

3-2**Reteaching****Solving Inequalities Using Addition or Subtraction**

You can add the same number to each side of an equation. You can also add the same number to each side of an inequality.

Problem

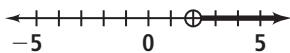
What are the solutions of $b - 4 > -2$? Graph and check the solutions.

$$b - 4 > -2 \quad \text{Original inequality.}$$

$$b - 4 + 4 > -2 + 4 \quad \text{Add 4 to each side.}$$

$$b > 2 \quad \text{Simplify.}$$

To graph $b > 2$, place an open circle at 2 and shade to the right.



To check the endpoint of $b > 2$, make sure that 2 is the solution of the related equation $b - 4 = -2$.

$$b - 4 = -2$$

$$2 - 4 \stackrel{?}{=} -2$$

$$-2 = -2 \checkmark$$

Then check to see if a number greater than 2 is a solution of the inequality. 5 is greater than 2.

$$b - 4 > -2$$

$$5 - 4 \stackrel{?}{>} -2$$

$$1 > -2 \checkmark$$

Exercises

Solve each inequality. Graph and check your solutions.

1. $m - 14 \geq -10 \quad m \geq 4$



2. $t - 2 < 4 \quad t < 6$



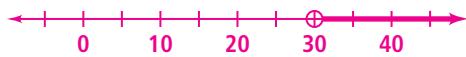
3. $y - 3 \leq 4 \quad y \leq 7$



4. $d - 9 \geq -12 \quad d \geq -3$



5. $w - 17 > 13 \quad w > 30$



6. $a - 22 < -7 \quad a < 15$



7. **Writing** Explain how you would solve $t - 15 \leq 5$.

add 15 to both sides

8. Anita is baking dinner rolls and pumpkin bread. She needs 4 cups of flour for the rolls. She needs at least 7 cups of flour left for the pumpkin bread. Write and solve an inequality to determine how much flour Anita needs before she starts baking. $c - 4 \geq 7$; **at least 11 cups**

3-2**Reteaching** (continued)**Solving Inequalities Using Addition or Subtraction**

You can subtract the same number from each side of an equation. You can also subtract the same number from each side of an inequality.

Problem

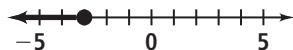
What are the solutions of $h + 7 \leq 4$? Graph and check the solutions.

$$h + 7 \leq 4 \quad \text{Original inequality.}$$

$$h + 7 - 7 \leq 4 - 7 \quad \text{Subtract 7 from each side.}$$

$$h \leq -3 \quad \text{Simplify.}$$

To graph $h \leq -3$, place a closed circle at -3 and shade to the left.



To check the endpoint of $h \leq -3$, make sure that -3 is the solution of the related equation $h + 7 = 4$.

$$h + 7 = 4$$

$$-3 + 7 \stackrel{?}{=} 4$$

$$4 = 4 \checkmark$$

Then check to see if a number less than -3 is a solution of the inequality. -4 is less than -3 .

$$h + 7 \leq 4$$

$$-4 + 7 \stackrel{?}{\leq} 4$$

$$3 \leq 4 \checkmark$$

Exercises

Solve each inequality. Graph and check your solutions.

9. $s + 7 \geq 12$ $s \geq 5$



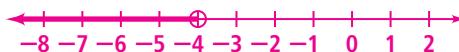
11. $b + 5 \leq -4$ $b \leq -9$



13. $v + 18 > -12$ $v > -30$



10. $p + 3 < -1$ $p < -4$



12. $n + 1 \geq 8$ $n \geq 7$



14. $k + 26 < 6$ $k < -20$



15. A boat can hold up to 1000 pounds. Two friends get in the boat. Together they weigh 285 pounds. Write and solve an inequality to determine how much more weight can be added to the boat.

$$w + 285 \leq 1000; \text{ up to } 715 \text{ pounds}$$