Focus:

1. To be able to factor and expand a difference of squares.
2. To be able to factor and expand perfect squares.
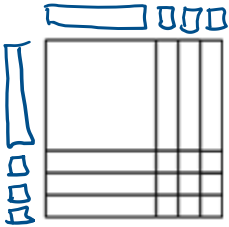
Curricular Competencies:
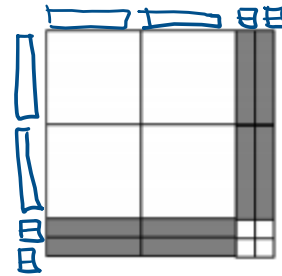   C2: I can represent math concretely, pictorially and symbolically

Perfect Square Trinomials

Write the following algebra tile models as a multiplication of binomials using the templates below.

or $(x+3)^2$

$x^2+6x+9 = (\underline{x+3})(\underline{x+3})$

or $(2x-2)^2$

$4x^2-8x+4 = (\underline{2x-2})(\underline{2x-2})$

The above examples are two of the many __perfect square__ trinomials that you will encounter. In general, perfect square trinomials:

Can be drawn as a __square__ area model

Can be remembered as two generic formulae:

$(ax+b)^2$ or $(ax+b)(ax+b)$ $\underline{or}$ $(ax-b)^2$ or $(ax-b)(ax-b)$

$a^2x^2 + 2abx + b^2$ $a^2x^2 - 2abx + b^2$

                                                        $4x^2 - 8x + 4$

* a, b are integers

$x^2 + 6x + 9$

Write the following algebra tile models as a multiplication of binomials using the templates below.
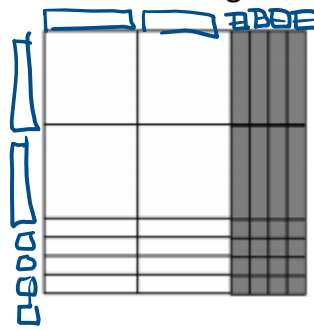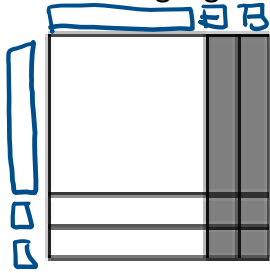
$x^2 - 4$ = ($X - 2$)($X + 2$) $4x^2 - 16$ = ($2x - 4$)($2x + 4$)

The above examples are two of the many __difference of squares__ trinomials that you will encounter. In general, difference of square trinomials:

Can be drawn as an area model which is a __difference__ of two squares

Can be remembered as __$(a \cdot x + b)(a \cdot x - b)$__

Examples

Factor the following fully. Identify the type of special polynomials.

a) $121x^2 - 22x + 1$

perfect $\square$

$(11x - 1)(11x - 1)$

b) $4x^2 - 9$

diff $\square$

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

c) $4x^2 + 4xy + y^2$

perfect $\square$

$(2x + 1y)(2x + 1y)$

d) $16a^2 - 25$

diff $\square$

$(4a - 5)(4a + 5)$

e) $25v^2 - 70vw + 49w^2$

perfect □

$(5v - 7w)(5v - 7w)$

f) $49x^4 - 36y^2$

diff □

$(7x^2 + 6y)(7x^2 - 6y)$

Expand the following binomial products. Identify the type of special polynomials.

a) $(2x + 7)^2$

perfect □

$(2x+7)(2x+7)$

$4x^2 + 14x + 14x + 49$

$4x^2 + 28x + 49$

b) $(a^2 - 5)^2$

perfect □

$(a^2-5)(a^2-5)$

$a^4 - 5a^2 - 5a^2 + 25$

$a^4 - 10a^2 + 25$

c). $(4 - k)(4 + k)$

$16 + 4k - 4k - k^2$

$16 - k^2$ diff of □

d) $(3m^2 - 4n)(3m^2 + 4n)$

$9m^4 + 12m^2n - 12m^2n - 16n^2$

$9m^4 - 16n^2$ diff of □

assignment: p 246 1, 4-9, 16, 20