

## Inequalities with Like Terms Video Guide

Solve each inequality.

$$\begin{array}{r}
 1) \quad k - 8 > 19 - 5k + 3k \\
 k - 8 > 19 - 2k \\
 +2k \quad \quad +2k \\
 \hline
 3k - 8 > 19 \\
 +8 \quad +8 \\
 \hline
 3k > 27 \\
 \frac{3k}{3} > \frac{27}{3} \\
 \hline
 k > 9
 \end{array}$$

$$\begin{array}{r}
 2) \quad 19 - 7m - 5m > 9 - 10m - 3m \\
 19 - 12m > 9 - 13m \\
 +13m \quad \quad +13m \\
 \hline
 19 + 1m > 9 \\
 -19 \quad \quad -19 \\
 \hline
 m > -10
 \end{array}$$

$$\begin{array}{r}
 3) \quad 10 + 5x + 9x < x + 10 - 9x \\
 10 + 14x < -8x + 10 \\
 +8x \quad +8x \\
 \hline
 10 + 22x < 10 \\
 -10 \quad -10 \\
 \hline
 22x < 0 \\
 \frac{22x}{22} < \frac{0}{22} \\
 \hline
 x < 0
 \end{array}$$

$$\begin{array}{r}
 4) \quad 13 + 10x > 1 + 10x + 6x \\
 13 + 10x > 1 + 16x \\
 -16x \quad -16x \\
 \hline
 13 - 6x > 1 \\
 -13 \quad -13 \\
 \hline
 -6x > -12 \\
 \frac{-6x}{-6} > \frac{-12}{-6} \\
 \hline
 x < 2
 \end{array}$$

$$\begin{array}{r}
 5) \quad -9 + v \geq -v - 8 + 7 \\
 -9 + v \geq -v - 1 \\
 +v \quad +v \\
 \hline
 -9 + 2v \geq -1 \\
 +9 \quad +9 \\
 \hline
 2v \geq 8 \\
 \frac{2v}{2} \geq \frac{8}{2} \\
 \hline
 v \geq 4
 \end{array}$$

$$\begin{array}{r}
 6) \quad 18 + 1 + 8b + 2b < 7b + 4 \\
 19 + 10b < 7b + 4 \\
 -7b \quad -7b \\
 \hline
 19 + 3b < 4 \\
 -19 \quad -19 \\
 \hline
 3b < -15 \\
 \frac{3b}{3} < \frac{-15}{3} \\
 \hline
 b < -5
 \end{array}$$

$$\begin{array}{r}
 7) \quad 3b + 10b > -13 + 10b - 3 - 8 \\
 13b > -24 + 10b \\
 -10b \qquad \qquad -10b \\
 \hline
 3b > -24 \\
 \frac{3b}{3} > \frac{-24}{3} \\
 \hline
 b > -8
 \end{array}$$

$$\begin{array}{r}
 8) \quad x - 9 - 7 \geq 8x - 5x - 2 \\
 x - 16 \geq 3x - 2 \\
 -3x \qquad \qquad -3x \\
 \hline
 -2x - 16 \geq -2 \\
 +16 \quad +16 \\
 \hline
 -2x \geq 14 \\
 \frac{-2x}{-2} \geq \frac{14}{-2} \\
 \hline
 x \leq -7
 \end{array}$$

$$9) \quad 5 + 3k - 8 + 8 > 5k - 3$$

- A)  $k < 4$       B)  $k < -30$   
 C)  $k < -24$     D)  $k < -29$

$$\begin{array}{r}
 5 + 3k - 8 + 8 > 5k - 3 \\
 5 + 3k > 5k - 3 \\
 -5k \qquad -5k \\
 \hline
 5 - 2k > -3 \\
 -5 \qquad \qquad -5 \\
 \hline
 -2k > -8 \\
 \frac{-2k}{-2} > \frac{-8}{-2} \\
 \hline
 k < 4
 \end{array}$$

$$10) \quad 3 + 4x - 5 \leq -16 + 2x$$

- A)  $x \leq -7$       B)  $x \geq -7$   
 C)  $x \geq -22$     D)  $x \leq -22$

$$\begin{array}{r}
 3 + 4x - 5 \leq -16 + 2x \\
 4x - 2 \leq -16 + 2x \\
 -2x \qquad \qquad -2x \\
 \hline
 2x - 2 \leq -16 \\
 +2 \quad +2 \\
 \hline
 2x \leq -14 \\
 \frac{2x}{2} \leq \frac{-14}{2} \\
 \hline
 x \leq -7
 \end{array}$$

$$11) \quad -8n - 3n > -16 - 3n + 8 - 9n$$

- A)  $n > -43$       B)  $n > -36$   
 C)  $n > -3$        D)  $n > -8$

$$\begin{array}{r}
 -8n - 3n > -16 - 3n + 8 - 9n \\
 -11n > -8 - 12n \\
 +12n \qquad \qquad +12n \\
 \hline
 n > -8
 \end{array}$$

$$12) \quad 1 - 4v - 8 \leq -5 - 5v + 3v$$

- A)  $v \geq -1$       B)  $v \leq -1$   
 C)  $v \geq -50$     D)  $v \leq -50$

$$\begin{array}{r}
 1 - 4v - 8 \leq -5 - 5v + 3v \\
 -4v - 7 \leq -5 - 2v \\
 +2v \qquad \qquad +2v \\
 \hline
 -2v - 7 \leq -5 \\
 +7 \quad +7 \\
 \hline
 -2v \leq 2 \\
 \frac{-2v}{-2} \leq \frac{2}{-2} \\
 \hline
 v \geq -1
 \end{array}$$