Name _____ Date _____

CHAPTER 8

Prime Trinomials of the Form $x^2 + bx + c$

In Lesson 9.5, you factored trinomials of the form $x^2 + bx + c$. Sometimes trinomials of this type will not be factorable. Non-factorable trinomials are called **prime trinomials**.

KEY CONCEPT

Prime Trinomials

A trinomial of the form $x^2 + bx + c$ is prime if there are no integer factors of c whose sum equals b.

EXAMPLE

Identify prime trinomials of the form $x^2 + bx + c$

Factor the trinomial $x^2 + 3x - 6$, if possible.

Solution:

Find two factors of -6 whose sum is 3 by checking all possibilities.

Factors of -6	Sum of Factors
$1, -6$	$1 + (-6) = -5$
$-1, 6$	$-1 + 6 = 5$
$2, -3$	$2 + (-3) = -1$
$-2, 3$	$-2 + 3 = 1$

Since no two factors of -6 sum to 3, the trinomial is prime. ■

Note it can be concluded that a trinomial of the form $x^2 + bx + c$ is prime only after all possible factor combinations of c have been tried and none sum to b.

Practice

Show that the trinomial is prime.

1. $b^2 + 3b + 4$ **2.** $d^2 + 8d + 9$ **3.** $x^2 - 6x + 4$

4. $p^2 + 7p - 12$ **5.** $r^2 + 15r - 28$ **6.** $q^2 - 12q + 16$

7. $t^2 - 8t - 15$ **8.** $m^2 - 10m - 20$ **9.** $k^2 + 28k + 45$

Factor the trinomial, if possible. Otherwise write *prime*.

10. $y^2 + 15y + 24$ **11.** $s^2 + 11s - 40$ **12.** $w^2 - 18w + 36$

13. $z^2 - 12z + 27$ **14.** $u^2 + 26u - 25$ **15.** $g^2 - 11g - 42$

16. $q^2 + 20q - 100$ **17.** $h^2 - 15h - 76$ **18.** $x^2 - 30x + 64$

Pre-AP Copymasters