7.1 Adding and Subtracting Polynomials
For use with Exploration 7.1

Essential Question  How can you add and subtract polynomials?

1 EXPLORATION: Adding Polynomials

Go to BigIdeasMath.com for an interactive tool to investigate this exploration.

Work with a partner. Write the expression modeled by the algebra tiles in each step.

Step 1
\((3x + 2) + (x - 5)\)

Step 2

Step 3

Step 4

2 EXPLORATION: Subtracting Polynomials

Go to BigIdeasMath.com for an interactive tool to investigate this exploration.

Work with a partner. Write the expression modeled by the algebra tiles in each step.

Step 1
\((x^2 + 2x + 2) - (x - 1)\)

Step 2

Step 3

7.1 Adding and Subtracting Polynomials (continued)

**EXPLORATION: Subtracting Polynomials (continued)**

Step 4

Step 5

Communicate Your Answer

3. How can you add and subtract polynomials?

4. Use your methods in Question 3 to find each sum or difference.

   a. \((x^2 + 2x - 1) + (2x^2 - 2x + 1)\)

   b. \((4x + 3) + (x - 2)\)

   c. \((x^2 + 2) - (3x^2 + 2x + 5)\)

   d. \((2x - 3x) - (x^2 - 2x + 4)\)
In your own words, write the meaning of each vocabulary term.

monomial

degree of a monomial

polynomial

binomial

trinomial

degree of a polynomial

standard form

leading coefficient

closed

Notes:
Core Concepts

Polynomials

A polynomial is a monomial or a sum of monomials. Each monomial is called a term of the polynomial. A polynomial with two terms is a binomial. A polynomial with three terms is a trinomial.

<table>
<thead>
<tr>
<th>Binomial</th>
<th>Trinomial</th>
</tr>
</thead>
<tbody>
<tr>
<td>$5x + 2$</td>
<td>$x^2 + 5x + 2$</td>
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</table>

The degree of a polynomial is the greatest degree of its terms. A polynomial in one variable is in standard form when the exponents of the terms decrease from left to right. When you write a polynomial in standard form, the coefficient of the first term is the leading coefficient.

Notes:

Extra Practice

In Exercises 1–8, find the degree of the monomial.

1. $-6s$  
2. $w$  
3. $8$  
4. $-2abc$

5. $7x^2y$  
6. $4r^2s^3t$  
7. $10mn^3$  
8. $\frac{2}{3}$
In Exercises 9–12, write the polynomial in standard form. Identify the degree and leading coefficient of the polynomial. Then classify the polynomial by the number of terms.

9. \( x + 3x^2 + 5 \)
10. \( \sqrt{5} \ y \)
11. \( 3x^5 + 6x^8 \)
12. \( f^2 - 2f + f^4 \)

In Exercises 13–16, find the sum.

13. \( (-4x + 9) + (6x - 14) \)
14. \( (-3a - 2) + (7a + 5) \)
15. \( (x^2 + 3x + 5) + (-x^2 + 6x - 4) \)
16. \( (t^2 + 3t^3 - 3) + (2t^2 + 7t - 2t^3) \)

In Exercises 17–20, find the difference.

17. \( (g - 4) - (3g - 6) \)
18. \( (-5h - 2) - (7h + 6) \)
19. \( (-x^2 - 5) - (-3x^2 - x - 8) \)
20. \( (k^2 + 6k^3 - 4) - (5k^3 + 7k - 3k^2) \)