Name_____

Section 3.6

Algebra II: Factoring Trinomials

Essential Questions:
What if the last factor in a trinomial is a negative? What does the minus sign tell you?
you will probably have to list all factors- both positive and negative -The minus sign tells you the factors must be a positive and a negative number. (one negative)

Factor Example 1

- Step 1—factor $n^2 + 4n - 21$. The minus sign shows one factor will be negative.

$3 + -7$
-3 and 7

- Step 2 What multiplies to get -21
- Step 3 What adds to get 4

$(n-3)(n+7)$

- Check

$n^2+7n-3n-21$

$n^2+4n-21$

Factor Example 2

- Step 1—factor $X^2-2X-15$ with a factor tree.

$3+-5$
$-3+5$

- Step 2 What multiplies to get -15
- Step 3 What adds to get -2

$(X+3)(X-5)$

$X^2-5X+3X-15$

$X^2-2X-15$

Name_____

Factor Example 3

- Step 1—factor $x^2 - 2x - 24$ with a factor tree. Write all possibilities.

$-1 \cdot 24$ $2 \cdot 12$ $-3 \cdot 8$ $-4 \cdot 6$

$1 \cdot -24$ $-2 \cdot 12$ $3 \cdot -8$ $4 \cdot -6$

- Step 2 What multiplies to get -24
- Step 3 What adds to get -2

$(x+4)(x-6)$

$x^2 - 6x + 4x - 24$

$x^2 - 2x - 24$

Class practice
Name all possible pairs of factors.

-6: $-1 \cdot 6$, $1 \cdot -6$, $2 \cdot 3$, $-2 \cdot 3$

-10: $1 \cdot -10$, $-1 \cdot 10$, $2 \cdot -5$, $-2 \cdot 5$

-30: $-1 \cdot 30$, $1 \cdot -30$, $-2 \cdot 15$, $2 \cdot -15$, $-3 \cdot 10$, $3 \cdot -10$, $5 \cdot -6$, $-5 \cdot 6$

-36: $-1 \cdot 36$, $1 \cdot -36$, $-2 \cdot 18$, $2 \cdot -18$, $-3 \cdot 12$, $3 \cdot -12$, $-4 \cdot 9$, $4 \cdot -9$, $6 \cdot -6$

Factor.

$x^2 + x - 6$ $\quad 3 \times -2 = -6$ $\quad 3 + -2 = 1$

$(x+3)(x-2)$

$n^2 - 3n - 10$ $\quad \_ \times \_ = -10$ $\quad \_ + \_ = -3$

$b^2 - b - 30$ $\quad \_ \times \_ = -30$ $\quad \_ + \_ = -1$

$x^2 - 5x - 36$ $\quad \_ \times \_ = -36$ $\quad \_ + \_ = -5$

Name_____

Factoring trinomials.

1) -21 2) -16 3) -18 4) -10

5) -24 6) -22 7) -32 8) -36

9) -63 10) -100 11) -45 12) -81

13) $x^2 + 4x - 21$ 14) $x^2 + 6x - 16$ 15) $y^2 - 3y - 18$

16) $n^2 + 3n - 10$ 17) $r^2 + 2r - 24$ 18) $y^2 - 9y - 22$

19) $y^2 + 4y - 32$ 20) $a^2 + 9a - 36$ 21) $y^2 - 2y - 63$

22) $y^2 + 21y - 100$ 23) $a^2 - 4a - 45$ 24) $y^2 - 24y - 81$