

Solving for x: Lesson 10

Linear Inequalities: Worksheet 1

Name: Answer Key

MATH  ALL

Predict if you will need to flip the inequality sign - Yes (flip) or No (no flip):

$$5z > -20 \quad \underline{\text{no}}$$

$$\frac{-4}{5}c - 2 \leq 10 \quad \underline{\text{yes}}$$

$$\frac{x}{7} \leq 4 \quad \underline{\text{no}}$$

$$2d + 8 > 14 \quad \underline{\text{no}}$$

$$-f \geq 11 \quad \underline{\text{yes}}$$

$$g + 3 < 9 \quad \underline{\text{no}}$$

Solve using excellent algebra:

$$\begin{aligned} \cancel{\frac{-3}{1}} \cdot \cancel{\frac{-1}{3}} y &\geq 5 \cdot \cancel{\frac{-3}{1}} \\ y &\leq -15 \end{aligned}$$

$$\begin{aligned} w + \cancel{7} &< 10 \\ \cancel{-7} &\quad \quad \quad \cancel{-7} \\ \hline w &< 3 \end{aligned}$$

$$\begin{aligned} 2d + 8 &> 14 \\ \cancel{-8} \quad \cancel{-8} & \\ \hline 2d &> 6 \\ \cancel{2} \quad \cancel{2} & \\ \hline d &> 3 \end{aligned}$$

$$\begin{aligned} -5x - \cancel{6} &\leq 14 \\ \cancel{+6} \quad \cancel{+6} & \\ \hline -5x &\leq 20 \\ \cancel{-5} \quad \cancel{-5} & \\ \hline x &\geq -4 \end{aligned}$$

$$\begin{aligned} -4a + 3 &\geq a + 8 \\ \cancel{+4a} \quad \cancel{+4a} & \\ \hline 3 &\geq 5a + 8 \\ \cancel{-8} \quad \cancel{-8} & \\ \hline -5 &\geq 5a \\ \cancel{5} \quad \cancel{5} & \\ \hline -1 &\geq a \text{ or } a \leq -1 \end{aligned}$$

$$\begin{aligned} 20 + 5b &< -2b - 1 \\ \cancel{+2b} \quad \cancel{+2b} & \\ \hline 20 + 7b &< -1 \\ \cancel{-20} \quad \cancel{-20} & \\ \hline 7b &< -21 \\ \cancel{7} \quad \cancel{7} & \\ \hline b &< -3 \end{aligned}$$

$$\begin{aligned}
 & -3(h-7)+5h-11 \geq 5(-h+4)+h+2 \\
 & -3h+21+5h-11 \geq -5h+20+h+2 \\
 & 2h+10 \geq -4h+22 \\
 & \quad +4h \qquad \quad +4h \\
 & \hline
 & 6h+10 \geq 22 \\
 & \quad -10 \quad -10 \\
 & \hline
 & 6h \geq 12 \\
 & \quad \div 6 \quad \div 6 \\
 & h \geq 2
 \end{aligned}$$

Challenge!

$$-\frac{5}{8} \cdot \frac{2}{1} = 10$$

$$\begin{aligned}
 & -\frac{5}{8}(x-16) + \frac{3}{4}x - 2 < \frac{1}{2}(x+10)+5 \\
 & -\frac{5}{8}x + 10 + \frac{3}{4}x - 2 < \frac{1}{2}x + 5 + 5 \\
 & \frac{1}{8}x + 8 < \frac{1}{2}x + 10 \\
 & \quad -\frac{1}{8}x \quad \quad -\frac{1}{8}x \\
 & \hline
 & 8 < \frac{3}{8}x + 10 \\
 & \quad -10 \quad \quad -10 \\
 & \hline
 & \frac{8}{3} \cdot -2 < \frac{3}{8}x \cdot \frac{8}{3} \\
 & -\frac{16}{3} < x \quad \text{or} \quad x > -\frac{16}{3}
 \end{aligned}$$