Get Ready

Language of Polynomials

term
- a number *or* variable *or* the product of a number and a variable
- examples: 5, *x*, 3*y*

polynomial
- an expression made up of 1 or more terms connected by addition or subtraction

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Study Tool

monomial
- a polynomial with 1 term. Examples: $4x$, 5, $3a^2$

binomial
- a polynomial with 2 terms. Examples: $4x + 5$, $3a^2 - 2a$

trinomial
- a polynomial with 3 terms. Example: $4x^2 - 8x + 2$

To find the **degree of a term**, add the exponents of the variable(s) in the term.
Example: $5x^2y = 5x^2y^1$, so it has a degree of 3.
The **degree of a polynomial** is the degree of the term with the highest degree.
Example: $7b^2 + 3b - 11$ has a degree of 2 because the highest degree term, $7b^2$, has a degree of 2.

1. Complete the table.

monomial, binomial, or trinomial

	Type of Polynomial	Degree of Polynomial
a) $x^2 - 2x + 5$		
b) $11c + 14$		
c) $24d^2$		

Equivalent Expressions

- **like terms** have the same variable(s) with the same exponent(s)
- combine by adding or subtracting
- examples: $5x - 3x = 2x$, $-4k^2 + 0.5k^2 = -3.5k^2$

- **unlike terms** have different variables or like variables with different exponents
- cannot be combined
- examples: $2t + 2t^2$, $-pq + 6p$

2. Simplify by combining like terms.

a) $x^2 - 6x + 2x^2 + 5x$

$= \boxed{x^2} \boxed{- 6x} + \boxed{2x^2} \boxed{+ 5x}$

$= x^2 + 2x^2 - 6x + 5x$ Group like terms.

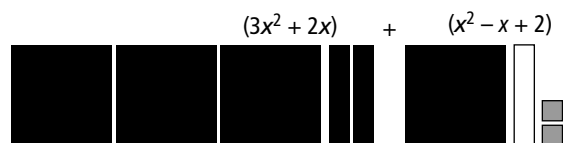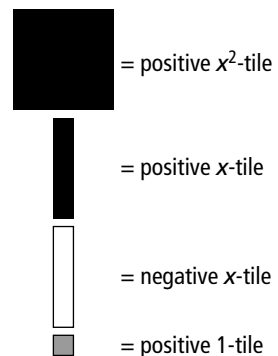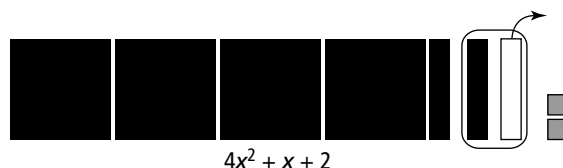$= \text{_____} x^2 - x$ Combine like terms.

b) $-2g^2 - 7n + 4g^2 + 3n$

Using a Model to Add and Subtract Polynomials

You can model adding or subtracting polynomials to simplify the expression.

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

= positive x^2-tile

= positive x-tile

= negative x-tile

= positive 1-tile

Group like terms. Then, remove any zero pairs.

$4x^2 + x + 2$

3. Draw a model to add or subtract the polynomials.

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

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

Using Opposites to Subtract Polynomials

To find the opposite of a polynomial, write the opposite of each term.
Example: The opposite of $2x^2 + 3x - 7$ is $-2x^2 - 3x + 7$.

To subtract polynomials, add the opposite.

$(4x^2 + x + 2) - (2x^2 + 3x - 7)$

$= (4x^2 + x + 2) + (-2x^2 - 3x + 7)$ Add the opposite.

$= 4x^2 - 2x^2 + x - 3x + 2 + 7$ Group like terms.

$= 2x^2 - 2x + 9$ Combine like terms.

4. Subtract the polynomials.

a) $(5x^2 + 3x - 7) - (2x^2 - 5x + 3)$

b) $(-3y^2 + 2y + 1) - (-6y^2 - 8y - 6)$

Add the opposite.

Group like terms.

Combine like terms.