

For Binomial Multiplication ONLY!

"FOIL" Method: multiply **F**irst **O**uter **I**nnner **L**ast

The words/letters used to describe the FOIL process pertain to the distributive method for multiplying two binomials. These words/letters do not apply to other multiplications such as a binomial times a trinomial.

$$\mathbf{F:} (x + 3)(x + 2)$$

$$\mathbf{O:} (x + 3)(x + 2)$$

$$\mathbf{I:} (x + 3)(x + 2)$$

$$\mathbf{L:} (x + 3)(x + 2)$$

$$\begin{aligned}(x + 3)(x + 2) &= x^2 + 2x + 3x + 6 \\ &= x^2 + 5x + 6\end{aligned}$$

The drawback to using the FOIL lettering is that it ONLY WORKS on binomial multiplication.

Cubing a Binomial



Expand: $(x + 3)^3$

If you take your time, this problem is really very simple. All you need to do is multiply twice. Multiply $(x + 3)$ times $(x + 3)$, and then multiply that answer by $(x + 3)$. Simple!

$$\begin{aligned}(x + 3)^3 &= (x + 3)(x + 3)(x + 3) \\ &= (x^2 + 3x + 3x + 9)(x + 3) && \text{the first multiplication is done} \\ &= (x + 3)(x^2 + 6x + 9) && \text{combine like terms and switch order} \\ &= x^3 + 6x^2 + 9x + 3x^2 + 18x + 27 && \text{multiply again} \\ &= x^3 + 9x^2 + 27x + 27 && \text{combine like terms}\end{aligned}$$

The "distributive method" of multiplication was used in this problem.
Note: FOIL will not work for the second multiplication in this problem.