

5.1: Multiplying Polynomials

April 19, 2017 11:38 AM

what is a polynomial? This is a sum of different terms

Ex: $x+5$

$2x^2 - x + 7$

These are polynomials

Distributive Property: Water balloon bombing

what is $(x+5)(2x-1)$?

$$\begin{aligned}
 (x+5)(2x-1) &= \overset{\text{break apart}}{\underbrace{x(2x-1)} + \underbrace{5(2x-1)}} \\
 &= \underset{\text{multiply in}}{(2x)(x) - 1(x)} + \underset{\text{multiply in}}{2x(5) - 1(5)} \\
 &= \underset{\text{Simplify}}{2x^2 - x} + \underset{\text{Simplify}}{10x - 5} \\
 &= \underset{\text{group like terms}}{\underline{\underline{2x^2 + 9x - 5}}}
 \end{aligned}$$

$$\begin{aligned}
 (\underline{40+2x})(7-3x) &= \overset{\text{break apart}}{\underbrace{40(7-3x)} + \underbrace{2x(7-3x)}} \\
 &= \underset{\text{multiply in}}{(40)(7) - 3x(40)} + \underset{\text{multiply in}}{2x(7) - 3x(2x)} \\
 &= \underset{\text{Simplify}}{280 - 120x} + \underset{\text{Simplify}}{14x - 6x^2} \\
 &= \underset{\text{group like terms}}{\underline{\underline{280 - 106x - 6x^2}}} \\
 &= \underline{\underline{-6x^2 - 106x + 280}}
 \end{aligned}$$

$$\begin{aligned}
 (x-2y)(x-4y) &= x(x-4y) - 2y(x-4y) \\
 &= x^2 - 4xy - 2xy + 8y^2 \\
 &= \underline{\underline{x^2 - 6xy + 8y^2}}
 \end{aligned}$$

$$(x+1)(5x+3) + 3(2x+4)(6x-2)$$

Foiling

$$\begin{aligned}
&= x(5x+3) + 1(5x+3) + 3(2x+4)(6x-2) \\
&= 5x^2 + 3x + 5x + 3 + 3(2x+4)(6x-2) \\
&= 5x^2 + 8x + 3 + 3[2x(6x-2) + 4(6x-2)] \\
&= 5x^2 + 8x + 3 + 3[12x^2 - 4x + 24x - 8] \\
&= 5x^2 + 8x + 3 + 3[12x^2 + 20x - 8] \\
&= \underline{5x^2} + \underline{8x} + \underline{3} + \underline{36x^2} + \underline{60x} - \underline{24} \\
&= \underline{\underline{41x^2 + 68x - 21}}
\end{aligned}$$

Foiling

F : First
O : Outer
I : Inner
L : Last

This only works with binomials

$$(Ax + B)(Mx + n)$$

Multiply the first,
then outer,
then inner
then last terms

$$\begin{aligned}
&(Ax)(Mx) \\
&+ (Ax)(n) \\
&+ (B)(Mx) \\
&+ (B)(n)
\end{aligned}$$

$$(Ax)(Mx) + (Ax)(n) + (B)(Mx) + (B)(n)$$

$$\begin{aligned}
(x-5)(x+1) &= x^2 + x - 5x - 5 \\
&= \underline{\underline{x^2 - 4x - 5}}
\end{aligned}$$

11...work 1-15 odd Exclude #9.

Pg 209

Homework 1-15 odd Exclude #9. Pg 209
Do all problems using the distributive or
foil method

Bathroom