$

set  
Interval Notation:  $\{x \mid x < -9 \text{ or } x \geq 6\}$

8.  $-x - 10 \geq -3$  or  $5x - 2 > -27$   
 $-x \geq 7$  or  $5x > -25$   
 $x \leq -7$  or  $x > -5$

set  
Interval Notation:  $\{x \mid x \leq -7 \text{ or } x > -5\}$

Keep the x in the middle

Keep the + in the middle

9.  $5 \leq x + 4 < 7$   
 $\frac{-4 \quad -4 \quad -4}{1 \leq x < 3}$  "and"  
 same as:  $x \geq 1$  and  $x < 3$

set  
Interval Notation:  $\{x \mid 1 \leq x < 3\}$

10.  $-14 < 3x - 5 < 1$  "and"  
 $\frac{+5 \quad +5 \quad +5}{-9 < \frac{3x}{3} < \frac{6}{3}}$  Same as:  
 $x > -3$  and  $x < 2$

set  
Interval Notation:  $\{x \mid -3 < x < 2\}$

**Absolute Value Inequalities:** Solve, graph, and write the solutions in interval notation.

11.  $|x| > 3$   
 $x > 3$  or  $x < -3$

set  
Interval Notation:  $\{x \mid x < -3 \text{ or } x > 3\}$

12.  $|x - 7| \leq 2$   
 $x - 7 \leq 2$  and  $x - 7 \geq -2$   
 $x \leq 9$  and  $x \geq 5$

set  
Interval Notation:  $\{x \mid 5 \leq x \leq 9\}$

13.  $|2x - 5| \geq 11$   
 $2x - 5 \geq 11$  or  $2x - 5 \leq -11$   
 $2x \geq 16$                        $2x \leq -6$   
 $x \geq 8$  or  $x \leq -3$

set  
Interval Notation:  $\{x \mid x \leq -3 \text{ or } x \geq 8\}$

14.  $|7x| - 3 \geq 25 \rightarrow |7x| \geq 28$   
 $7x \geq 28$  OR  $7x \leq -28$   
 $x \geq 4$  or  $x \leq -4$

set  
Interval Notation:  $\{x \mid x \leq -4 \text{ or } x \geq 4\}$

15.  $8|x - 5| > 32 \rightarrow |x - 5| > 4$   
 $x - 5 > 4$  or  $x - 5 < -4$   
 $x > 9$  or  $x < 1$

set  
Interval Notation:  $\{x \mid x < 1 \text{ or } x > 9\}$

16.  $3|x + 4| - 8 < 1 \rightarrow 3|x + 4| < 9$   
 $|x + 4| < 3$   
 $x + 4 < 3$  and  $x + 4 > -3$   
 $x < -1$  and  $x > -7$

set  
Interval Notation:  $\{x \mid -7 < x < -1\}$

good luck on your quiz! 😊