Math 9 Name: _____
Ch. 5 – Polynomials Block: _____

5.2 – Like and Unlike Terms

What would be the best way to organize this list when going to the grocery store?

2 bananas	5 oranges
3 oranges	8 bananas
1 apple	10 oranges
4 bananas	2 bananas
2 apples	5 apples

16 bananas
18 oranges
8 apples

This is an example of putting **like terms** together. In algebra, like terms are those that have the same variable(s) raised to the same exponent(s).

Bananas and apples are what we would call **unlike terms**. In algebra, unlike terms have different variables or the same variables, but raised to different exponents.

Examples of like terms:

$4x^1$ and $-3x^1$
y^2 and $5y^2$
$2x^2y$ and $-3x^2y$
$-4ab$ and $5ba$

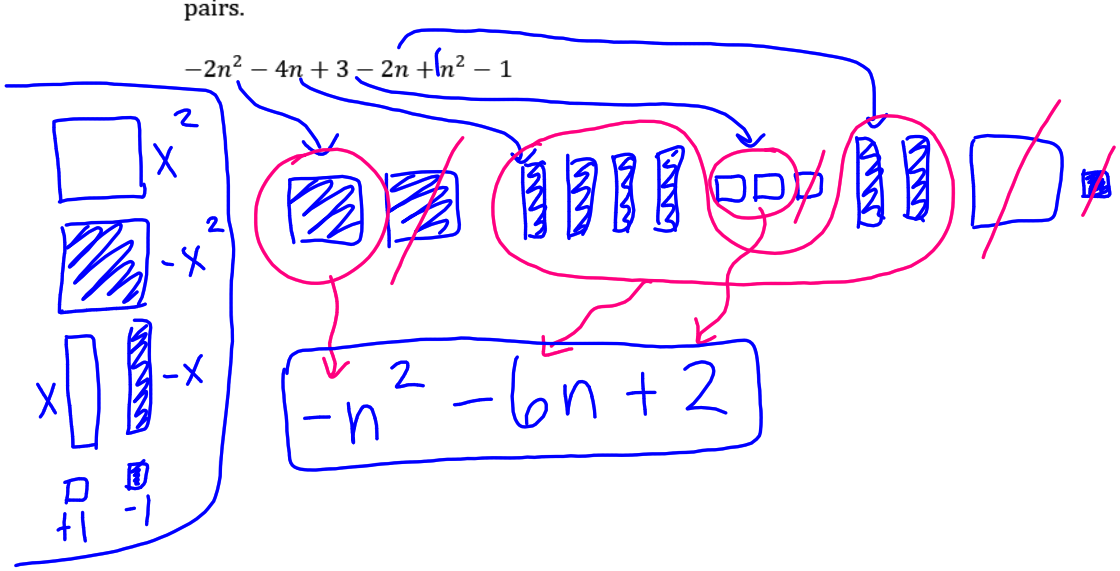
Examples of unlike terms:

$2x$ and $2y$
$4x^2y$ and $-3xy^2$
$3ab$ and $5b$

We can use **algebra tiles** to "combine like terms", thereby simplifying a polynomial.

Ex. 1: Simplify the following polynomial by representing it with algebra tiles and removing zero pairs.

$-2n^2 - 4n + 3 - 2n + n^2 - 1$



We don't always want to draw algebra tiles to simplify a polynomial. Instead, you can determine which terms are like terms and then combine them by adding their coefficients (the numbers in front of the variables):

$7x + 5x = 12x$

$-2a^2b - 8a^2b = -10a^2b$

$-2y + 3y = 1y = y$

$4pq + 7pq - 2qp = 9pq$

Ex. 2: Simplify the following polynomials. Write the result in descending order.

(a) $1p^2 - 2 + 5p + 3 + 2p - 4p^2 - 10$

$-3p^2 + 7p - 9$

(b) $2x - 5 + 3x^4 - 4x + x^2 - 2x^4 - 2 + 1x$

$= x^4 + x^2 - x - 7$

(c) $4xy - 1y^2 - 3x^2 + 2xy - x - 3y^2$

$-3x^2 - 4y^2 + 6xy - x$

Ex. 3: Are $2b^2 + 4b - 6$ and $5b^2 - 4b + 2 - 3b^2 + 8b - 4$ **equivalent polynomials**?

the same

$2b^2 + 4b - 6$ vs. $2b^2 + 4b - 2$

$\therefore$ not equivalent.