

Inequalities with the Distributive Property and Like Terms Video Guide

Solve each inequality.

$$\begin{array}{r}
 1) \quad 2(v+10) + 5v < 44 + 4v \\
 2v + 20 + 5v < 44 + 4v \\
 7v + 20 < 44 + 4v \\
 \underline{-4v} \qquad \qquad \underline{-4v} \\
 3v + 20 < 44 \\
 \underline{-20} \qquad \underline{-20} \\
 3v < 24 \\
 \underline{\frac{3v}{3}} \qquad \underline{\frac{24}{3}} \\
 v < 8
 \end{array}$$

$$\begin{array}{r}
 2) \quad 32 - 5n \geq 8 - 8(-7n - 3) \\
 32 - 5n \geq 8 + 56n + 24 \\
 32 - 5n \geq 32 + 56n \\
 \underline{-56n} \qquad \qquad \underline{-56n} \\
 32 - 61n \geq 32 \\
 \underline{-32} \qquad \qquad \underline{-32} \\
 -61n \geq 0 \\
 \underline{-61} \qquad \underline{-61} \\
 n \geq 0
 \end{array}$$

$$\begin{array}{r}
 3) \quad 5n - 3(n+7) < 3(n-4) \\
 5n - 3n - 21 < 3n - 12 \\
 2n - 21 < 3n - 12 \\
 \underline{-3n} \qquad \qquad \underline{-3n} \\
 -n - 21 < -12 \\
 \underline{+21} \qquad \underline{+21} \\
 -n < 9 \\
 \underline{-1} \qquad \underline{-1} \\
 n > -9
 \end{array}$$

$$\begin{array}{r}
 4) \quad 7(n-2) + 6(10n+3) \geq 5n+2+5n+2 \\
 7n - 14 + 60n + 18 \geq 5n + 2 + 5n + 2 \\
 67n + 4 \geq 10n + 4 \\
 \underline{-10n} \qquad \qquad \underline{-10n} \\
 57n + 4 \geq 4 \\
 \underline{-4} \qquad \underline{-4} \\
 57n \geq 0 \\
 \underline{57} \qquad \underline{57} \\
 n \geq 0
 \end{array}$$

$$\begin{array}{r}
 5) \quad -30 - 8p < -9 - 7(3p - 10) \\
 -30 - 8p < -9 - 21p + 70 \\
 -30 - 8p < 61 - 21p \\
 \underline{+21p} \qquad \qquad \underline{+21p} \\
 -30 + 13p < 61 \\
 \underline{+30} \qquad \qquad \underline{+30} \\
 13p < 91 \\
 \underline{13} \qquad \underline{13} \\
 p < 7
 \end{array}$$

$$\begin{array}{r}
 6) \quad 9 - 5(7p - 9) \geq 3p - 6(8p + 1) \\
 9 - 35p + 45 \geq 3p - 48p - 6 \\
 54 - 35p \geq -45p - 6 \\
 \underline{+45p} \qquad \underline{+45p} \\
 54 + 10p \geq -6 \\
 \underline{-54} \qquad \qquad \underline{-54} \\
 10p \geq -60 \\
 \underline{10} \qquad \underline{10} \\
 p \geq -6
 \end{array}$$

$$\begin{array}{r}
 7) \quad 6x + 10(-8x - 7) < -7(9x - 5) - 4x \\
 6x - 80x - 70 < -63x + 35 - 4x \\
 -74x - 70 < -67x + 35 \\
 +67x \qquad \qquad +67x \\
 \hline
 -7x - 70 < 35 \\
 +70 \qquad +70 \\
 \hline
 -7x < 105 \\
 \frac{-7}{-7} \qquad \frac{105}{-7} \\
 \hline
 x > -15
 \end{array}$$

$$\begin{array}{r}
 8) \quad -15 - 6n < -5 - 1(2n - 2) \\
 -15 - 6n < -5 - 2n + 2 \\
 -15 - 6n < -3 - 2n \\
 +2n \qquad \qquad +2n \\
 \hline
 -15 - 4n < -3 \\
 +15 \qquad \qquad +15 \\
 \hline
 -4n < 12 \\
 \frac{-4}{-4} \qquad \frac{12}{-4} \\
 \hline
 n > -3
 \end{array}$$

9) $-5 - 8(1 + n) > -8 - 9n$

A) $n > 5$ B) $n < 5$
 C) $n < -35$ D) $n < -36$

$$\begin{array}{r}
 -5 - 8(1 + n) > -8 - 9n \\
 -5 - 8 - 8n > -8 - 9n \\
 -13 - 8n > -8 - 9n \\
 +9n \qquad \qquad +9n \\
 \hline
 -13 + n > -8 \\
 +13 \qquad +13 \\
 \hline
 n > 5
 \end{array}$$

10) $4x + 30 > -2 - 8(3x - 4)$

A) $x > 0$ B) $x < -34$
 C) $x > -34$ D) $x > -7$

$$\begin{array}{r}
 4x + 30 > -2 - 8(3x - 4) \\
 4x + 30 > -2 - 24x + 32 \\
 4x + 30 > 30 - 24x \\
 +24x \qquad \qquad +24x \\
 \hline
 28x + 30 > 30 \\
 -30 \qquad -30 \\
 \hline
 28x > 0 \\
 \frac{28}{28} \qquad \frac{0}{28} \\
 \hline
 x > 0
 \end{array}$$

11) $-9r + 5(r - 9) > 5(r + 9)$

A) $r > -24$ B) $r < -10$
 C) $r > 4$ D) $r > -10$

$$\begin{array}{r}
 -9r + 5(r - 9) > 5(r + 9) \\
 -9r + 5r - 45 > 5r + 45 \\
 -4r - 45 > 5r + 45 \\
 -5r \qquad \qquad -5r \\
 \hline
 -9r - 45 > 45 \\
 +45 \qquad +45 \\
 \hline
 -9r > 90 \\
 \frac{-9}{-9} \qquad \frac{90}{-9} \\
 \hline
 r < -10
 \end{array}$$

12) $6x + 2(5x + 6) < 9(x - 2) + 10x$

A) $x < 10$ B) $x < 6$
 C) $x > 10$ D) $x < -11$

$$\begin{array}{r}
 6x + 2(5x + 6) < 9(x - 2) + 10x \\
 6x + 10x + 12 < 9x - 18 + 10x \\
 16x + 12 < 19x - 18 \\
 -19x \qquad \qquad -19x \\
 \hline
 -3x + 12 < -18 \\
 -12 \qquad -12 \\
 \hline
 -3x < -30 \\
 \frac{-3}{-3} \qquad \frac{-30}{-3} \\
 \hline
 x > 10
 \end{array}$$