Module 3 Lesson 4:
Math Lab: Factoring $ax^2 + bx + c$

Procedure

Step 1: Multiply each of the polynomials in the table by using the distributive property. Write each term of the corresponding expansion in the appropriate column. The first row has been completed for you as an example.

	x^2-term	x-term	x-term	Constant	Product
$(2x + 1)(x + 2)$	$2x^2$	$4x$	$1x$	2	$2x^2 + 5x + 2$
$(2x – 3)(x + 5)$					
$(3x + 4)(2x – 1)$					
$(3x – 2)(4x – 3)$					

Step 2: Collect like terms and write the answer in the final column.

Analysis

1. Look at the first row you completed,(2x – 3)(x + 5).
   a. What is the product of the x^2-term and the constant?

   b. How does the product in 1.a. compare with the product of the two x-terms?

   c. How does the sum of the two x-terms compare with the coefficient of the x-term in the final answer?

2. Look at the second row you completed, $(3x + 4)(2x – 1)$.
   a. What is the product of the x^2-term and the constant?

b. How does the product in 2.a. compare with the product of the two x-terms?

c. How does the sum of the two x-terms compare with the coefficient of the x-term in the final answer?

3. Look at the final row you completed, $(3x - 2)(4x - 3)$.
   a. What is the product of the x^2-term and the constant?

   b. How does the product in 3.a. compare with the product of the two x-terms?

   c. How does the sum of the two x-terms compare with the coefficient of the x-term in the final answer?

4. In the final two rows of the chart that you completed, describe if there is a pattern with respect to how the product of the x^2-term and constant compare with the product of the two x-terms.

5. If you were given the x^2-term, the two x-terms, and the constant only, how could you obtain the original binomials?

6. Complete the table below. In each case, find a pair of numbers with the indicated product and sum. An example has been done for you.

Product	Sum	Numbers	Check
4	5	4 and 1	$4 \times 1 = 4$ $4 + 1 = 5$
10	7		
–6	1		
20	–9		
–12	–4		

7. Describe the strategy you used to complete the table.