

**THE FOIL METHOD**

YOU SHOULD ALREADY KNOW THE DISTRIBUTIVE PROPERTY OF MULTIPLICATION.

$$4(2d + 3) = 4(2d + 3) = (4 \times 2d) + (4 \times 3) = 8d + 12$$

WHEN YOU MULTIPLY TWO BINOMIALS YOU ARE USING THE SAME PROCESS BUT WITH TWO TERMS.

$$(4d + 2)(d + 3) = (4d)(d + 3) + (2)(d + 3)$$





SEE HOW WE NEED TO MULTIPLY THE **4d** AND THE **2** BY **(d + 3)**? IT'S THE DISTRIBUTIVE PROPERTY.

**THE FOIL METHOD HELPS US STAY ORGANIZED WHEN MULTIPLYING TWO BINOMIALS.**

SOMETIMES PEOPLE FORGET WHICH NUMBERS AND VARIABLES TO MULTIPLY, SO MATH PEOPLE CREATED **FOIL**.

- F**irst - Multiply the first term in each set of parentheses.
- O**uter - Multiply the outer term in each set of parentheses.
- I**nner - Multiply the inner term in each set of parentheses.
- L**ast - Multiply the last term in each set of parentheses.

LET'S DO THE SAME PROBLEM BUT USE THE **FOIL** METHOD.

$(4d + 2)(d + 3)$	<b>First</b>	 $(4d + 2)(d + 3) = 4d^2$
	<b>Outer</b>	 $(4d + 2)(d + 3) = 12d$
	<b>Inner</b>	 $(4d + 2)(d + 3) = 2d$
	<b>Last</b>	 $(4d + 2)(d + 3) = 6$

PUT ALL THE ANSWERS TOGETHER.

$$4d^2 + 12d + 2d + 6$$

COMBINE LIKE TERMS AND WE HAVE THE FINAL ANSWER.

$$4d^2 + 14d + 6$$

BASICALLY YOU'RE USING THE DISTRIBUTIVE PROPERTY AND MULTIPLYING THE **4d** BY EVERYTHING INSIDE THE OTHER PARENTHESIS **(d + 3)** AND THEN MULTIPLYING THE **2** BY EVERYTHING IN THE OTHER PARENTHESIS **(d + 3)**.

**Now your turn.**

1.  $(f + 3)(f + 5)$   
 $f^2 + 5f + 3f + 15$   
 **$f^2 + 8f + 15$**

2.  $(2w + 1)(4 + w)$   
 $8w + 2w^2 + 4 + w$   
 **$2w^2 + 9w + 4$**

3.  $(5h + 6)(2h + 3)$   
 $10h^2 + 15h + 12h + 18$   
 **$10h^2 + 27h + 18$**

THE FOIL METHOD

HELPFUL EXAMPLE

$(b + 2)(b - 1)$  THIS PROBLEM HAS A NEGATIVE 1.

First  $(b + 2)(b - 1) = b^2$

Outer  $(b + 2)(b - 1) = -b$

Inner  $(b + 2)(b - 1) = 2b$

Last  $(b + 2)(b - 1) = -2$

THIS IS HOW YOUR WORK AND ANSWER SHOULD LOOK LIKE.

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

Now your turn.

1.  $(e - 3)(2e + 3)$   
 $2e^2 - 3e - 9$

2.  $(3d + 2)(2d + 9)$   
 $6d^2 + 31d + 18$

3.  $(g - 3)(g - 3)$   
 $g^2 - 6g + 9$

4.  $(t + 6)(2 - 3t)$   
 $-3t^2 - 16t + 12$

5.  $(h + 7)(h + 7)$   
 $h^2 + 14h + 49$

6.  $(2r - 1)(4r - 8)$   
 $8r^2 - 20r + 8$

7.  $(3w + 4)(4w + 2)$   
 $12w^2 + 22w + 8$

8.  $(5k - 2)(6 - 5k)$   
 $-25k^2 + 40k - 12$

9.  $(y - 6)(y + 6)$   
 $y^2 - 36$

10.  $(-a + 7)(4 - 2a)$   
 $2a^2 - 18a + 28$

11.  $(4c - 5)(5c - 8)$   
 $20c^2 - 57c + 40$

12.  $(3n + 3)(5n + 9)$   
 $15n^2 + 42n + 27$