

WRITE INEQUALITY IN INTERVAL NOTATION

$$x \leq 2 \Rightarrow (-\infty, 2]$$

$$-2 < x \leq 5 \Rightarrow (-2, 5]$$

$$x > 9 \Rightarrow (9, \infty)$$

WRITE INTERVAL AS AN INEQUALITY

$$(-\infty, 4) \Rightarrow x < 4$$

$$[-1, 3] \Rightarrow -1 \leq x \leq 3$$

$$[2, \infty) \Rightarrow x \geq 2$$

SOLVE THE INEQUALITIES:

$$\frac{2}{5}(x-6) \geq x-1$$

$$\cancel{5} \cdot \frac{2}{\cancel{5}}(x-6) \geq \cancel{5}(x-1)$$

$$2x-12 \geq 5x-5$$
$$-5x+12 \quad -5x+12$$

$$-3x \geq 7$$
$$\quad \quad \quad -3 \quad \quad -3$$

$$x \leq -\frac{7}{3}$$

$$\Rightarrow x \in (-\infty, -\frac{7}{3}]$$

$$2(x+3) > 2x+1$$

$$\cancel{2}x+6 > \cancel{2}x+1$$
$$-\cancel{2}x \quad -\cancel{2}x$$

$$6 > 1 \text{ TRUE}$$

$$\Rightarrow x \in (-\infty, \infty)$$

$$4(x-2) > 4x+5$$

$$\cancel{4}x-8 > \cancel{4}x+5$$
$$-\cancel{4}x \quad -\cancel{4}x$$

$$-8 > 5 \text{ FALSE}$$

$$\Rightarrow x \in \emptyset \text{ No solution}$$

$$-\frac{5x+1}{7} - \frac{2x-6}{4} \geq -4$$

$$\cancel{28} \left( -\frac{5x+1}{7} \right) - \cancel{28} \left( \frac{2x-6}{4} \right) \geq \cancel{28}(-4)$$

$$-20x - 4 - 14x + 42 \geq -112$$

$$-34x + 38 \geq -112$$
$$\quad \quad \quad -38 \quad -38$$

$$\frac{-34x}{-34} \geq \frac{-150}{-34}$$

$$x \leq \frac{75}{17}$$

$$\Rightarrow x \in \left( -\infty, \frac{75}{17} \right]$$

$$-\frac{1}{2} \leq \frac{4x-1}{6} \leq \frac{5}{6}$$

$$\cancel{6} \left( -\frac{1}{2} \right) \leq \cancel{6} \left( \frac{4x-1}{6} \right) \leq \cancel{6} \left( \frac{5}{6} \right)$$

$$-3 \leq 4x-1 \leq 5$$

$$\quad +1 \quad +1 \quad +1$$

$$-2 \leq 4x \leq 6$$
$$\quad \quad \quad \frac{4}{4} \quad \quad \quad \frac{4}{4}$$

$$-\frac{1}{2} \leq x \leq \frac{3}{2} \Rightarrow x \in \left[ -\frac{1}{2}, \frac{3}{2} \right]$$

$$-5 < 2(x+4) < 8$$

$$-5 < 2x+8 < 8$$
$$\quad -8 \quad \quad -8 \quad -8$$

$$-\frac{13}{2} < \frac{2x}{2} < \frac{0}{2}$$

$$-\frac{13}{2} < x < 0 \Rightarrow x \in \left( -\frac{13}{2}, 0 \right)$$