Name_____

Review of all Inequalities

1) $-3x - 1 \geq 21 - x$

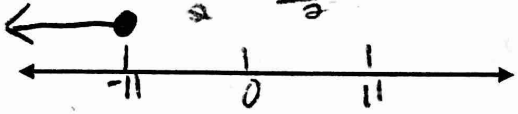
$+3x \quad +3x$

$-1 \geq 21 + 2x$

$-21 \quad -21$

$\frac{-22}{2} \geq \frac{2x}{2}$

$x \leq -11$

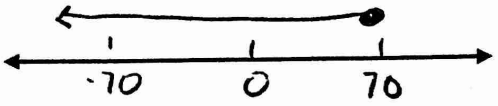


2) $-10 \leq -\frac{1}{5}y + 4$

$-4 \quad -4$

$-5 \cdot -14 \leq -\frac{1}{5}y \cdot -5$ Flip!

$70 \geq y$ or $y \leq 70$

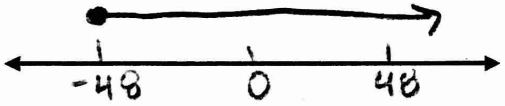


3) $\frac{5}{8}n + 6 \geq -24$

$-6 \quad -6$

$\frac{5}{8}n \geq -30 \cdot \frac{5}{5}$

$n \geq -48$



4) $b - 11 < 8b + 3$

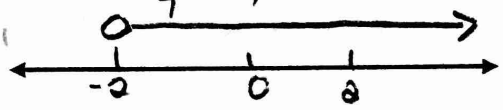
$-b \quad -b$

$-11 < 7b + 3$

$-3 \quad -3$

$\frac{-14}{7} < \frac{7b}{7}$

$b > -2$



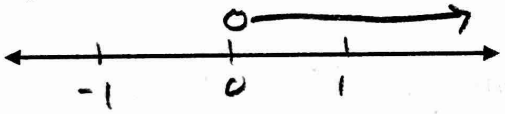
5) $6(y+1) > 6$

$\frac{6}{6} \quad \frac{6}{6}$

$y + 1 > 1$

$-1 \quad -1$

$y > 0$

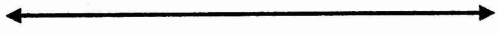


6) $6(x-8) > 6x - 48$

$6x - 48 > 6x - 48$

$-48 > -48$ False

No solution

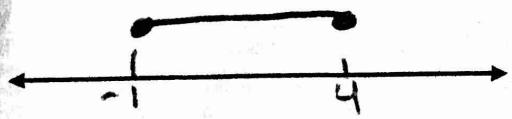


7) $2c - 4 \geq -6$ *and* $3c + 1 \leq 13$

$+4 \quad +4 \qquad -1 \quad -1$

$\frac{2c}{2} \geq \frac{-2}{2} \qquad \frac{3c}{3} \leq \frac{12}{3}$

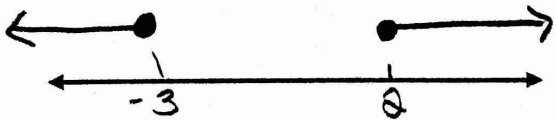
$c \geq -1$ and $c \leq 4$ or $-1 \leq c \leq 4$



8) $w + 3 \leq 0$ *or* $w + 7 \geq 9$

$-3 \quad -3 \qquad -7 \quad -7$

$w \leq -3$ or $w \geq 2$



9) $\frac{1}{2}n > 2$ *OR* $2n - 2 < 6 + n$

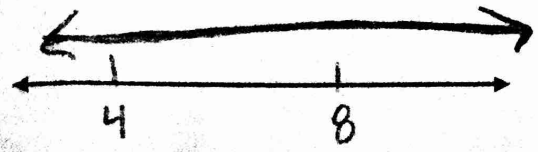
$2 \cdot \quad +2 \quad -n \qquad -n$

$n > 4 \qquad n - 2 < 6$

$+2 \quad +2$

$n < 8$

all real #s



10) $d - 3 < 6d + 12 < 2d + 32$

$d - 3 < 6d + 12$ and $6d + 12 < 2d + 32$

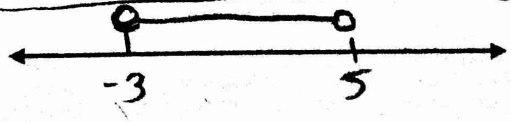
$-d \quad -d \qquad -2d \quad -2d$

$-3 < 5d + 12 \qquad 4d + 12 < 32$

$-12 \quad -12 \qquad -12 \quad -12$

$\frac{-15}{5} < \frac{5d}{5} \qquad \frac{4d}{4} < \frac{20}{4}$

$-3 < d$ and $d < 5$ or $-3 < d < 5$



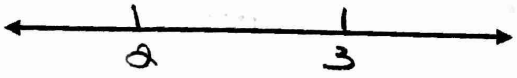
11) $3x > x + 6$ *and* $15x < 10x + 10$

$-x \quad -x \qquad -10x \quad -10x$

$\frac{2x}{2} > \frac{6}{2} \qquad \frac{5x}{5} < \frac{10}{5}$

$x > 3$ and $x < 2$

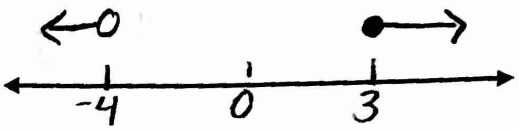
No solution



12) $k - 3 < -7$ *OR* $k + 5 \geq 8$

$+3 \quad +3 \qquad -5 \quad -5$

$k < -4$ or $k \geq 3$



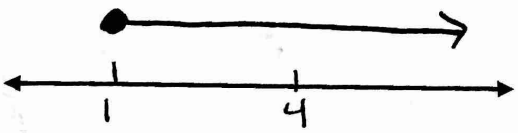
13) $4x - 2 \geq 2$ *or* $3x - 9 \geq 3$

$+2 \quad +2 \qquad +9 \quad +9$

$\frac{4x}{4} \geq \frac{4}{4} \qquad \frac{3x}{3} \geq \frac{12}{3}$

$x \geq 1$ or $x \geq 4$

or MORE



14) $-2x \geq -6$ *or* $-5 < 5x$

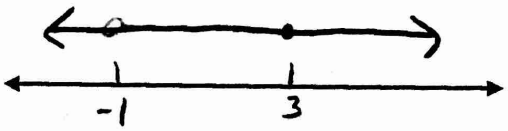
$\frac{-2x}{-2} \geq \frac{-6}{-2} \qquad \frac{-5}{5} < \frac{5x}{5}$

Flip!

$x \leq 3$ or $-1 < x$

$x \leq 3$ or $x > -1$

All real #s



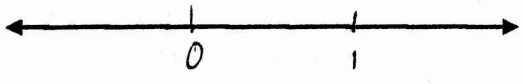
15) $-5x + 2 \leq -3$ *and* $-6x + 3 \geq 3$

$-2 \quad -2 \qquad -3 \quad -3$

Flip! $\frac{-5x}{-5} \leq \frac{-5}{-5} \qquad \frac{-6x}{-6} \geq \frac{0}{-6}$ Flip!

$x \geq 1$ and $x \leq 0$

No solution



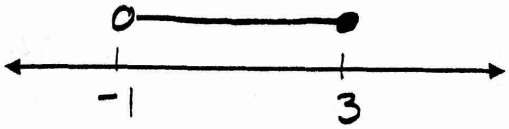
16) $-5x - 7 < -2$ *and* $21 \geq 7x$

$+7 \quad +7 \qquad \frac{}{7} \quad \frac{}{7}$

Flip! $\frac{-5x}{-5} < \frac{5}{-5} \qquad 3 \geq x$

$x > -1$ and $x \leq 3$

$-1 < x \leq 3$



17) $4x + 5 < 2x + 1 < 5x + 4$

Separate these two

$4x + 5 < 2x + 1$ and $2x + 1 < 5x + 4$

$-2x \quad -2x \qquad -2x \quad -2x$

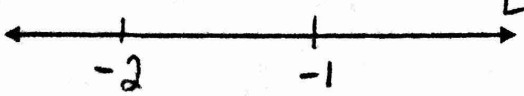
$2x + 5 < 1 \qquad 1 < 3x + 4$

$-5 \quad -5 \qquad -4 \quad -4$

$\frac{2x}{2} < \frac{-4}{2} \qquad \frac{-3}{3} < \frac{3x}{3}$

$x < -2$ and $-1 < x$

No solution



18) $6x - 8 < 5x + 2 < 7x - 8$

$6x - 8 < 5x + 2$ and $5x + 2 < 7x - 8$

$-5x \quad -5x \qquad -5x \quad -5x$

$x - 8 < 2 \qquad 2 < 2x - 8$

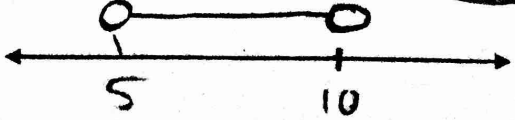
$+8 \quad +8 \qquad +8 \quad +8$

$x < 10$ and $10 < 2x$

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

$5 < x$

$5 < x < 10$



19) Tara has $34 to spend on boxes of valentine candy for her friends. Each box of candy is $1.50 and there is a flat rate of $4.00 for shipping. How many boxes of valentine candy can she buy? Define a variable, set up an inequality and solve.

X = # of boxes of candy

$$1.5x + 4 \leq 34$$
$$-4 \quad -4$$
$$\frac{1.5x}{1.5} \leq \frac{30}{1.5}$$
$$x \leq 20$$

Tara can buy no more than 20 boxes of valentine candy

20) Porter went to the bowling alley and spent $12.50 on food and $3.00 to rent shoes. Bowling costs $2.50 per game. How many games can he bowl if he brought $25.50 with him to the bowling alley? Define a variable, set up an inequality and solve.

X = # of games

$$12.50 + 3 + 2.5x \leq 25.50$$
$$15.50 + 2.5x \leq 25.50$$
$$-15.50 \qquad -15.50$$
$$\frac{2.5x}{2.5} \leq \frac{10.00}{2.50}$$
$$x \leq 4$$

Porter can bowl at most 4 games

21) Dani has $500 in a savings account at the beginning of the summer. She wants to have at least $200 in the account by the end of the summer. She withdraws $25 each week for food, clothes and movie tickets. Write an inequality to represent Dani's situation. How many weeks can Dani withdraw money from her account?

X = # of weeks

$$500 - 25x \geq 200$$
$$-500 \qquad -500$$
$$\frac{-25x}{-25} \geq \frac{-300}{-25}$$

Flip!

$$x \leq 12$$

Dani can withdraw up to 12 weeks