Factoring Trinomials when there is a GCF: $ax^2 + bx + c$

1) Make sure the trinomial is in standard form
2) Always check for a <u>GCF</u> first
3) If there is no GCF, then follow the sign rules:
   - If the last sign is <u>positive</u>, then the signs will be the <u>same</u> which is two of the sign that came first

   +   + __   +   +

   -    + __   -   -

   - If the last sign is <u>negative</u>, then the signs will ALWAYS be <u>different</u> and the bigger number goes with the first sign you see in the original problem

   +   - __   +   - ; bigger number goes with plus sign

   -   - __   +   - ; bigger number goes with minus sign

4) Find the factors of the constant (the number only) that add or subtract to give the coefficient of x (the middle number). The last sign tells you to add or subtract.

   To find the factors of the constant, use the TI 36XPRO calculator. Use the table button and choose option 2 and hit enter. Type in the number and divide by x

5) Check your answer by redistributing

   <u>Example 1:</u> $2x^2 + 2x - 24$

   <u>Example 2:</u> $4x^2 - 24x + 20$

   <u>Example 3:</u> $2x^2 + 6x - 108$

Example 4: $2x^2 + 22x + 60$

Example 5: $5x^2 + 10x + 20$

Example 6: $5x^2 - 30x + 40$

Example 7: $2x^2 + 2x - 4$

Example 8: $4x^2 - 4x - 8$

Example 9: $6x^2 + 66x + 60$

Example 10: $x^3 - 6x^2 + 8x$

Example 11: $x^3 + 6x^2 + 9x$

Example 12: $x^3 - 2x^2 - 8x$

Example 13: $x^3 + 2x^2 - 15x$