Get Ready

Date: _____

Language of Polynomials

Polynomials are expressions made up of one or more terms. The terms are connected by addition or subtraction. For example, $4x^2 - 8x + 2$ has three terms. Some polynomials have specific names depending on the number of terms that are included:

- A *monomial* has one term.
- A *binomial* has two terms.
- A *trinomial* has three terms.

To find the degree of a term, add the exponents of its variables.

Polynomials have a degree the same as the highest degree term. $7b^2 + 3b - 11$ has degree 2 because the highest degree term, $7b^2$, has degree 2.

1. For each expression, state whether it is a monomial (M), binomial (B), or trinomial (T). Then, identify the polynomial's degree.

a) $x^2 - 2x + 5$ **b)** $3y^2 - 9y$

c) $11c + 14$ **d)** $24d^2$

2. Create a polynomial that meets these conditions:

- contains two variables
- has three terms
- is of degree 2

Equivalent Expressions

Like terms differ only by their numerical coefficients. Like terms can be combined. Unlike terms cannot be combined.

Like terms: $3x$ and $-5x$ can be combined as $-2x$.
$-4k^2$ and $0.5k^2$ can be combined as $-3.5k^2$.

Unlike terms: $2t$ and t^2 cannot be combined.
$-pq$ and $6p$ cannot be combined.

3. Which of the following expressions are equivalent to $3n^2$?

a) $3n + n$ **b)** $2n^2 + n^2$

c) $4n^2 - 1$ **d)** $-7n^2 + 10n^2$

4. Simplify by collecting like terms.

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

b) $4p^2 - 2p + p + 2 - p^2$

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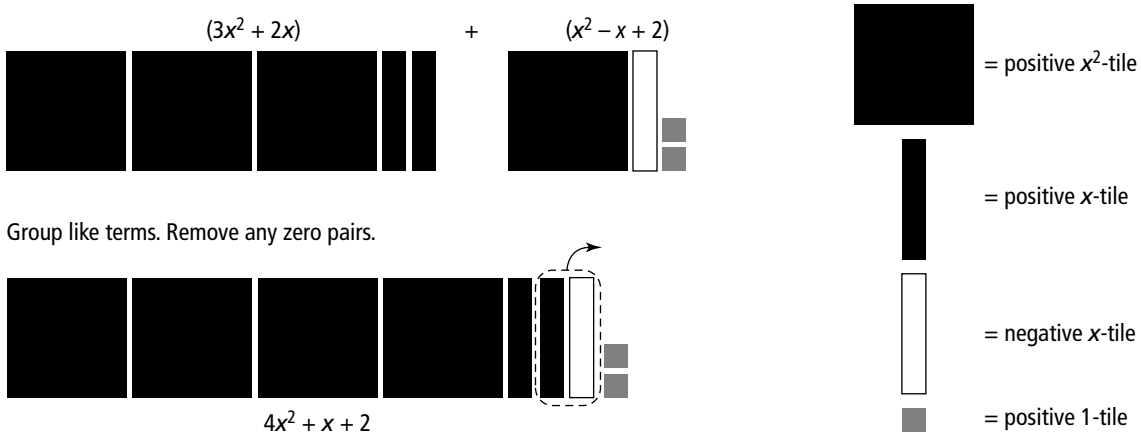
Using a Model to Add and Subtract Polynomials

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



5. Add the polynomials, using models.

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

b) $(2t^2 - 5) + (3t + 6)$

6. Subtract the polynomials, using models.

a) $(2s - 4) - (2s + 3)$

b) $(-y^2 + 3y - 2) - (-2y^2 - 2y)$

Using Opposites to Subtract Polynomials

To subtract polynomials, you can add the opposite. The opposite of a polynomial is found by taking the opposite of each term. For example, the opposite of $(2x^2 + 3x - 7)$ is $(-2x^2 - 3x + 7)$

$$\begin{aligned}(4x^2 + x + 2) - (2x^2 + 3x - 7) &= (4x^2 + x + 2) + (-2x^2 - 3x + 7) \\ &= 4x^2 - 2x^2 + x - 3x + 2 + 7 \\ &= 2x^2 - 2x + 9\end{aligned}$$

7. Subtract the polynomials.

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

b) $(2y^2 + 3y - 3) - (2y^2 + 4y + 6)$