SKILL #17

CODE: FT.2

Factoring Trinomials $(ax^2 + bx + c)$



- Core Concept

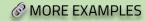
Factoring trinomials like $(ax^2 + bx + c)$ where $a \ne 1$ requires finding two binomials whose product matches the original. Unlike Skill 16, the coefficient of x^2 is no longer 1, adding complexity.

When to use it?

- When the expression has three terms: $ax^2 + bx + c$
- When factoring trinomials with a > 1
- When solving quadratic equations



Steps to Solve



Example: Factor $2x^2 + 7x + 3$:

STEP 1: a = 2, b = 7, c = 3 --> we can't use direct factoring (skill 16)

STEP 2: multiply a by $c \rightarrow 2(3) = 6$

STEP 3: Find the two numbers when multiplied you have 6 and when added you have 7.

STEP 4: Two numbers --> 6 and 1. 6(1) = (6)

6 + 1 = 7

STEP 5: Rewrite the middle term using these numbers --> middle term (7x) -----> 6x + x

STEP 6: $2x^2 + 6x + x + 3$ --> factor by grouping --> $(2x^2 + 6x) + (x + 3)$ --> 2x(x + 3) + (x + 3)

STEP 7: Common binomial (x + 3) -----> (x + 3)(2x + 1)

Quick Tips

- Always check if there's a GCF for the whole trinomial before starting.
- List all factor pairs of $a \times c$ to find the correct numbers.
- If grouping doesn't work, try different factor pairs or check your numbers.

Common Mistakes to Avoid

- \times Forgetting to Multiply $a \times c$.
- Choosing wrong pair of numbers (don't guess!).
- X Forgetting to factor out GCF if all terms have one.
- X Incorrect signs or wrong grouping.



Additional Resources





