

7.3 Solve Negative Inequalities

PRACTICE

If you were to solve the following, would you flip the inequality? Circle the correct response.

1. $x + 5 > -1$

YES the inequality flips!

or

NO the inequality would NOT flip!

2. $6 \leq -2y$

YES the inequality flips!

or

NO the inequality would NOT flip!

3. $-\frac{h}{4} < -7$

YES the inequality flips!

or

NO the inequality would NOT flip!

4. $-5 > y - 1$

YES the inequality flips!

or

NO the inequality would NOT flip!

5. $5t \leq -20$

YES the inequality flips!

or

NO the inequality would NOT flip!

6. $6 < -\frac{1}{3}n$

YES the inequality flips!

or

NO the inequality would NOT flip!

Solve the following inequalities.

7. $4x + 7 > -1$

$$\begin{array}{r} -7 \quad | \quad -7 \\ 4x > -8 \\ \hline \frac{4x}{4} > \frac{-8}{4} \\ \hline x > -2 \end{array}$$

8. $-6 \leq -2y - 8$

$$\begin{array}{r} +8 \quad | \quad +8 \\ -6 \leq -2y - 8 \\ +8 \quad | \quad +8 \\ 2 \leq -2y \\ \hline \frac{2}{-2} \leq \frac{-2y}{-2} \\ \hline -1 \geq y \end{array}$$

9. $-\frac{h}{3} + 5 < 7$

$$\begin{array}{r} -5 \quad | \quad -5 \\ -\frac{h}{3} + 5 < 7 \\ -5 \quad | \quad -5 \\ (-3) - \frac{h}{3} < 2(-3) \\ \hline h > -6 \end{array}$$

10. $x + 5 > -2$

$$\begin{array}{r} -5 \quad | \quad -5 \\ x + 5 > -2 \\ -5 \quad | \quad -5 \\ \hline x > -7 \end{array}$$

11. $-12 \leq -3g$

$$\begin{array}{r} -3 \quad | \quad -3 \\ -12 \leq -3g \\ -3 \quad | \quad -3 \\ \hline 4 \geq g \end{array}$$

12. $5 - \frac{2}{3}t < 9$

$$\begin{array}{r} -5 \quad | \quad -5 \\ 5 - \frac{2}{3}t < 9 \\ -5 \quad | \quad -5 \\ (-3) - \frac{2}{3}t < 4(-3) \\ \hline 2t > -12 \\ \hline \frac{2t}{2} > \frac{-12}{2} \\ \hline t > -6 \end{array}$$

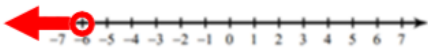
Solve the inequality and graph the solution set on the number line. Determine if the point is in the solution set.

$$13. \quad 5 \cdot -3 > \frac{2x-3}{5} \cdot 5$$

$$-15 > 2x - 3$$

$$\begin{array}{r} +3 \\ \hline -12 > 2x \\ \hline -6 > x \end{array}$$

$$\boxed{x < -6}$$



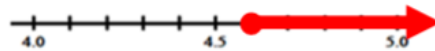
Is $x = 5$ in the solution set?

NO

$$14. \quad 3.1 - 2.5m \leq -8.4$$

$$\begin{array}{r} -3.1 \\ \hline -2.5m \leq -11.5 \\ \hline -2.5 \\ \hline m \geq 4.6 \end{array}$$

$$\boxed{m \geq 4.6}$$



Is $m = 4.8$ in the solution set?

YES

$$15. \quad -3(2h+1) < 21$$

$$-6h - 3 < 21$$

$$\begin{array}{r} +3 \\ \hline -6h < 24 \\ \hline -6 \\ \hline h > -4 \end{array}$$

$$\boxed{h > -4}$$



Is $h = 0$ in the solution set?

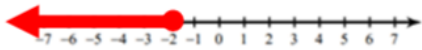
YES

$$16. \quad 12 \leq 4 + 2 - 3n$$

$$12 \leq 6 - 3n$$

$$\begin{array}{r} -6 \\ \hline 6 \leq -3n \\ \hline -3 \\ \hline -2 \geq n \end{array}$$

$$\boxed{n \leq -2}$$



Is $n = -4$ in the solution set?

YES

$$17. \quad 30 \geq -10x$$

$$\begin{array}{r} -10 \\ \hline -3 \leq x \end{array}$$

$$\boxed{x \geq -3}$$



Is $x = 5$ in the solution set?

YES

$$18. \quad 3p + 4 > -14$$

$$3p > -18$$

$$\begin{array}{r} -4 \\ \hline 3p > -18 \\ \hline 3 \\ \hline p > -6 \end{array}$$

$$\boxed{p > -6}$$



Is $p = 0$ in the solution set?

YES