

Section 2.4 Solving Multi-Step Inequalities

Extra Practice

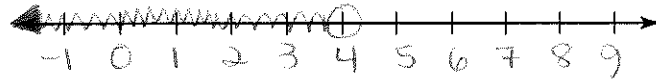
Solve the inequality. Graph the solution.

1. $3x - 2 < 10$

$$\begin{array}{r} +2 \quad +2 \\ \hline 3x - 2 < 10 \\ 3x < 12 \end{array}$$

$$\begin{array}{r} \frac{3x < 12}{3 \quad 3} \end{array}$$

$$\{x \mid x < 4\}$$

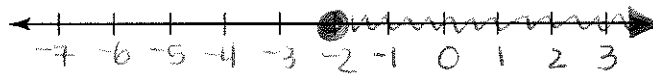


2. $4a + 8 \geq 0$

$$\begin{array}{r} -8 \quad -8 \\ \hline 4a + 8 \geq 0 \\ 4a \geq -8 \end{array}$$

$$\begin{array}{r} \frac{4a \geq -8}{4 \quad 4} \end{array}$$

$$\{a \mid a \geq -2\}$$

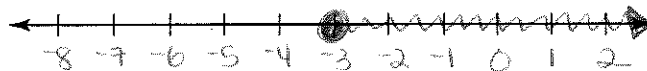


3. $2 + \frac{b}{-3} \leq 3$

$$\begin{array}{r} -2 \quad -2 \\ \hline 2 + \frac{b}{-3} \leq 3 \\ -2 \leq 1 - \frac{b}{3} \end{array}$$

$$(-3)\left(\frac{b}{-3}\right) \leq (-3)(-2)$$

$$\{b \mid b \geq -3\}$$



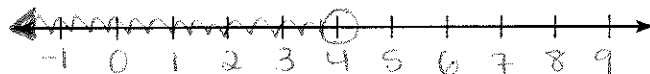
4. $\frac{-c}{2} - 6 > -8$

$$\begin{array}{r} +6 \quad +6 \\ \hline \frac{-c}{2} - 6 > -8 \\ \frac{-c}{2} > -2 \end{array}$$

$$2\left(\frac{-c}{2}\right) > (-2) \cdot 2$$

$$\begin{array}{r} -c > -4 \\ -1 \quad -1 \end{array}$$

$$\{c \mid c < 4\}$$



5. $8 \leq -4(d + 1)$

$$-4(d + 1) \geq 8$$

$$\begin{array}{r} -4d - 4 \geq 8 \\ +4 \quad +4 \end{array}$$

$$\begin{array}{r} -4d \geq 12 \\ -4 \quad -4 \end{array}$$

$$\{d \mid d \leq -3\}$$



Solve the inequality.

$$6. \quad \begin{array}{r} 5 - 2n > 8 - 4n \\ +4n \quad +4n \end{array}$$

$$\begin{array}{r} 5 + 2n > 8 \\ -5 \quad -5 \end{array}$$

$$\frac{2n}{2} > \frac{3}{2}$$

$$\boxed{\{n \mid n > \frac{3}{2}\}}$$

$$7. \quad 6h - 18 < 6h + 1$$

$$\begin{array}{r} -6h \quad -6h \end{array}$$

$$-18 < 1$$

(true)

→ $\boxed{\text{Infinitely Many Solutions}}$

$$8. \quad 3p + 4 \geq -4p + 25$$

$$\begin{array}{r} +4p \quad +4p \end{array}$$

$$\begin{array}{r} 7p + 4 \geq 25 \\ -4 \quad -4 \end{array}$$

$$\frac{7p}{7} \geq \frac{21}{7}$$

$$\boxed{\{p \mid p \geq 3\}}$$

$$9. \quad 7j - 4j + 6 < -2 + 3j$$

$$\begin{array}{r} 3j + 6 < -2 + 3j \\ -3j \quad -3j \end{array}$$

$$6 < -2$$

(false)

→ $\boxed{\text{No Solution}}$

$$10. \quad 12\left(\frac{1}{4}w + 3\right) \leq 3(w - 4)$$

$$\begin{array}{r} 3w + 36 \leq 3w - 12 \\ -3w \quad -3w \end{array}$$

$$36 \leq -12$$

(False)

→ $\boxed{\text{No Solution}}$