Name: ______________________________ Date: ________________________

Learning Goal 1.2	Factor trinomials of the form $ax^2 + bx + c$.

Expand:

$\neq x^2 + 25$

$(x+5)^2 = (x+5)(x+5)$
$= x^2 + 5x + 5x + 25$
$= x^2 + 10x + 25$

$(x-1)^2 =$
$x^2 - 2x + 1$

$(x-2)^2 =$
$x^2 - 4x + 4$

$(x-3)^2 =$
$x^2 - 6x + 9$

$(x+1)^2 =$
$x^2 + 2x + 1$

$(x+2)^2 =$
$x^2 + 4x + 4$

$(x+3)^2 =$
$x^2 + 6x + 9$

$(2x-1)^2 =$
$4x^2 - 4x + 1$

$(3x-1)^2 =$
$9x^2 - 6x + 1$

$(4x-1)^2 =$
$16x^2 - 8x + 1$

$(2x+1)^2 =$
$4x^2 + 4x + 1$

$(3x+1)^2 =$
$9x^2 + 6x + 1$

$(4x+1)^2 =$
$16x^2 + 8x + 1$

What patterns do you see in the trinomials and their factors above?

$121x^2 + 22x + 1$
$= (11x+1)^2$

$x^2 - 22x + 121$
$= (x-11)^2$

How could you use the patterns to factor these trinomials?

$4x^2 + 20x + 25$ and $9x^2 - 12x + 4$

$2 \times \sqrt{4 \times 25}$
$= 2 \times (2 \times 5)$
$= 2 \times 10$
$= 20$

$= (2x + 5)^2$

$= (3x - 2)^2$

$2 \times \sqrt{9 \times 4}$
$= 2 \times (3 \times 2)$
$= 2 \times 6$
$= 12$

This type of polynomial is called a perfect square trinomials.

Example Factor these trinomials

a. $36x^2 + 12x + 1$

$2 \times \sqrt{36 \times 1}$
$= 2 \times (6 \times 1)$
$= 2 \times 6$
$= 12$

$= (6x + 1)^2$

b. $16 - 56x + 49x^2$

$2 \times \sqrt{16 \times 49}$
$= 2 \times (4 \times 7)$
$= 2 \times 28$
$= 56$

$= (4 - 7x)^2$

How about these?

a. $81m^2 - 49$

$= 81m^2 + 0m - 49$

$= (9m + 7)(9m - 7)$

Expand:

$= 81m^2 - 63m + 63m - 49$

b. $162v^4 - 2w^4$

$= 2(81v^4 - w^4)$

$= 2(9v^2 + w^2)(9v^2 - w^2)$

This type of polynomial is called a difference of squares.

Assignment Handout Quiz Next Day!