Using the Area Model with Algebraic Expressions

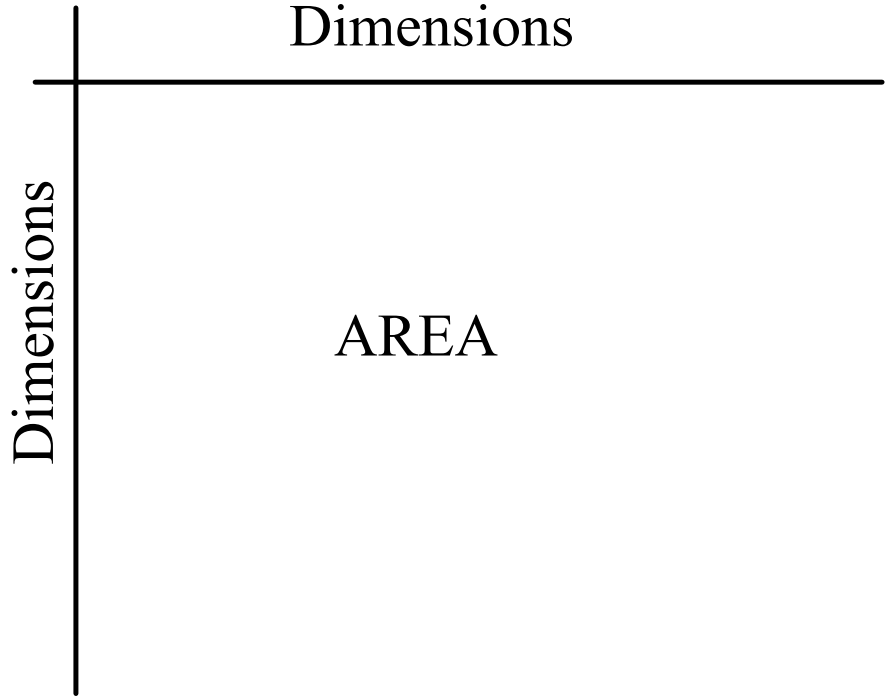
Learning Goal: By the end of today we will have two techniques for multiplying algebraic expressions together.

Area Model for Multiplication

34 x 41

Nov 24-12:56 PM

Using the Algebra Tiles and Area Model Together



Nov 24-1:18 PM

Polynomial Definitions - Refresher

Monomial - "ONE Term" - consisting of a *constant*, an unknown, or a constant and unknown multiplied together
ie. 5
ie. 9x
ie. $-12x^2$

Binomial - "Two Terms" - consisting of a constant and an unknown, or two unknowns separated by the addition or subtraction operation
ie. $x + 5$
ie. $7x - 16$
ie. $-12x^2 + 7x$

Trinomial - "Three Terms" - consisting of a constants and unknowns separated by the addition or subtraction operation
ie. $x^2 - 6x + 5$

ie. $-12x^2 + 7x - 1$

Mar 30-9:23 AM

What is an Alge-Tile? And what can it be used for?

Part One

An alge-tile can be used as a two colour counter to illustrate such things as:

- used to illustrate the ZERO Principle
- adding/subtracting integers

Part Two

An alge-tile can be used to represent the collection of "like" and "unlike" terms

Part Three

An alge-tile can be used with a multiplication array to create an AREA MODEL that can be used to illustrate the following:

- the Distributive Property
- Common Factoring
- Factoring of Trinomials
- Factoring of a Differnce of Squares
- Illustrate Completing the Square

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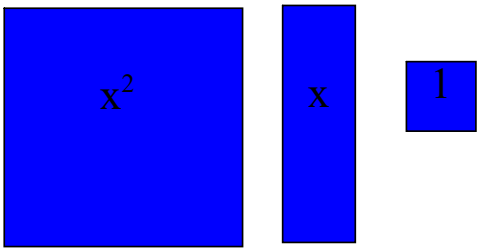
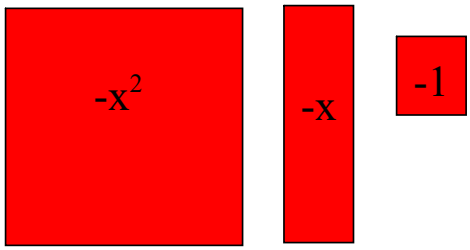
Alge-Tiles and the Multiplication Array

Alge-Tile Pieces we will be using, both positive and negative

Positive Alge-Tiles



Negative Alge-Tiles



The ZERO Principle still applies to Alge-Tiles, a positive and negative of the same value (size) cancel each out.

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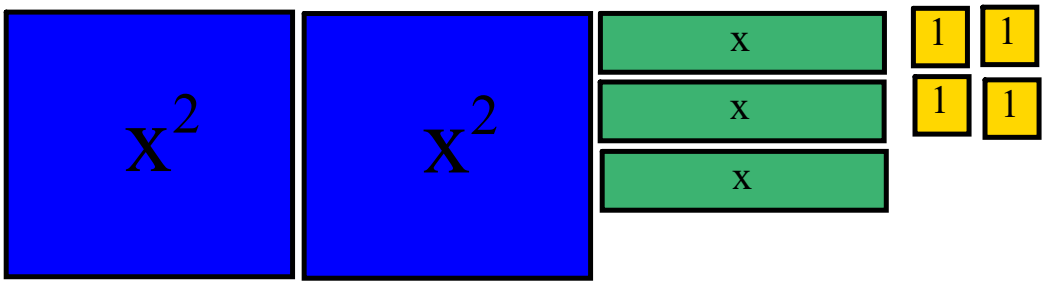
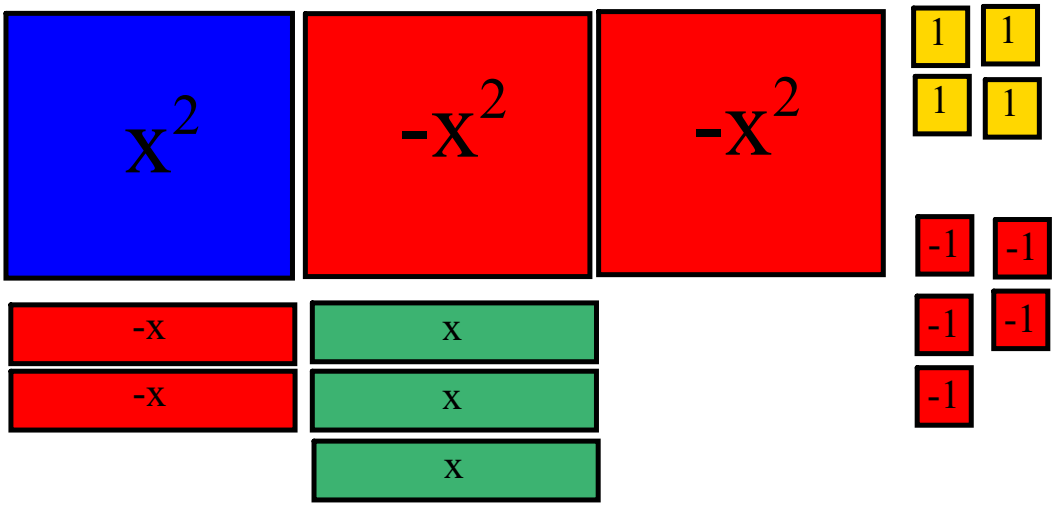
What is the value of each group?

(a)



(b)



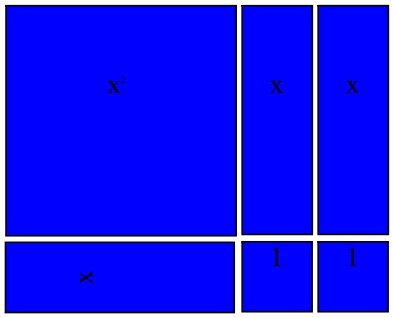
Nov 24-1:14 PM

Alge-Tiles and the Multiplication Array

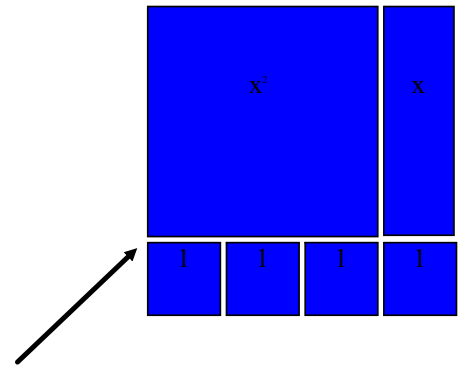
Alge-Tile Guide Lines

The one important guideline for using Alge-Tiles is that ONLY SIDES OF THE SAME LENGTH ARE ALLOWED TO BE IN CONTACT.

Correct Alge-Tile Placement



Incorrect Alge-Tile Placement



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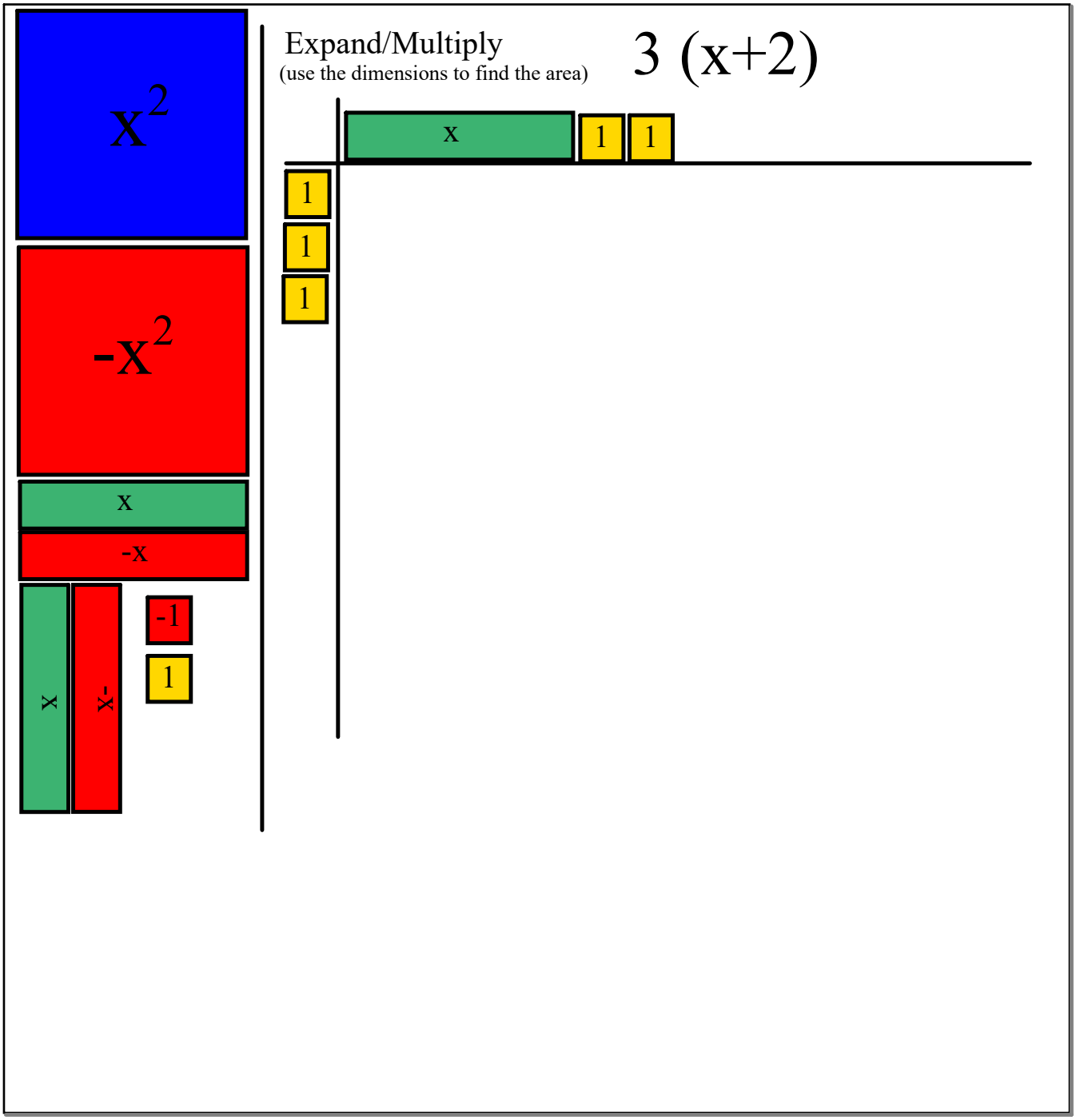
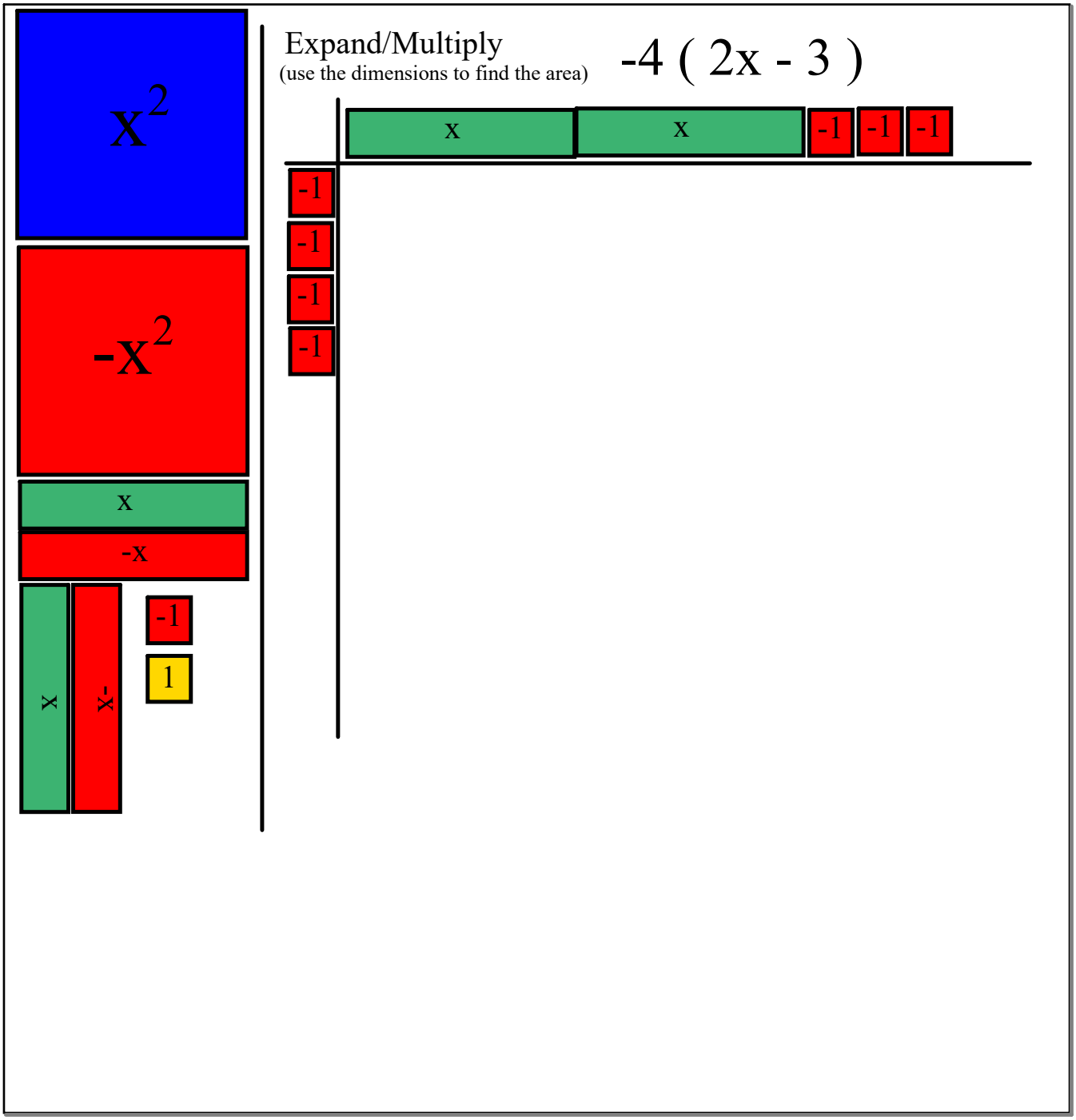


Feb 12-11:53 AM



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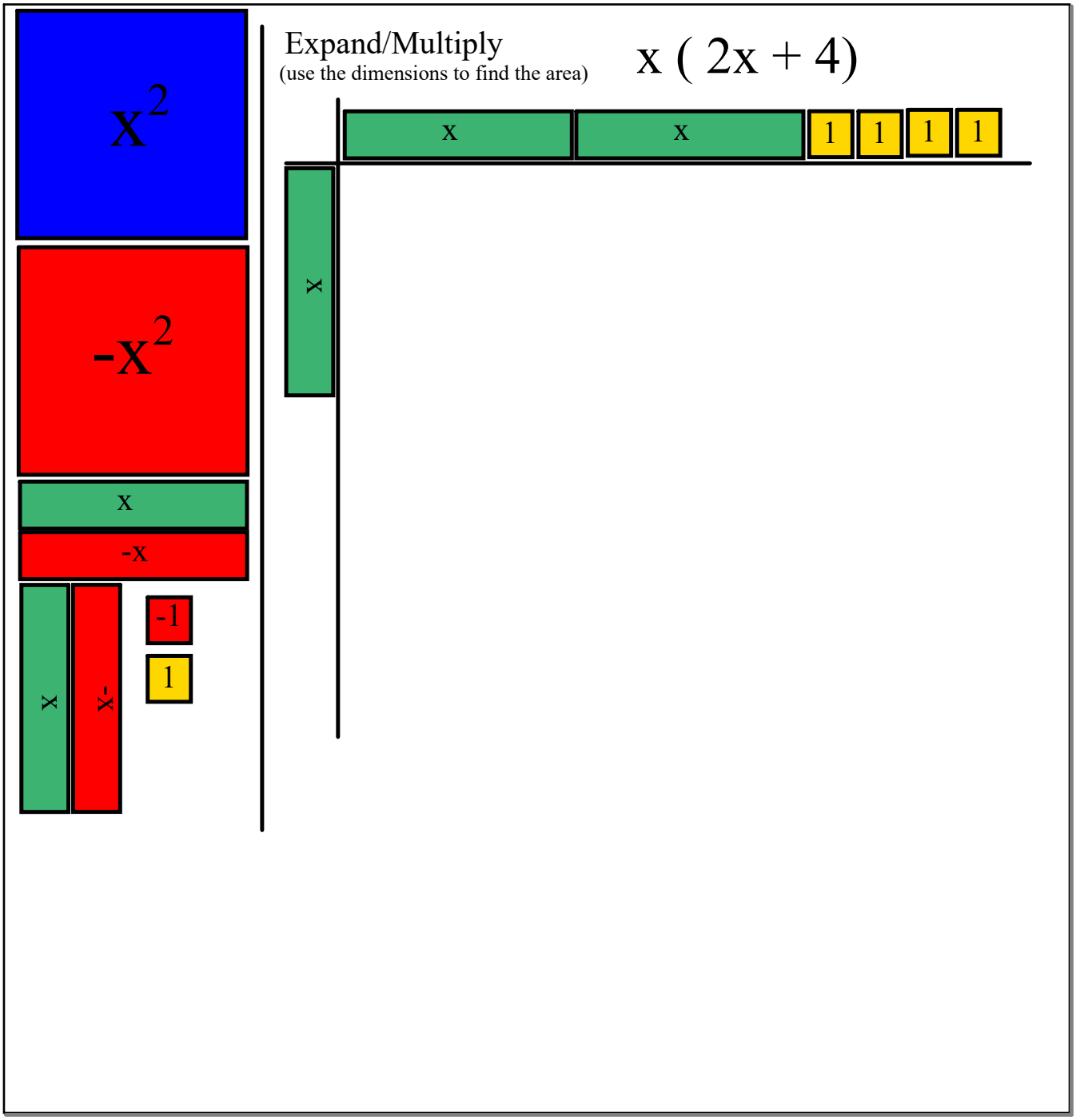

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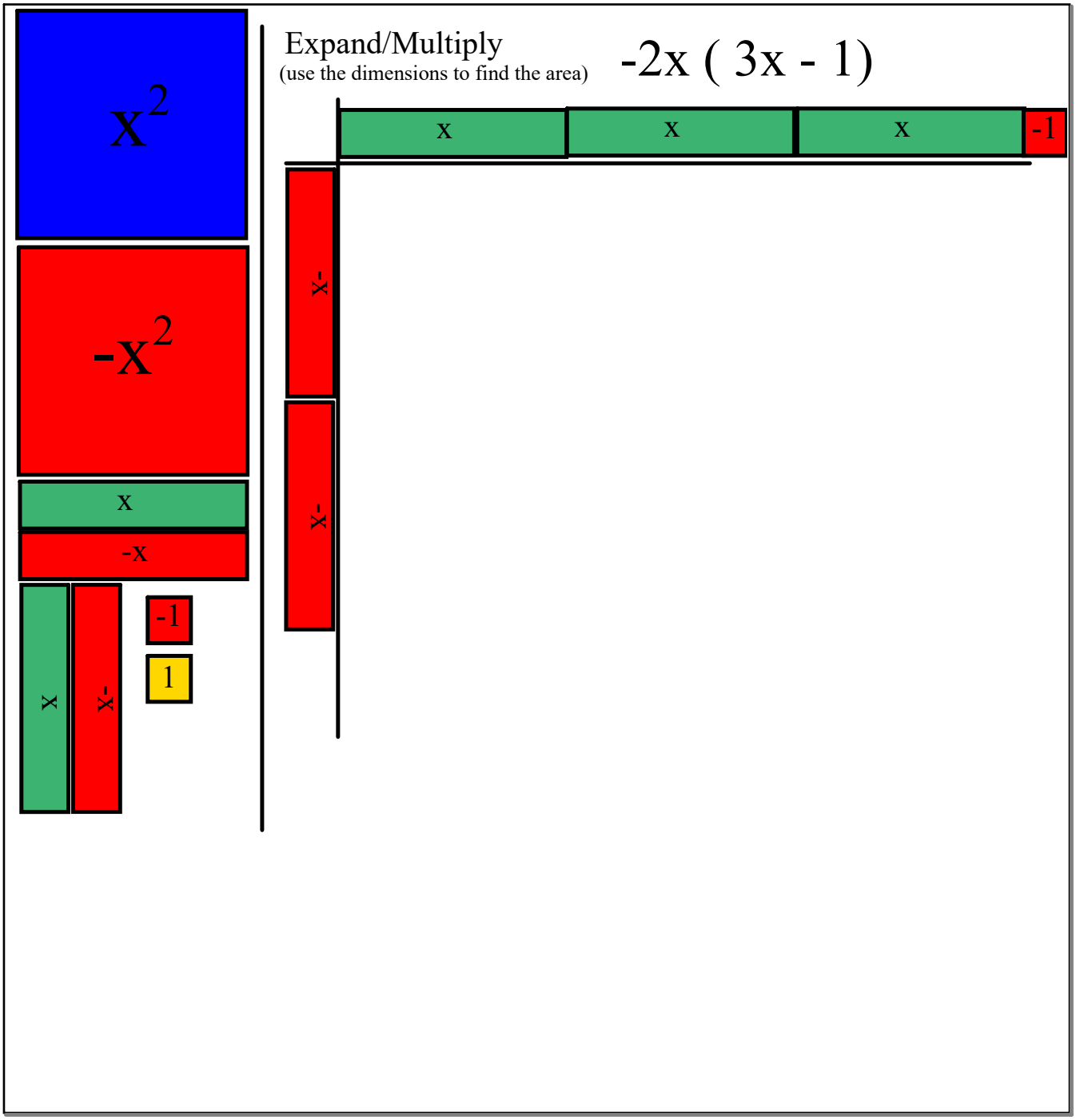

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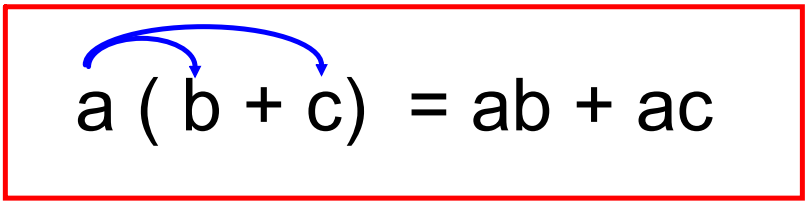
Short cut for Distributive property



Mar 3-10:58 AM

Expand (multiply together)

$2x (x + 8)$

Mar 3-10:59 AM

Expand (multiply together)

$$2 (a + b + c)$$

Mar 3-10:59 AM

Expand (multiply together)

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

Mar 3-10:59 AM

Expand (multiply together)

$-3x^2 (5x - 2x^2 - x^5)$

Mar 3-10:59 AM

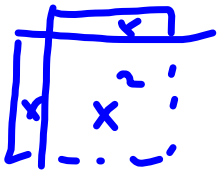
Consolidation Questions:

pg 116-7

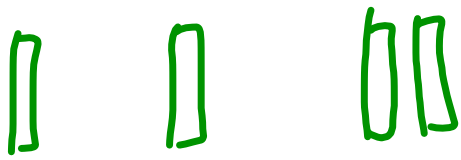
#1-4,6,7,9

Watch for

$(x)(x) = x^2$



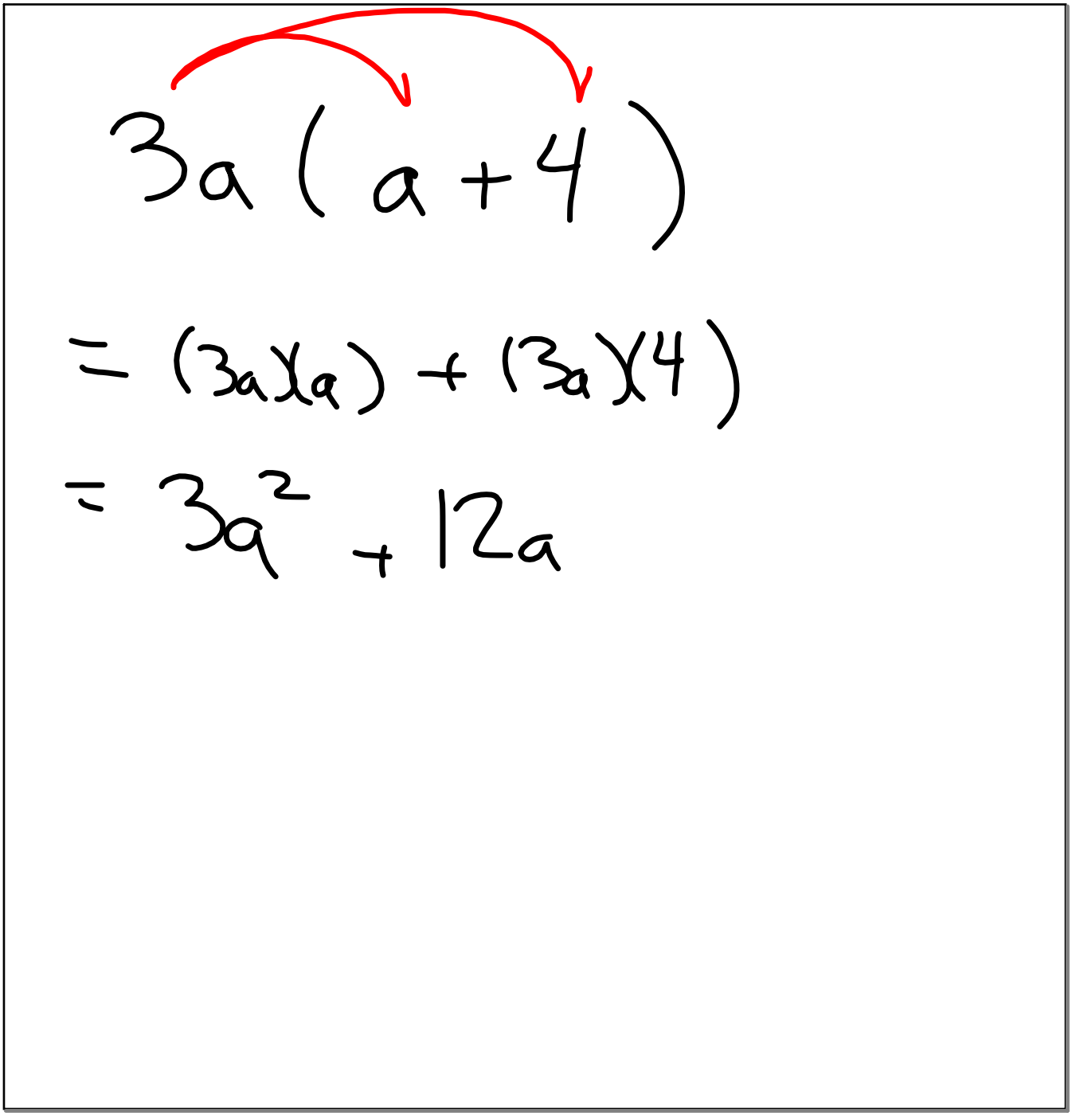
$x + x = 2x$



Sep 23-9:31 PM

Extra Examples

Mar 3-10:15 AM



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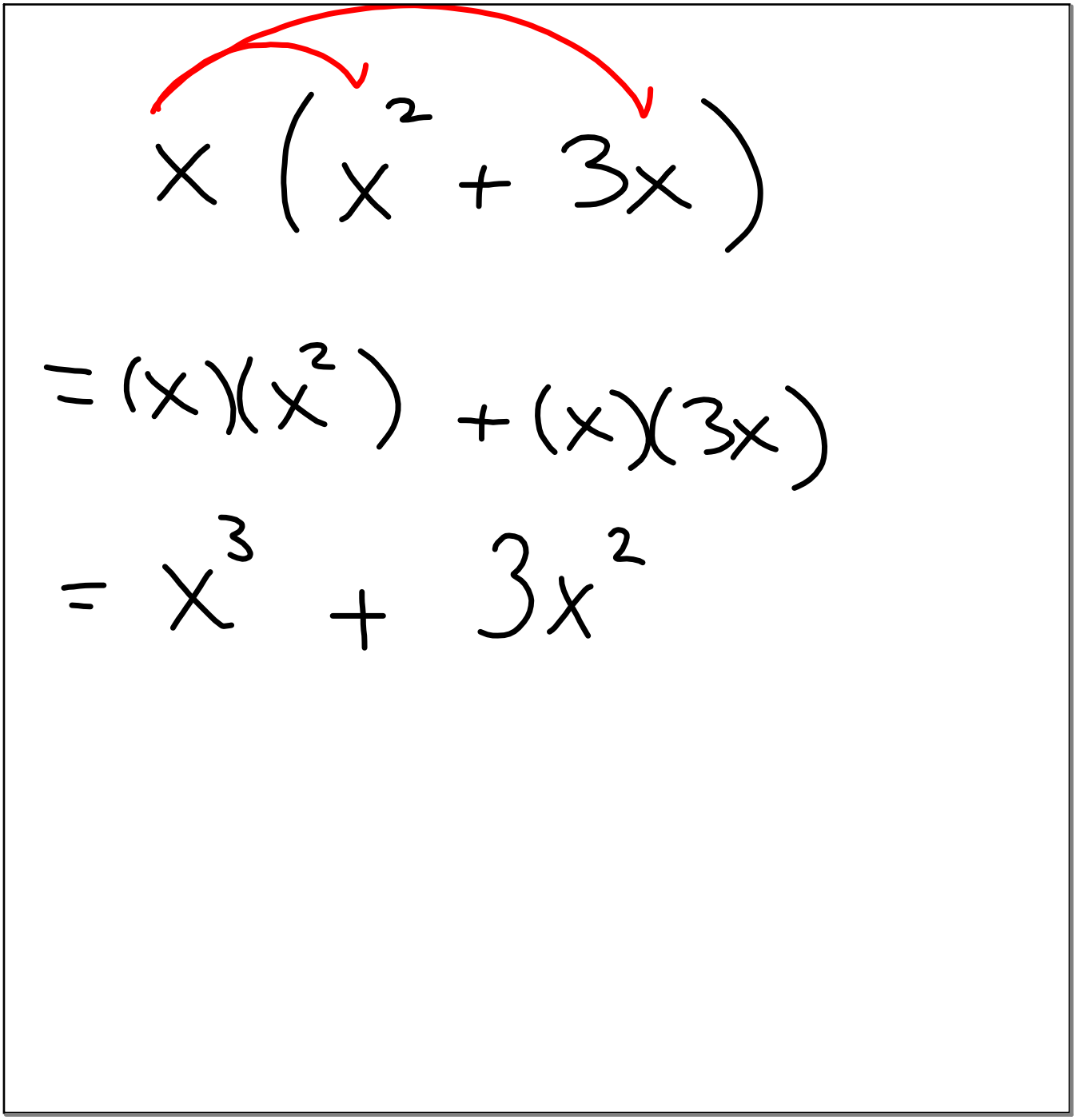
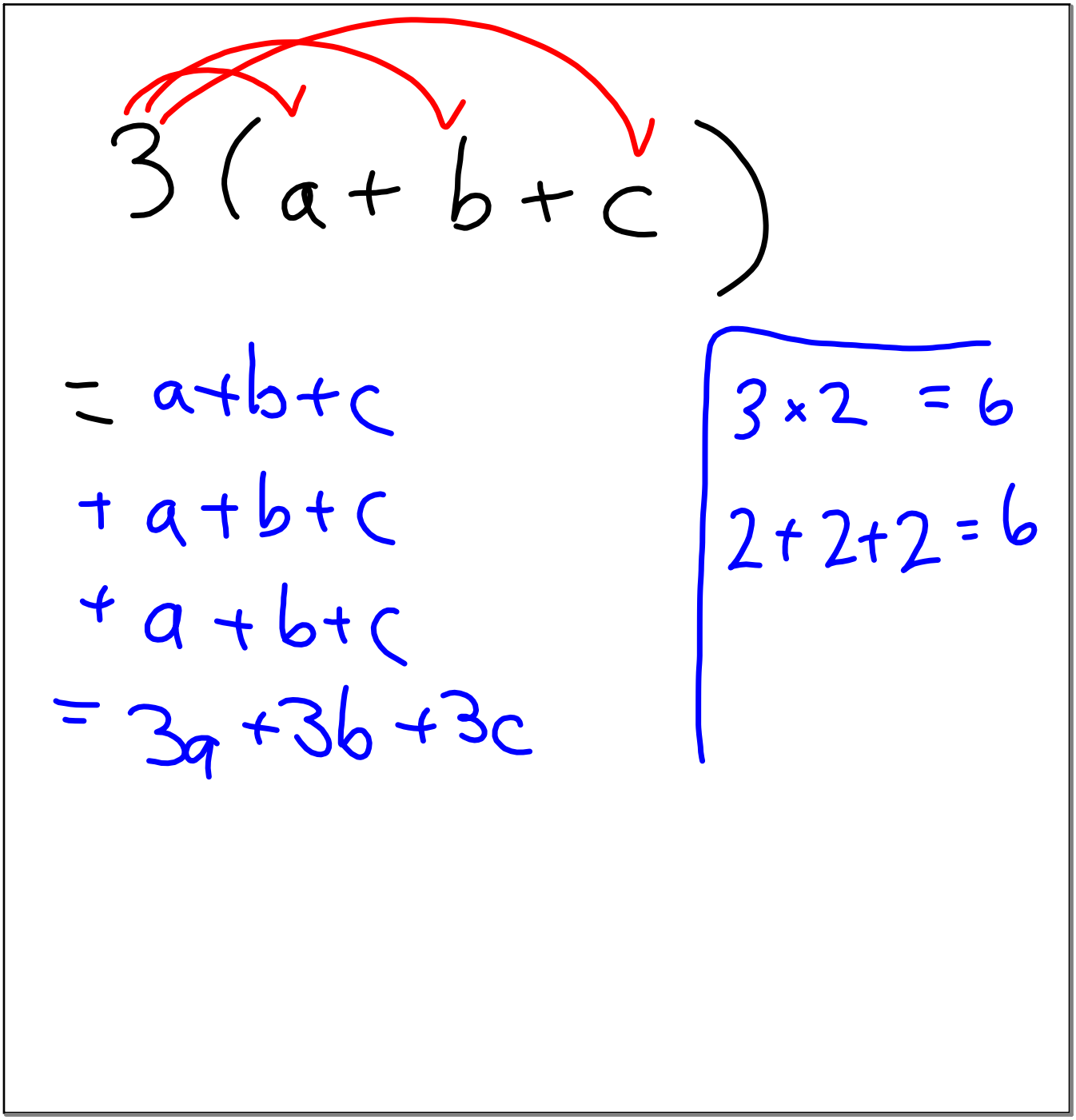


Mar 3-10:16 AM


3(a+b+c)
= a+b+c
+ a+b+c
+ a+b+c
= 3a+3b+3c
3×2 = 6
2+2+2 = 6

$$2a^2(3a + 4b)$$

$$= (2a^2)(3a) + (2a^2)(4b)$$

$$= 6a^3 + 8a^2b$$

Mar 3-10:21 AM