

Section 2.2 Solving Inequalities Using Addition or Subtraction

equivalent inequalities: inequalities that have the same solutions

Core Concepts

* Addition Property of Inequality

Adding the same number to each side of an inequality produces an equivalent inequality.

* Subtraction Property of Inequality

Subtracting the same number from each side of an inequality produces an equivalent inequality.

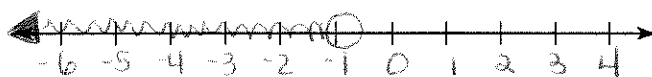
Extra Practice

Solve the inequality. Graph the solution.

1. $x - 3 < -4$

$$\begin{array}{r} +3 \quad +3 \\ \hline x < -1 \end{array}$$

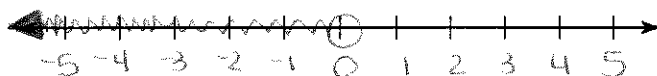
$$\{x \mid x < -1\}$$



2. $-3 > -3 + h$

$$\begin{array}{r} +3 \quad +3 \\ \hline 0 > h \\ h < 0 \end{array}$$

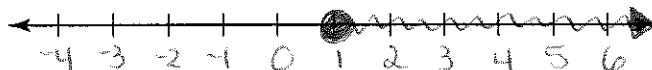
$$\{h \mid h < 0\}$$



3. $x - (-1) \geq 2$

$$\begin{array}{r} x + 1 \geq 2 \\ -1 \quad -1 \\ \hline x \geq 1 \end{array}$$

$$\{x \mid x \geq 1\}$$



$$4. \quad -3 + u < -2$$

$$\begin{array}{r} -3 + u < -2 \\ +3 \quad +3 \\ \hline u < 1 \end{array}$$

$$\{u \mid u < 1\}$$

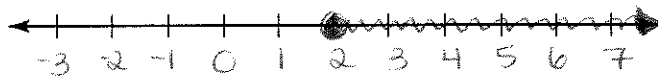


$$5. \quad 12 \leq 4c - 3c + 10$$

$$\begin{array}{r} 12 \leq c + 10 \\ -10 \quad -10 \\ \hline 2 \leq c \end{array}$$

$$c \geq 2$$

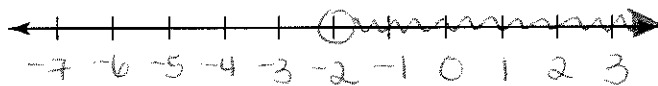
$$\{c \mid c \geq 2\}$$



$$6. \quad 15 - 7p + 8p > 15 - 2$$

$$\begin{array}{r} 15 + p > 13 \\ -15 \quad -15 \\ \hline p > -2 \end{array}$$

$$\{p \mid p > -2\}$$



7. You have \$15 to spend on groceries. You have \$12.25 worth of groceries already in your cart.

a. Write an inequality that represents how much more money m you can spend on groceries.

$$m + 12.25 \leq 15$$

b. Solve the inequality.

$$\begin{array}{r} m + 12.25 \leq 15 \\ -12.25 \quad -12.25 \\ \hline m \leq 2.75 \end{array}$$

$$m \leq 2.75$$

You can spend up to \$2.75 more on groceries.