

## SOLVING MULTI-STEP INEQUALITIES

Solve each inequality, then graph using the given number line. Be sure to label the number line with the units of your choosing. Show your work and circle/box your final answer.

1.  $-2b + 4 > -6$

$$\begin{array}{r} -4 \\ -4 \\ \hline -2b > -10 \end{array}$$

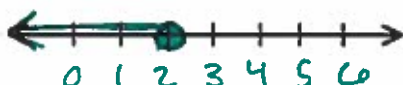
$$\frac{-2b}{-2} > \frac{-10}{-2} \quad \boxed{b < 5}$$



2.  $3x + 15 \leq 21$

$$\begin{array}{r} -15 \\ -15 \\ \hline 3x \leq 6 \end{array}$$

$$\frac{3x}{3} \leq \frac{6}{3} \quad \boxed{x \leq 2}$$



3.  $\frac{d}{2} - 1 \geq 3$

$$\begin{array}{r} +1 \\ +1 \\ \hline \frac{d}{2} \geq 4 \end{array}$$

$$2 \cdot \frac{d}{2} \geq 4 \cdot 2 \quad \boxed{d \geq 8}$$



4.  $-\frac{t}{5} + 7 > -4$

$$\begin{array}{r} -7 \\ -7 \\ \hline -\frac{t}{5} > -11 \end{array}$$

$$-5 \cdot -\frac{t}{5} > -11 \cdot -5$$

$$\boxed{t < 55}$$



5.  $-10 + 3j \geq 5$

$$\begin{array}{r} +10 \\ +10 \\ \hline 3j \geq 15 \end{array}$$

$$\frac{3j}{3} \geq \frac{15}{3} \quad \boxed{j \geq 5}$$



6.  $8 - 3f < -9$

$$\begin{array}{r} -3 \\ -3 \\ \hline -3f < -17 \end{array}$$

$$\frac{-3f}{-3} < \frac{-17}{-3}$$

$$\boxed{f > 4}$$



7.  $2p + 5 \geq 3p - 10$

$$\begin{array}{r} -3p \\ -3p \\ \hline -p + 5 \geq -10 \end{array}$$

$$\begin{array}{r} -5 \\ -5 \\ \hline -p \geq -15 \end{array}$$

$$-p \geq -15 \rightarrow \boxed{p \leq 15}$$

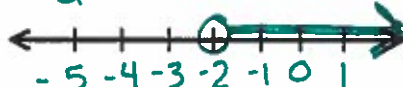


8.  $4k + 15 > -2k + 3$

$$\begin{array}{r} +2k \\ +2k \\ \hline 6k + 15 > 3 \end{array}$$

$$\begin{array}{r} -15 \\ -15 \\ \hline 6k > -12 \end{array}$$

$$\frac{6k}{6} > \frac{-12}{6} \rightarrow \boxed{k > -2}$$



9.  $2(-3m - 5) \geq -28$

$$\begin{array}{r} -6m \\ -6m \\ \hline -6m - 10 \geq -28 \end{array}$$

$$\begin{array}{r} +10 \\ +10 \\ \hline -6m \geq -18 \end{array}$$

$$\frac{-6m}{-6} \geq \frac{-18}{-6} \quad \boxed{m \leq 3}$$



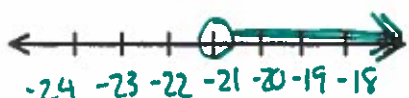
10.  $4m - 17 < 6m + 25$

$$\begin{array}{r} -6m \\ -6m \\ \hline -2m - 17 < 25 \end{array}$$

$$\begin{array}{r} +17 \\ +17 \\ \hline -2m < 42 \end{array}$$

$$\begin{array}{r} -2 \\ -2 \\ \hline -m < 21 \end{array}$$

$$\boxed{m > -21}$$



11.  $-6 \leq 3(5v - 2)$

$$\begin{array}{r} -6 \\ -6 \\ \hline -6 \leq 15v - 6 \end{array}$$

$$\begin{array}{r} +6 \\ +6 \\ \hline 0 \leq 15v \end{array}$$

$$\frac{0}{15} \leq \frac{15v}{15}$$

$$\boxed{0 \leq v}$$

