Name _____ Date Answer Key

Solve Equations With Variables on Both Sides

To solve an equation with variables on both sides, you can follow these steps:

1. Identify like terms. Combine like terms that are on the same side of the equation, if needed.
2. Use inverse operations to get like terms that are on opposite sides of the equation together. To get like terms together, use the inverse operation of one of the terms. Choose the term that you think will be easier to move.
3. Use inverse operations to solve the equation for the variable.

Let's try it! Solve $11n - 8 = 5n - 20$.

$11n - 8 = 5n - 20$	*Identify like terms. Here, there are no like terms on the same side of the equation.*
$11n - 8 - 5n = 5n - 20 - 5n$	*Use inverse operations to get the variable terms together. Subtract 5n from both sides.*
$6n - 8 = -20$	*Simplify.*
$6n - 8 + 8 = -20 + 8$	*Use inverse operations to get the constant terms together. Add 8 to both sides.*
$6n = -12$	*Simplify.*
$\frac{6n}{6} = \frac{-12}{6}$	*Use inverse operations to get n alone. Divide both sides by 6.*
$n = -2$	*Simplify.*

Practice! Solve each equation.

1. $-5y + 35 = 2y$ $y = 5$	2. $27 + 8m = 5m$ $m = -9$	3. $5b = -3b + 24$ $b = 3$
4. $7a - 3 = -23 - 3a$ $a = -2$	5. $-11h - 27 = 29 - 3h$ $h = -7$	6. $3z + 10 = -2z - 30$ $z = -8$
7. $20 + 2u + 15 = 11u - 19$ $u = 6$	8. $4 + 4c + 25 = 2c + 9$ $c = -10$	9. $-5r - 7 + 3r = 65 - 8r$ $r = 12$