

MBF 3CI

5.1

Expand Binomials

Today's Learning Goals:

Students will...

- Learn how to "smile."
- Expand and simplify binomial expressions.

REVIEW:

Simplify: Note the difference between: a) "Addition" and b) "Multiplication"

a) $3x + 2x$

$= 5x$

b) $(3x)(2x)$

$= (3)(2)x^{1+1}$

$= 6x^2$

c) $4(x - 7)$

$= 4x - 28$

d) $(4x^2)(5x^3)$

$= 20x^{2+3}$

$= 20x^5$

F.O.I.L.**Binomial Multiplication**

Recall: a binomial is a polynomial with 2 terms.

Expand and simplify.

$$\begin{array}{llll}
1) \quad (x + 3)(x + 4) & 2) \quad (x - 3)(x + 4) & 3) \quad (x - 2)(x - 3) & 4) \quad (2x + 1)(x + 4) \\
\cancel{x}^2 + \cancel{4x} + \underline{3x} + 12 & \cancel{x}^2 + \cancel{4x} - \underline{3x} - 12 & \cancel{x}^2 - \cancel{3x} - \underline{2x} + 6 & \cancel{x}^2 + \cancel{8x} + \underline{x} + 4 \\
= x^2 + 7x + 12 & = x^2 + x - 12 & = x^2 - 5x + 6 & = 2x^2 + 9x + 4 \\
& & \text{FOIL} &
\end{array}$$

5) $(x - 3)^2$

$$\begin{aligned}
&= (x - 3)(x - 3) \\
&= x^2 - 3x - 3x + 9 \\
&= x^2 - 6x + 9
\end{aligned}$$

6) $(x + 1)^2$

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

$$\begin{aligned}
7) \quad (2x + 3.5)(4x - 1) \\
&= 8x^2 - \underline{2x} + \underline{14x} - 3.5 \\
&= 8x^2 + 12x - 3.5
\end{aligned}$$

FOIL

8) $4(x - 2)^2$

$$\begin{aligned}
&= 4(x - 2)(x - 2) \\
&= 4(x^2 - 2x - 2x + 4) \\
&= 4(x^2 - 4x + 4) \\
&= 4x^2 - 16x + 16
\end{aligned}$$

9) $5(3x - 1)^2$

$$\begin{aligned}
&= 5(3x - 1)(3x - 1) \\
&= 5(9x^2 - 3x - 3x + 1) \\
&= 5(9x^2 - 6x + 1) \\
&= 45x^2 - 30x + 5
\end{aligned}$$

10) $-2.6(x + 3)^2$

$$\begin{aligned}
&= -2.6(x + 3)(x + 3) \\
&= -2.6(x^2 + 3x + 9) \\
&= -2.6(x^2 + 6x + 9) \\
&= -2.6x^2 - 15.6x - 23.4
\end{aligned}$$

Entertainment:

pp. 239-240 #5, 7, 10, 12

You will have an opportunity to "Show What You Know" on Expanding Binomials on Wednesday.