

Notes for Factoring Trinomials

Step 1: Move All terms on the same side.

Example: $2x^2 + 9x = -4$ becomes $2x^2 + 9x + 4 = 0$

Example: $n - 6 = -2n^2$ becomes $2n^2 + n - 6 = 0$

Step 2: If the leading coefficient is negative then change each terms signs

Example: $-2n^2 - n + 6 = 0$ becomes $2n^2 + n - 6 = 0$

Step 3: Find the A, B, C and AC in the problem: $Ax^2 + Bx + C$

Example: $2x^2 + 9x + 4$ $A = 2$ $B = 9$ $C = 4$ $AC = (2)(4) = 8$

Example: $2n^2 + n - 6$ $A = 2$ $B = 1$ $C = -6$ $AC = (2)(-6) = -12$

Example: $x^2 + 2x + 1$ $A = 1$ $B = 2$ $C = 1$ $AC = (1)(1) = 1$

Step 4: Find 2 numbers that ADD to give you B and multiply to give you AC (you have been shown how to find these numbers in the calculator as well in $y =$)

Example: $\underline{\quad} + \underline{\quad} = 9$

$\underline{\quad} \times \underline{\quad} = 8$

The two numbers are 8 and 1

Example: $\underline{\quad} + \underline{\quad} = 1$

$\underline{\quad} \times \underline{\quad} = -12$

The two numbers are 4 and -3

Example: $\underline{\quad} + \underline{\quad} = 2$

$\underline{\quad} \times \underline{\quad} = 1$

The two numbers are 1 and 1

THIS IS THE FUN PART

THIS IS CALLED FACTORING BY "GROUPING." SO WE ARE GOING TO DANCE. IN ORDER TO DANCE YOU MUST HAVE A PAIR OF PEOPLE. 3 PEOPLE SHOULDN'T DANCE TOGETHER BUT 2 PEOPLE SHOULD!

We are going to replace the middle term with the 2 numbers we just found

Step 5: Replace the middle term with the two numbers you just found.

Example : $2x^2 + 9x + 4$
 $2x^2 + 8x + 1x + 4$

Remember the two numbers were 8 and 1

Example: $2n^2 + n - 6$
 $2n^2 + 4n - 3n - 6$

Remember the two numbers were 4 and -3

Example: $x^2 + 2x + 1$
 $x^2 + 1x + 1x + 1$

Remember the two numbers were 1 and 1

Step 6: Group the 1st two terms and group the last two terms together with a parentheses ALWAYS
PUT A + BETWEEN THE TWO PARENTHESES

Example: $(2x^2 + 8x) + (1x + 4)$

Example: $(2n^2 + 4n) + (-3n - 6)$

Example: $(x^2 + 1x) + (1x + 1)$

Step 7: Factor out the GCF in each parenthesis. What's left in both parentheses should be the same.

Example: $2x(x + 4) + 1(x + 4)$

Example: $2n(n + 2) - 3(n + 2)$

Example: $x(x + 1) + 1(x + 1)$

Step 8: Factor out the COMMON PARENTHESIS

Example: $(x + 4)(2x + 1)$

Example: $(n + 2)(2n - 3)$

Example: $(x + 1)(x + 1)$

FINAL STEP/ CHECK STEP: Multiply out to see if your problem matches the original.

Example: $2x^2 + x + 8x + 4 = 2x^2 + 9x + 4$ IT MATCHES

Example: $2n^2 - 3n + 4n - 6 = 2n^2 + n - 6$ IT MATCHES

Example: $x^2 + 1x + 1x + 1 = x^2 + 2x + 1$ IT MATCHES