Lesson 1.5: Factoring Trinomials of the Form $ax^2 + bx + c$
(Complex Trinomials)

Specific Outcome: 5.2 – Model factoring of a trinomial, concretely or pictorially, and record the process symbolically. 5.4 – Identify and explain errors in a polynomial factorization. 5.5 – Factor a polynomial, and verify by multiplying the factors. 5.8 – Express a polynomial as a product of its factors.

A. REVIEW: FACTORING BY *GROUPING*

Factor: $6x^2 + 3x + 8x + 4$

Practice: Factor.

a) $12x^2 + 9x + 8x + 6$

b) $4x^2 - 8x - x + 2$

c) $3x^2 + 6x - x - 2$

B. FACTOR USING *DECOMPOSITION*

Steps for Decomposition: $ax^2 + bx + c$

1. Find two integers: *S:* _____
                                      P: _____
2. *Replace* the two integers for the middle term (*bx*)
3. Factor using grouping

Factor. $6x^2 + 11x + 4$:   S: _____
                                          * P: _____

Practice:

a) $2x^2 + 7x + 6$

b) $6x^2 + 17x - 3$

c) $3a^2 - 2a - 8$

d) $12y^2 - 8y + 1$

e) $2a^2 + 7a - 15$

f) $6x^2 - 26x - 20$

g) $6y^2 - 21y + 9$ h) $15k^2 + 5k - 10$ i) $3a^2 - 23a - 8$

Problem Solving:

1. A rectangle garden has an area of $(2a^2 + 3a - 5)$ m². Write are the dimensions of the garden?

2. The expression $6x^2 + 7x - 20$ can be written in the form $(ax - b)(cx + d)$.

   Write the value of a in the first box.   Write the value of b in the second box.
   Write the value of c in the third box.   Write the value of d in the fourth box.

3. Find an integer to replace _____ so that the trinomial can be factored.
   a) $4x^2 + \underline{}x + 3$ b) $9a^2 + \underline{}a + 1$