Math 10

Section 5.3.1

Factoring Polynomials

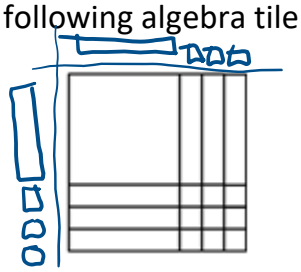
Focus:

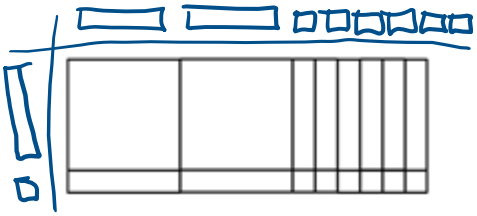
1. To be able to represent polynomials with algebra tiles.
2. To be able to factor polynomials using algebra tiles.
3. To be able to explain the relationship between multiplication and factoring

Curricular Competencies:
B2: I can visualize to explore math

Trinomials in Factored Form

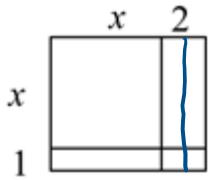
Write the following algebra tile models as a multiplication of binomials using the templates below.

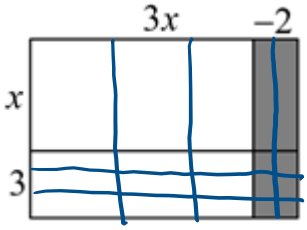




x^2+6x+9 = ($x+3$)($x+3$)

$2x^2+8x+6$ = ($2x+6$)($x+1$)





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

$3x^2+7x-6$ = ($3x-2$)($x+3$)

Expanding Binomial Products

A binomial product is a multiplication of two binomials. They can be written in the general form of ax^2+bx+c. a, b, c are integers

To factor trinomials of this form, find two numbers that:

multiply to c

add to b

Caution: signs matter!

Factor the following if possible:

a) $x^2 + 5x + 4$ $\times 4$ $+5$

$(x+4)(x+1)$

check $(x+4)(x+1)$

$x^2+x+4x+4$

x^2+5x+4

b) $x^2 - 7x + 10$ $\times 10$ $+ -7$

$(x-5)(x-2)$

c) $x^2 + 4x + 6$ $\times 6$ $+4$ $\rightarrow$ $1,6$ $2,3$

not possible

d) $x^2 + 5x - 6$ $x\ -6$ $+\ 5$

$(x+6)(x-1)$

e) $x^2 - 8x + 15$ $\times 15$ $+ -8$ $1,15$ $3,5$

$(x-3)(x-5)$

f) $x^2 - 29x + 28$ $\times 28$ $+ -29$

$(x-1)(x-28)$

Sometimes you will need to remove a common factor before factoring …

a) $4x^2 - 32x + 48$ $\times 12$ $+ -8$

$4(x^2 - 8x+12)$

$4(x-2)(x-6)$

b) $3x^3 + 21x^2 + 30x$ $\times 10$ $+ 7$

$3x(x^2+7x+10)$

$3x(x+2)(x+5)$

c) $2x^2 + 6x + 4$ $\times 2$ $+3$

$2(x^2+3x+2)$

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

d) $-2x^2 - 30x - 108$ $\times 54$ $+ 15$

$-2(x^2+15x+54)$

$-2(x+6)(x+9)$

e) $ax^2 - 14ax + 45a$ $\times 45$ $+ -14$

$a(x^2 - 14x + 45)$

$a(x-5)(x-9)$

f) $-10x^4 + 100x^3 - 240x^2$ $\times 24$ $+ -10$

$-10x^2(x^2 - 10x + 24)$

$-10x^2(x-6)(x-4)$

g) $2x^2 - 18x + 10$ $\times 5$ $+ -9$

$2(x^2 - 9x + 5)$

assignment: p 234 1, 3, 4, 5, 9, 10