

NOTES

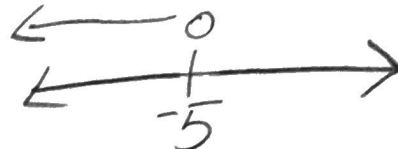
Solving Inequalities Graphing

X on left
on right

$$\begin{array}{r} -1 + x \geq 4 \\ +1 \quad +1 \\ \hline x \geq 5 \end{array}$$

$$\begin{array}{r} -12 > x - 7 \\ +7 \quad +7 \\ \hline -5 > x \\ x < 5 \end{array}$$

Flip



When x or ÷ by a neg. # you flip the inequality

$$\begin{array}{r} -3x > 3 \\ \frac{-3x}{-3} > \frac{3}{-3} \\ \text{Flip} \\ x < -1 \end{array}$$

$$\begin{array}{r} x \leq -4.4 \\ \text{Flip} \\ x \leq -16 \end{array}$$

$$\begin{array}{r} 2x + 4 \geq 24 \\ -4 \quad -4 \\ \hline 2x \geq 20 \\ \frac{2x}{2} \geq \frac{20}{2} \\ x \geq 10 \end{array}$$

$$\begin{array}{r} -b - 2 \geq 8 \\ +2 \quad +2 \\ \hline -b \geq 10 \\ \frac{-b}{-1} \geq \frac{10}{-1} \\ \text{Flip} \\ b \leq -10 \end{array}$$

$$\begin{array}{r} -4(-4 + x) > 56 \\ 16 - 4x > 56 \\ \frac{16 - 4x}{-4} > \frac{56}{-4} \\ -4x > 40 \\ \frac{-4x}{-4} > \frac{40}{-4} \\ \text{FLIP!} \\ x < -10 \end{array}$$

$$\begin{array}{r} 15. \frac{-9 + a}{15} > 1.5 \\ \frac{-9 + a}{15} > 1.5 \\ \frac{-9 + a}{15} > 1.5 \\ +9 \quad +9 \\ \hline a > 24 \end{array}$$

open circle

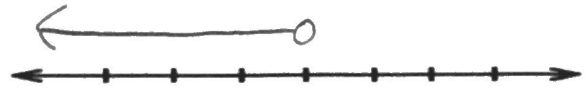
$$\begin{array}{r} \frac{x}{3} - 3 \leq -6 \\ +3 \quad +3 \\ \hline \frac{x}{3} \leq -3 \\ 3 \cdot \frac{x}{3} \leq -3 \cdot 3 \\ x \leq -9 \end{array}$$

Solving Linear Inequalities

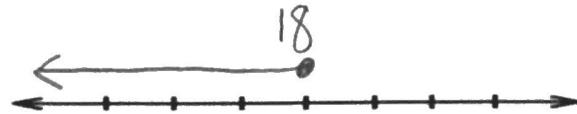
Name: Key Date: 4/28
 Period: _____

Classwork: Solve each inequality. Then check your solution, and graph it on a number line.

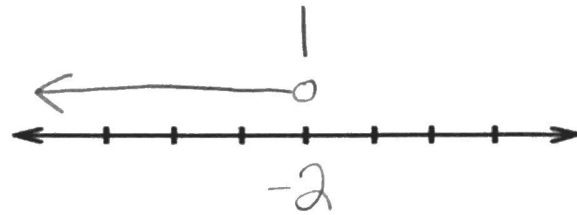
$$\begin{array}{r} 1. \ a - 12 < 6 \\ +12 \ +12 \\ \hline a < 18 \end{array}$$



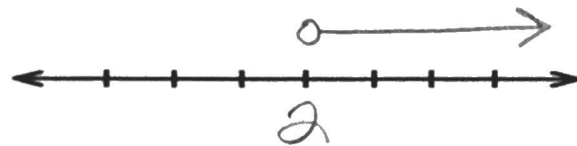
$$\begin{array}{r} 2. \ 2x < x + 1 \\ -1x \ -1x \\ \hline x < 1 \end{array}$$



$$\begin{array}{r} 3. \ -2x > 4 \\ \div -2 \ \div -2 \\ \hline x < -2 \end{array}$$

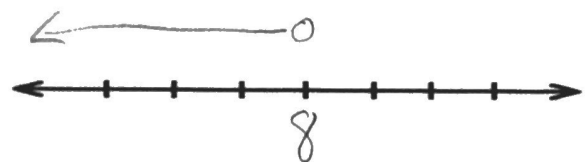


$$\begin{array}{r} 4. \ 2x + 3 > x + 5 \\ -1x \ -1x \\ \hline x + 3 > 5 \\ x > 2 \end{array}$$

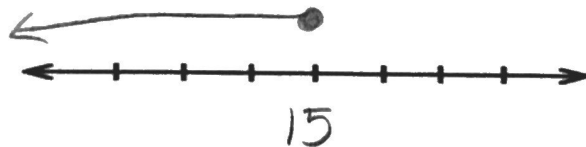


Solve each inequality. Then check your solution.

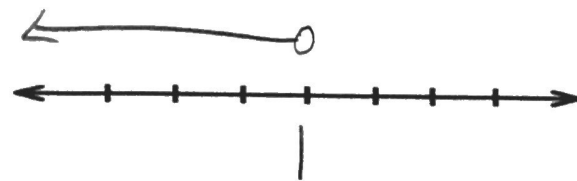
$$\begin{array}{r} 5. \ \frac{1}{2}x < 4 \cdot 2 \\ \cdot 2 \ \cdot 2 \\ \hline x < 8 \end{array}$$



$$\begin{array}{r} 6. \ 3x - 9 \leq 2x + 6 \\ +9 \ +9 \\ \hline 3x \leq 2x + 15 \\ -2x \ -2x \\ \hline x \leq 15 \end{array}$$



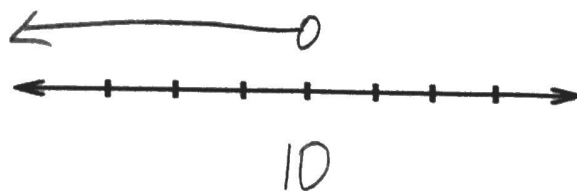
$$\begin{array}{r} 7. \ -17x - 25 < 75 - 117x \\ +25 \ +25 \\ \hline -17x < 100 - 117x \\ +117x \ +117x \\ \hline 100x < 100 \\ \frac{100x}{100} < \frac{100}{100} \\ x < 1 \end{array}$$



$$8. \ 3(r - 2) < 2r + 4$$

$$\begin{array}{r} -17x - 25 < 75 - 117x \\ +117x \ +117x \\ \hline 100x - 25 < 75 \\ +25 \ +25 \\ \hline 100x < 100 \\ \frac{100x}{100} < \frac{100}{100} \\ x < 1 \end{array}$$

$$\begin{array}{r} 3r - 6 < 2r + 4 \\ -2r \ -2r \\ \hline r - 6 < 4 \\ +6 \ +6 \\ \hline r < 10 \end{array}$$



Unit 1 Quiz Practice

Solve each equation.

1) $108 = 6(2p + 2)$

$$\begin{array}{r} 108 = 12p + 12 \\ -12 \quad -12 \\ \hline 96 = 12p \\ \frac{96}{12} = \frac{12p}{12} \\ 8 = p \end{array}$$

3) $2x - 2(8x + 5) = 102$

$$\begin{array}{r} 2x - 16x - 10 = 102 \\ -14x - 10 = 102 \\ +10 \quad +10 \\ \hline -14x = 112 \\ \frac{-14x}{-14} = \frac{112}{-14} \quad X = -8 \end{array}$$

5) $-3x - 6(3x + 1) = 39 - 6x$

$$\begin{array}{r} -3x - 18x - 6 = 39 - 6x \\ -21x - 6 = 39 - 6x \\ +6x \quad +6x \\ \hline -15x - 6 = 39 \\ +6 \quad +6 \\ \hline -15x = 45 \\ \frac{-15x}{-15} = \frac{45}{-15} \quad X = -3 \end{array}$$

7) $-3(7b - 2) = -39 - 6b$

$$\begin{array}{r} -21b + 6 = -39 - 6b \\ +6b \quad +6b \\ \hline -15b + 6 = -39 \\ -6 \quad -6 \\ \hline -15b = -45 \\ \frac{-15b}{-15} = \frac{-45}{-15} \quad b = 3 \end{array}$$

Solve each inequality and graph its solution.

9) $158 > -4x + 7(2 - 2x)$

$$\begin{array}{r} 158 > -4x + 14 - 14x \\ 158 > -18x + 14 \\ -14 \quad -14 \\ \hline 144 > -18x \\ \frac{144}{-18} > \frac{-18x}{-18} \quad * \text{Flip Again} \\ -8 < x \quad X > -8 \end{array}$$

11) $-5(1 - 5b) > -205$

$$\begin{array}{r} -5 + 25b > -205 \\ +5 \quad +5 \\ \hline 25b > -200 \\ \frac{25b}{25} > \frac{-200}{25} \\ b > -8 \end{array}$$

2) $-91 = -7(n + 5)$

$$\begin{array}{r} -91 = -7n - 35 \\ +35 \quad +35 \\ \hline -56 = -7n \\ \frac{-56}{-7} = \frac{-7n}{-7} \\ 8 = n \end{array}$$

4) $-112 = 7(5n - 6)$

$$\begin{array}{r} -112 = 35n - 42 \\ +42 \quad +42 \\ \hline -70 = 35n \\ \frac{-70}{35} = \frac{35n}{35} \\ -2 = n \end{array}$$

6) $-2(8b + 6) = -6b + 18$

$$\begin{array}{r} -16b - 12 = -6b + 18 \\ +6b \quad +6b \\ \hline -10b - 12 = 18 \\ +12 \quad +12 \\ \hline -10b = 30 \\ \frac{-10b}{-10} = \frac{30}{-10} \\ b = -3 \end{array}$$

8) $4 - 7v = -7 - (2v - 1)$

$$\begin{array}{r} 4 - 7v = -7 - 2v + 1 \\ +2v \quad +2v \\ \hline 4 - 5v = -6 \\ -4 \quad -4 \\ \hline -5v = -10 \\ \frac{-5v}{-5} = \frac{-10}{-5} \\ v = 2 \end{array}$$

10) $3(-6 + 6n) < -126$

$$\begin{array}{r} -18 + 18n < -126 \\ +18 \quad +18 \\ \hline 18n < -108 \\ \frac{18n}{18} < \frac{-108}{18} \\ n < -6 \end{array}$$

12) $94 < 7n - 3(6n - 2)$

$$\begin{array}{r} 94 < 7n - 18n + 6 \\ 94 < -11n + 6 \\ -6 \quad -6 \\ \hline 88 < -11n \\ \frac{88}{-11} < \frac{-11n}{-11} \quad -8 > n \end{array}$$

Flip

Flip

Flip Again on left