

M9 - 5.0 - Distribution "FOIL" Review

Expand and Simplify

$$2(x+3) \rightarrow 2x+6$$

Distribute Multiply

Negative Distribution

$$+(x+3) \rightarrow x+3$$

$$-(x-2) \rightarrow -x+2$$

Backwards Distribution

$$(x+2)(3) \rightarrow 3x+6$$

Check Answer $2(x+3) = 2x+6$ Pick an Arbitrary x value
 $x = 3^*$ $2((3)+3) = 2(3)+6 = 12$ Substitute into question and answer
 Must be equal!

Every single question you ever do!

Expand and Simplify

$(x+2)(x+3) =$ "FOIL" Method

F - multiply **F**irst numbers in brackets
 O - multiply **O**utside numbers in brackets
 I - multiply **I**nside numbers in brackets
 L - multiply **L**ast numbers in brackets

Alternative Method:

$$(x+2)(x+3) = x(x+3) + 2(x+3)$$

$$x^2 + 3x + 2x + 6$$

$$x^2 + 5x + 6$$

Combine like terms. **Quick Method**

$$(x+2)(x+3) = x^2 + 5x + 6$$

Multiply and combine like terms in the same step.

$(x+2)^2$
 $(x+2)(x+2)$
 $x^2 + 2x + 2x + 4$

FOIL
Combine Like Terms

$$x^2 + 4x + 4$$

$-(x+2)(x+4)$
 $-(x^2 + 4x + 2x + 8)$
 $-(x^2 + 6x + 8)$

FOIL
Combine Like Terms
Distribute

$$-x^2 - 6x - 8$$

$2(x+4)(x-1)$
 $2(x^2 - x + 4x - 4)$
 $2(x^2 + 3x - 4)$

FOIL
Combine Like Terms
Distribute

$$2x^2 + 6x - 8$$

Expand and Simplify

$(x+3)(x^2 - 2x + 8)$

Triple FOIL

$$x^3 - 2x^2 + 8x + 3x^2 - 6x + 24$$

Combine Like Terms

$$x^3 + x^2 + 2x + 24$$

$(x+1)(x+2)(x-3)$

FOIL
Combine Like Terms
Then Triple FOIL

$$(x^2 + 2x + 1x + 2)(x-3)$$

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

...

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

Distribute
Combine Like Terms

$(x-2) - (x+1)(x-3)$
 $x-2 - (x^2 - 3x + x - 3)$
 $x-2 - (x^2 - 2x - 3)$
 $x-2 - x^2 + 2x + 3$
 $-x^2 + 3x + 1$

FOIL
Distribute
Combine Like Terms

Algebra Tiles

$(2x-1)(x+2)$

Check by FOIL

$2x^2 + 4x - x - 2$

$$2x^2 + 3x - 2$$

Legend

$\blacksquare = x^2$ $\square = -x^2$

$\text{rectangle} = x$ $\text{small square} = 1$

$\text{white rectangle} = -x$ $\text{white square} = -1$