

Expanding

Multiplying Binomials Using
FOIL, Algebra Tiles and the
Chart Method



Multiplying Binomials with FOIL

- This method multiplies the first terms of the binomial (F), multiplies the outside terms (O), multiplies the inside terms of the binomials (I), multiplies the last terms of the binomials (L), and simplifies by adding like terms.

■ *Example*

1. Expand and simplify.

a) $(x-4)(x+3)$

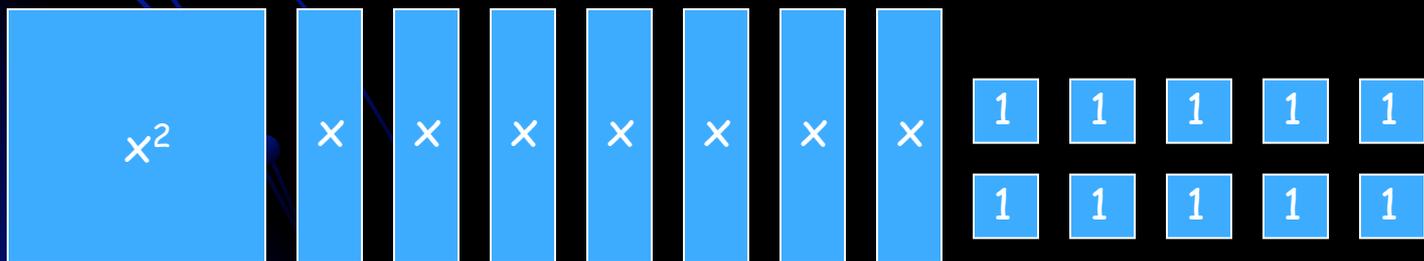
b) $(2x+1)(x+5)$

Multiplying Binomials with Algebra Tiles

- Algebra tiles are used to represent the terms in a trinomial of the form x^2+bx+c .
- There are three tiles: a “1” tile (unit tile), x tile, and x^2 tile.
- They can be used for expressions with positive terms or negative terms.
- Positive terms are represented in one colour and negative terms in another.
- They follow the same rules as integers. When you multiply two positive tiles, the answer is positive. Multiplying two negative tiles also results in a positive tile. Multiplying a negative tile and a positive tile results in a negative tile.

Examples

1. Represent the expression $x^2+7x+10$ with algebra tiles.



1

x

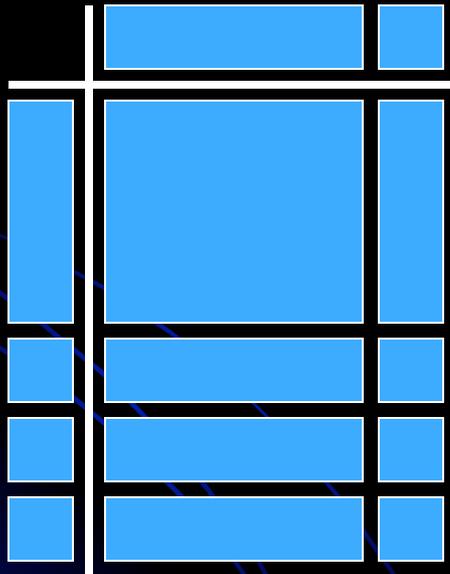
x^2

Multiplying Binomials with Algebra Tiles Tiles (continued)

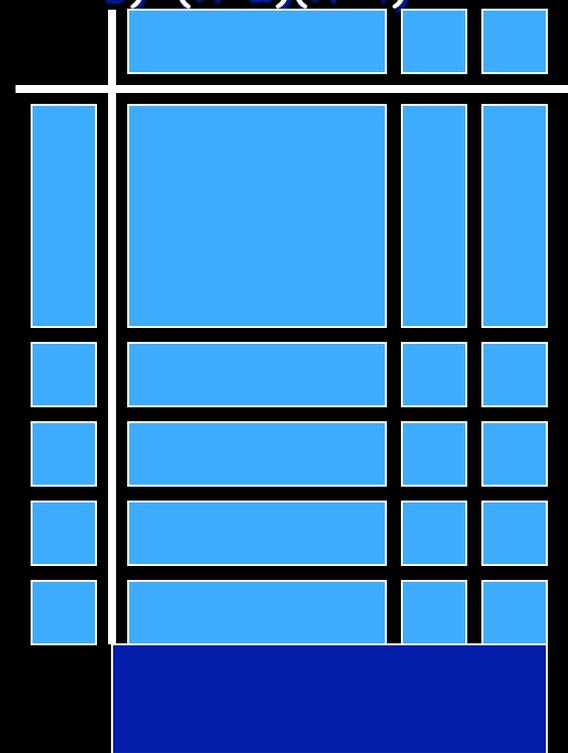
■ *Examples (continued)*

2. Use algebra tiles to multiply and simplify the binomials.

a) $(x+1)(x+3)$



b) $(x+2)(x+4)$



Multiplying Binomials with the Chart Method

- The chart method organizes the distributive property into a table.

- **Example**

1. Use the chart method to multiply and simplify the binomials.

a) $(x-6)(x+2)$

	x	-6
x	x^2	$-6x$
$+2$	$+2x$	-12



b) $(x-3)(x-9)$

	x	-3
x	x^2	$-3x$
-9	$-9x$	$+27$



c) $(x+4)(x-11)$

	x	$+4$
x	x^2	$+4x$
-11	$-11x$	-44



Multiplying Special Binomials

■ Perfect Square Binomials

➤ When you are multiplying a binomial by itself.

➤ **Example**

1. Multiply.

a) $(x-9)^2$



b) $(x+6)^2$



Do you see the pattern?

In the expanded form, the middle number is the number in the bracket $\times 2$ and the number on the end is the number in the bracket squared.

■ Difference of Squares Binomials

➤ When you are multiplying two binomials that look identical, except one is positive and the other is negative.

➤ **Example**

1. Multiply.

a) $(x+5)(x-5)$



b) $(x+7)(x-7)$



Do you see the pattern?

In the expanded form, there are only 2 terms, the first term squared and the last term squared with a subtraction sign between them.

Homework

- *Worksheet*

