NAME _____ DATE _____ PERIOD _____

6-1 Study Guide and Intervention

Solving Inequalities by Addition and Subtraction

Solve Inequalities by Addition Addition can be used to solve inequalities. If any number is added to each side of a true inequality, the resulting inequality is also true.

Addition Property of Inequalities	For all numbers a, b, and c, if $a > b$, then $a + c > b + c$, and if $a < b$, then $a + c < b + c$.

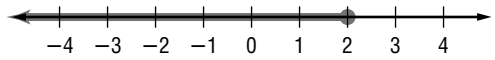
The property is also true when $>$ and $<$ are replaced with $\geq$ and $\leq$.

Example 1 **Solve $x - 8 \leq -6$. Then graph it on a number line.**

$x - 8 \leq -6$	Original inequality
$x - 8 + 8 \leq -6 + 8$	Add 8 to each side.
$x \leq 2$	Simplify.

The solution in set-builder notation is $\{x \mid x \leq 2\}$.

Number line graph:

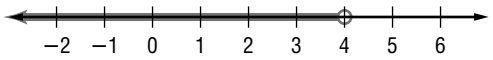


Example 2 **Solve $4 - 2a > -a$. Then graph it on a number line.**

$4 - 2a > -a$	Original inequality
$4 - 2a + 2a > -a + 2a$	Add $2a$ to each side.
$4 > a$	Simplify.
$a < 4$	$4 > a$ is the same as $a < 4$.

The solution in set-builder notation is $\{a \mid a < 4\}$.

Number line graph:

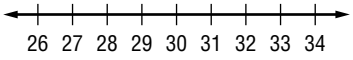


Lesson 6-1

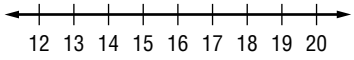
Exercises

Solve each inequality. Then check your solution, and graph it on a number line.

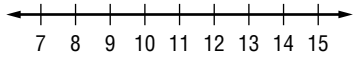
1. $t - 12 \geq 16$



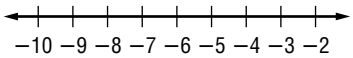
2. $n - 12 < 6$



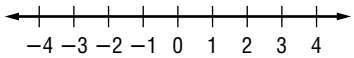
3. $6 \leq g - 3$



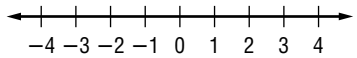
4. $n - 8 < -13$



5. $-12 > -12 + y$



6. $-6 > s - 8$



Solve each inequality. Then check your solution.

7. $-3x \leq 8 - 4x$

8. $0.6n \geq 12 - 0.4n$

9. $-8k - 12 < -9k$

10. $-y - 10 > 15 - 2y$

11. $z - \frac{1}{3} \leq \frac{4}{3}$

12. $-2b > -4 - 3b$

Define a variable, write an inequality, and solve each problem. Then check your solution.

13. A number decreased by 4 is less than 14.

14. The difference of two numbers is more than 12, and one of the numbers is 3.

15. Forty is no greater than the difference of a number and 2.