

Factoring Trinomials of the form $Ax^2 + Bx + C$, where $A \neq 1$

A · C Method A.K.A. Grouping Method

Steps to Factoring $Ax^2 + Bx + C$	Example Factor: $12x^2 + 11x - 5$
1. Multiply $A \cdot C$	$A \cdot C = 12 \cdot -5 = -60$
2. Find two factors of $A \cdot C$ that add to the middle term, B (the coefficient of x). Be sure to include the proper signs with these numbers.	$\underline{-60}$ $1 \cdot 60$ $2 \cdot 30$ $3 \cdot 20$ $4 \cdot 15 \quad -4 + 15 = 11$ $5 \cdot 12$ $6 \cdot 10$
3. Rewrite the middle term as the sum of the two new factors you found in Step 2 (include the signs). The order of the two terms is not important, as either arrangement will work.	$12x^2 - 4x + 15x - 5$
4. Group the terms to form pairs – the first two terms and the last two terms. Factor out the GCF from each pair.	$(12x^2 - 4x) + (15x - 5)$ $4x(3x - 1) + 5(3x - 1)$
5. Factor out the shared (common) binomial in parentheses.	$(3x - 1)(4x + 5)$

Here Are a Couple More Examples...

Example 1	Example 2
Factor: $8x^2 - 6x - 9$	Factor: $3x^2 - 16x + 16$
1. $A \cdot C = -72$	1. $A \cdot C = 48$
2. $6 \cdot (-12) = -72$ AND $6 + (-12) = -6$	2. $-4 \cdot (-12) = 48$ AND $-4 + (-12) = -16$
3. $8x^2 + 6x - 12x - 9$	3. $3x^2 - 4x - 12x + 16$
4. $2x(4x + 3) - 3(4x + 3)$	4. $x(3x - 4) - 4(3x - 4)$
5. $(4x + 3)(2x - 3)$	5. $(3x - 4)(x - 4)$