NAME _____

Lesson 3.3 Solving 1-Variable Equations

The **Addition and Subtraction Properties of Equality** state that when the same number is added to both sides of an equation, the two sides remain equal:

$4 + 17 = 21 \quad 4 + 17 + 5 = 21 + 5 \quad (26 = 26)$

When the same number is subtracted from both sides of an equation, the two sides remain equal:

$32 = 16 + 16 \quad 32 - 4 = 16 + 16 - 4 \quad (28 = 28)$

Use these properties to determine the value of variables:

$x + 17 = 23$
$x + 17 - 17 = 23 - 17$
$x + 0 = 6 \quad x = 6$

$40 - n = 19$
$40 - n - 40 = 19 - 40$
$0 - n = -29 \quad n = 29$

$y - 14 = 3$
$y - 14 + 14 = 3 + 14$
$y + 0 = 17 \quad y = 17$

Find the value of the variable in each equation.

	a	b	c
1.	$a + 12 = 25$ _____	$48 + d = 60$ _____	$y - 19 = 18$ _____
2.	$31 - x = 16$ _____	$11 + n = 25$ _____	$m - 21 = 34$ _____
3.	$28 + b = 50$ _____	$p - 16 = 32$ _____	$t + 22 = 57$ _____
4.	$33 + c = 54$ _____	$e + 19 = 37$ _____	$16 + r = 40$ _____
5.	$52 - n = 24$ _____	$y - 15 = 18$ _____	$21 + n = 49$ _____
6.	$m - 5 = 18$ _____	$36 + s = 45$ _____	$21 - a = 7$ _____
7.	$17 + d = 29$ _____	$x - 23 = 9$ _____	$27 + f = 35$ _____
8.	$r - 15 = 24$ _____	$27 - p = 3$ _____	$34 - x = 18$ _____
9.	$y + 12 = 20$ _____	$n - 24 = 31$ _____	$16 + p = 38$ _____
10.	$18 + q = 25$ _____	$m + 17 = 32$ _____	$e + 29 = 36$ _____
11.	$39 - r = 34$ _____	$42 + x = 56$ _____	$q - 21 = 35$ _____
12.	$18 + p = 22$ _____	$s - 32 = 9$ _____	$43 + n = 49$ _____