

Module 3 Lesson 4:

Math Lab: Factoring $ax^2 + bx + c$ Possible Solutions

Procedure

The completed chart should look like the following.

	x^2 -term	x-term	x-term	Constant	Product
$(2x + 1)(x + 2)$	$2x^2$	$4x$	x	2	$2x^2 + 5x + 2$
$(2x - 3)(x + 5)$	$2x^2$	$10x$	$-3x$	-15	$2x^2 + 7x - 15$
$(3x + 4)(2x - 1)$	$6x^2$	$-3x$	$8x$	-4	$6x^2 + 5x - 4$
$(3x - 2)(4x - 3)$	$12x^2$	$-9x$	$-8x$	6	$12x^2 - 17x + 6$

Analysis

1 a. $2 \times 2 = 4$

b. $4 \times 1 = 4$ (The product is identical to the product in 1.a.)

c. $4 + 1 = 5$ (The sum is equal to the coefficient of the x-term in the final answer.)

2 and 3. The results for the other rows in the table are similar to those found in the first row. In other words, the product of the coefficient of the x^2 -term and the constant is equal to the product of the two x-terms; and the sum of the two x-terms is equal to the coefficient of the x-term in the final answer.

4. The middle term of a trinomial can be expressed as the sum (or difference) of two x-terms.

5. You can group the first two terms and the last two terms; then factor out the GCF; then factor out the binomial that is common to both terms.

6. The completed chart should look like the following.

Product	Sum	Numbers	Check
4	5	4 and 1	$4 \times 1 = 4$ $4 + 1 = 5$

10	7	5 and 2	$5 \times 2 = 10$ $5 + 2 = 7$
-6	1	3 and -2	$3 \times (-2) = -6$ $3 + (-2) = 1$
20	-9	-5 and -4	$(-5) \times (-4) = 20$ $(-5) + (-4) = -9$
-12	-4	-6 and 2	$(-6) \times 2 = -12$ $(-6) + 2 = -4$

7. Answers may vary. Most students will suggest trial and error.