

Section Overview

Polynomials

Lesson 7-5

Why? Polynomials can be used to represent various measurements, including perimeter, area, and volume.

Polynomial	Degree	Classified by Degree	Classified by Number of Terms
8	0	Constant	Monomial
$x - 2$	1	Linear	Binomial
$4c^2 + c - 3$	2	Quadratic	Trinomial
$5x^3 - 2x^2 + 3$	3	Cubic	Trinomial

Adding and Subtracting Polynomials

Lesson 7-6

Why? Addition or subtraction of polynomials can be used to compare profit models.
Add or subtract polynomials by combining like terms.

Vertical Method

$$\begin{array}{r}
 (7x^2 + 4x + 3) + (2x^2 + x + 5) \\
 7x^2 + 4x + 3 \\
 + 2x^2 + x + 5 \\
 \hline
 9x^2 + 5x + 8
 \end{array}$$

Horizontal Method

$$\begin{aligned}
 &(3x^2 + 7x + 1) - (5x^2 + 4x - 6) \\
 &(3x^2 + 7x + 1) + (-5x^2 - 4x + 6) \\
 &(3x^2 + 7x + 1) + (-5x^2 - 4x + 6) \\
 &[3x^2 + (-5x^2)] + [7x + (-4x)] + (1 + 6) \\
 &\quad -2x^2 + 3x + 7
 \end{aligned}$$

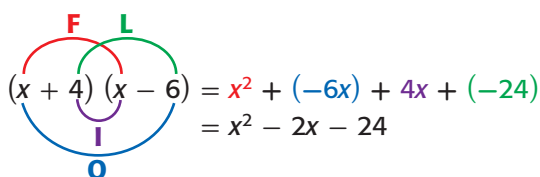
Multiplying Polynomials

Lessons 7-7, 7-8

Why? Students need to understand how polynomials are multiplied before they can factor them in the next chapter.

FOIL

First terms, Outer terms, Inner terms, and then Last terms



$$\begin{aligned}
 (x + 4)(x - 6) &= x^2 + (-6x) + 4x + (-24) \\
 &= x^2 - 2x - 24
 \end{aligned}$$

Rectangular Model

$$\begin{array}{r}
 (x + 4)(x - 6) \\
 \begin{array}{cc}
 x & +4 \\
 \hline
 x & \begin{array}{|c|c|} \hline x^2 & 4x \\ \hline \end{array} \\
 -6 & \begin{array}{|c|c|} \hline -6x & -24 \\ \hline \end{array}
 \end{array} \\
 x^2 - 2x - 24
 \end{array}$$

Perfect-Square Trinomial

$$\begin{aligned}
 (a + b)^2 &= a^2 + 2ab + b^2 \\
 (a - b)^2 &= a^2 - 2ab + b^2
 \end{aligned}$$

$$(x + 6)^2 = x^2 + 2(x)(6) + 6^2 = x^2 + 12x + 36$$

Difference of Two Squares

$$\begin{aligned}
 (a + b)(a - b) &= a^2 - b^2 \\
 (x + 7)(x - 7) &= x^2 - 7^2 = x^2 - 49
 \end{aligned}$$