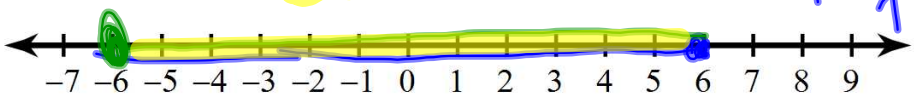
1.6 -- Compound Inequalities

- the solutions must satisfy both ineq.

overlap

Ex.1: $9 - 5k \geq -21$ and $2k - 9 \geq -21$



$9 - 5k \geq -21$

$+5k \quad +5k$

$9 \geq -21 + 5k$

$+21 \quad +21$

$30 \geq 5k$

$6 \geq k$

$k \leq 6$

$2k - 9 \geq -21$

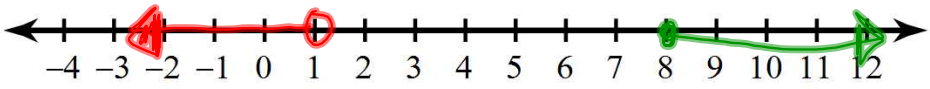
$+9 \quad +9$

$2k \geq -12$

$k \geq -6$

$-6 \leq k \leq 6$

Ex.2: $3 - 2b \leq -13$ or $10b - 1 < 9$ less restricted



$3 - 2b \leq -13$ $+2b$ $+2b$

$3 \leq -13 + 2b$

$+13$ $+13$

$16 \leq 2b$

$b \geq 8$

$10b - 1 < 9$

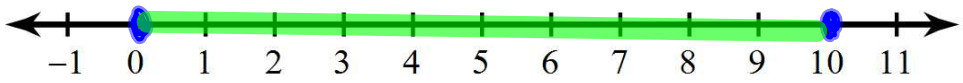
$10b < 10$

$b < 1$

$b \geq 8$ or $b < 1$

$8 \leq b < 1$

Ex.3: $4 + 3a \geq 4$ and $7 + 4a \leq 47$



$4+3a \geq 4$

$3a \geq 0$

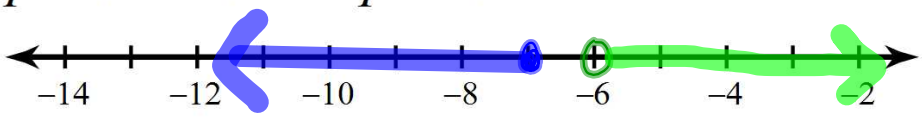
$a \geq 0$

$7+4a \leq 47$

$4a \leq 40$

$a \leq 10$

Ex. 4: $7p - 5 \leq -54$ or $p - 4 > -10$



$7p - 5 \leq -54$

$7p \leq -49$

$p \leq -7$

$p - 4 > -10$

$p > -6$

Summary:

"And" Compound Inequalities:

- Solutions have to satisfy both inequalities

"Or" Compound Inequalities:

- Solutions just have to satisfy one or the other