Algebra I

2.4 - Compound Inequalities

Solve each inequality and graph its solution.

1) $k + 24 \geq 44$

$k \geq 20$:

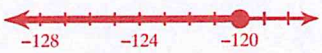
$K+24 \geq 44$

$-24 \quad -24$

$K \geq 20$

2) $\frac{x}{10} \leq -12$

$x \leq -120$:

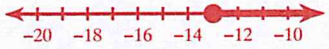


$\frac{(10)x}{10} \leq \frac{-12(10)}{10}$

$x \leq -120$

3) $-2x + 4 \leq 30$

$x \geq -13$:



$-2x+4 \leq 30$

$-4 \quad -4$

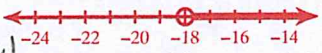
$-2x \leq 26$

$\frac{-2x}{-2} \leq \frac{26}{-2}$ Flip!

$x \geq -13$

4) $\frac{n}{2} - 5 > -14$

$n > -18$:



$\frac{n}{2} - 5 > -14$

$+5 \quad +5$

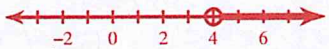
$\frac{n}{2} > -9$

$2\left(\frac{n}{2}\right) > -9(2)$

$n > -18$

5) $2(4x + 4) + 2 > 42$

$x > 4$:



$8x + 8 + 2 > 42$

$8x + 10 > 42$

$-10 \quad -10$

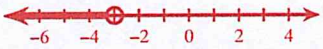
$8x > 32$

$\frac{8x}{8} > \frac{32}{8}$

$x > 4$

6) $-3(2 - 4x) < -42$

$x < -3$:



$-6 + 12x < -42$

$+6 \quad +6$

$12x < -36$

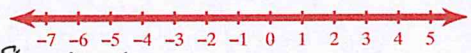
$\frac{12x}{12} < \frac{-36}{12}$

$x < -3$

Solve each compound inequality and graph its solution.

7) $-10x + 10 \geq -50$ or $-1 + 8x \geq -1$

{ All real numbers. } :



$-10x + 10 \geq -50$

$-10 \quad -10$

$\frac{-10x}{-10} \geq \frac{-60}{-10}$ Flip!

$x \leq 6$

$-1 + 8x \geq -1$

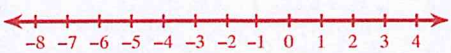
$+1 \quad +1$

$\frac{8x}{8} \geq \frac{0}{8}$

$x \geq 0$

8) $-8 < 3k - 2 < -29$

No solution. :



$-8 < 3k - 2 < -29$

$+2 \quad +2 \quad +2$

$\frac{-6}{3} < \frac{3k}{3} < \frac{-27}{3}$

$-2 < k < -9$

9) $-18 < 2 - 2x < 8$

$-3 < x < 10$:

$-18 < 2 - 2x < 8$

$-2 \quad -2 \quad -2$

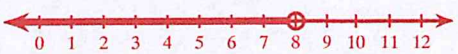
$\frac{-20}{-2} < \frac{-2x}{-2} < \frac{6}{-2}$ Flip!

$10 > x > -3$ Double flip!

$-3 < x < 10$

10) $7x - 9 < -16$ or $7 + 2x < 23$

$x < 8$:



$7x - 9 < -16$

$+9 \quad +9$

$\frac{7x}{7} < \frac{-7}{7}$

$x < -1$

$7 + 2x < 23$

$-7 \quad -7$

$\frac{2x}{2} < \frac{16}{2}$

$x < 8$