

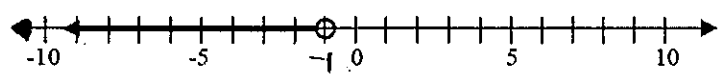
Name Key
Mrs. Roubos

Date _____
8A Period _____

Solving Inequalities Homework

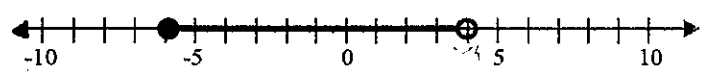
1) Which of the following inequalities is graphed below?

- (1) $x < 2$
- (2) $x \leq -1$
- (3) $x < -1$
- (4) $x > -1$



2) Which of the following values of x is *not* in the solution set graphed below?

- (1) -5 ✓
- (2) -6
- (3) 0
- (4) 4 ✓



3) Which of the following represents the solution set of the inequality $4x + 6 \leq 26$?

- (1) $x \leq 5$
- (2) $x \leq 8$
- (3) $x \geq 5$
- (4) $x \geq 8$

$$\begin{aligned} 4x + 6 &\leq 26 \\ -6 &-6 \\ \hline 4x &\leq 20 \\ \frac{4}{4} &\frac{20}{4} \\ x &\leq 5 \end{aligned}$$

4) Which of the following represents the solution set of the inequality $-3x + 6 < 27$?

- (1) $x < -7$
- (2) $x \leq -7$
- (3) $x > 7$
- (4) $x > -7$

$$\begin{aligned} -3x + 6 &< 27 \\ -6 &-6 \\ \hline -3x &< 21 \end{aligned}$$

switch direction when dividing by a neg #

$$\begin{aligned} (-3) x &> (-7) \end{aligned}$$

5) Which of the following is the solution set of the inequality $10 \leq 4x - 14$?

- (1) $x \leq 6$
- (2) $x \geq 6$
- (3) $x \geq -1$
- (4) $x < -1$

$$\begin{aligned} 10 &\leq 4x - 14 \\ +14 &+14 \\ \hline 24 &\leq 4x \\ \frac{24}{4} &\frac{4x}{4} \\ 6 &\leq x \text{ or } x \geq 6 \end{aligned}$$

6) What is the solution set of the inequality : $4t + 2 < 8t - (6t - 10)$

a) $\{t | t < -6.5\}$

b) $\{t | t > -6.5\}$

c) $\{t | t < 4\}$

d) $\{t | t > 4\}$

$$4t + 2 < 8t - 6t + 10$$

$$4t + 2 < 2t + 10$$

$$\frac{-2t}{-2} \quad \frac{-2t}{-2}$$

$$2t + 2 < 10$$

$$\frac{-2}{-2} \quad \frac{-2}{-2}$$

$$2t < 8$$

$$t < 4$$

Solve the following inequalities & graph your solution. (List the properties for #7 only)

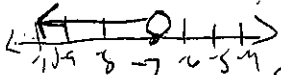
Write your answer in set builder & interval notation

7) $1 - 5x > 36$

$-1 \quad -1$ Sub. Prop. of Ineq.

$-5x > 35$ Div. Prop. of Ineq.

$\frac{-5}{-5} > \frac{35}{-5}$
 $x < -7$ *Switch direction of inequality by dividing by a neg.*



S.B: $\{x | x < -7\}$

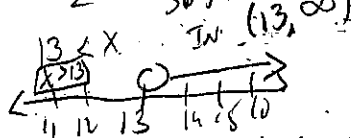
I.N: $(-\infty, -7)$

8) $2(4x + 3) < 10(x - 2)$

$8x + 6 < 10x - 20$ Dist. Prop.
 $\frac{-8x}{-8x} \quad \frac{-8x}{-8x}$ S.P.O.I

$6 < 2x - 20$
 $\frac{+20}{+20}$ A.P.O.I

$26 < 2x$ D.P.O.I
 $\frac{26}{2} < \frac{2x}{2}$ S.B. $\{x | x > 13\}$

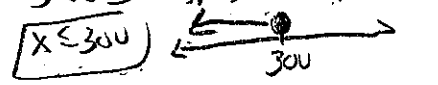


9) $0.15x + 50 \geq 0.20x + 35$ S.P.O.I

$\frac{-0.15x}{-0.15x} \quad \frac{-0.15x}{-0.15x}$
 $50 \geq 0.05x + 35$
 $\frac{-35}{-35} \quad \frac{-35}{-35}$ S.P.O.I

$15 \geq 0.05x$ D.P.O.I

$\frac{15}{0.05} \geq \frac{0.05x}{0.05}$ S.B. $\{x | x \leq 300\}$

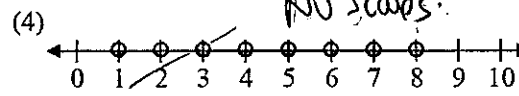
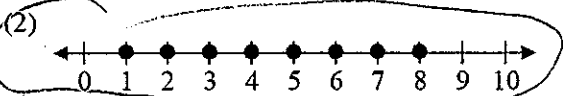
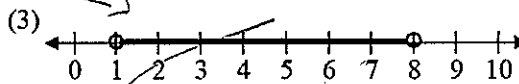
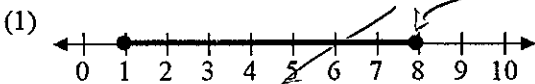


10) Translate the following verbal sentence into an algebraic inequality

"Four times a number decreased by 15 is less than six more than the same number"

$4x - 15 < x + 6$

ii) Felicia's Ice Cream Shoppe offers a maximum of eight scoops of ice cream on a single cone. They serve only whole scoops (a customer may not order 2 and a half scoops for example). If a customer just ordered an ice cream cone, which of the following solutions represents the number of scoops the customer may have ordered? Explain. *part of scoops*



★ Challenge ★

A) Which of the following inequalities has all real numbers as its solution set?

(1) $3x + 2 > 2x + 7$
 $\frac{-2x}{-2x} \quad \frac{-2x}{-2x}$
 $x + 2 > 7$
 $x > 5$

(3) $4x + 8 \leq 4x + 16$
 $\frac{-4x}{-4x} \quad \frac{-4x}{-4x}$
 $8 \leq 16$ ✓

(2) $7x + 3 > 7x + 10$
 $\frac{-7x}{-7x} \quad \frac{-7x}{-7x}$
 $3 > 10$

(4) $5x - 4 > 2x + 3$
 $\frac{-2x}{-2x} \quad \frac{-2x}{-2x}$
 $3x - 4 > 3$
 $3x > 7$
 $x > 2.33$

B) Which of the following inequalities has no values in its solution set (it's empty)?

(1) $6x + 2 > 6x - 1$
 $\frac{-6x}{-6x} \quad \frac{-6x}{-6x}$
 $2 > -1$ ✓

(3) $8x + 7 < 3x + 9$
 $\frac{-3x}{-3x} \quad \frac{-3x}{-3x}$
 $5x + 7 < 9$
 $5x < 2$
 $x < 0.4$

(2) $4x + 8 \geq 4x + 8$
 $\frac{-4x}{-4x} \quad \frac{-4x}{-4x}$
 $8 \geq 8$ ✓

(4) $2x + 6 < 2x - 10$
 $\frac{-2x}{-2x} \quad \frac{-2x}{-2x}$
 $6 < -10$ → no real